ABSTRACT

PREVALENCE OF UNREPORTED FALLS IN THE ELDERLY

By Courtney R. Beaudette

Falls are a serious health concern in the elderly. It is estimated that 30% to 40% of community-dwelling elders aged 65 years and older fall each year. However, no specific data is available to confirm the number of unreported falls. Falls are the most common cause of injuries and hospital admissions for trauma in older adults (Lueckenotte & Conley, 2009). Inpatient fall-prevention programs are focusing efforts at interventions to reduce serious injury; such programs may also be directed towards community-dwelling individuals. The purpose of this study was to evaluate the prevalence of unreported falls at home in the elderly.

A descriptive approach was used to explore the prevalence of unreported falls in community-dwelling elderly people. Data were collected using a questionnaire that was distributed to a convenience sample of people age 65 years and older at a northeast Wisconsin community senior center. The survey contained questions related to demographics and falls at home. Responses were kept anonymous. Descriptive statistics were used to analyze the data to determine the number of unreported falls in community-dwelling elderly.

The results showed that 20.8% of survey respondents reported falling at home. This suggests that risks of further injury or even death should be considered. Respondents ranged in age from 65 years to 91 years (m=73.2 years). Data support additional screening for fall risk in the primary care setting when appropriate. Interventions can be implemented to reduce the risk of falling at home. A simple medication change, assistive devices, physical therapy, or environmental modifications are several ways primary care providers can intervene to reduce the risk of falling in the elderly

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by

Courtney R. Beaudette

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Chapter I

Introduction

Falls are a health concern for the elderly. A fall is "an unplanned descent to the floor (or extension of the floor, e.g., trash can or other equipment) with or without injury to the patient" (Lueckenotte & Conley, 2009, p. 207). Rubenstein & Josephson (2002) reported that one-third of persons over the age of 65 years residing in the community fall each year. Accidents are the fifth leading cause of death in older people, with falls accounting for two-thirds of these deaths (Rubenstein, 2006). Apart from the direct physical injuries resulting from falls, there are many social and psychological consequences, as well. Fear of falling or loss of self confidence occurs in approximately 50% of all fallers, as they tend to limit their daily activities and become socially isolated. This decreases their quality of life and further increases their fall risk (Keskin et al., 2008). The loss of independence that often occurs after falls can have serious effects on health and quality of life.

In 2005, 15,802 persons in the United States age 65 years and older died as a result of injuries from falls (Centers for Disease Control [CDC], 2008). The number of older adults who fall and are not injured is unknown. The CDC analyzed data from the 2006 Behavioral Risk Factor Surveillance System (BRFSS) survey and found that about 5.8 million older adults over age 65 fell at least once during the preceding 3 months. Of those who fell, 31.3% sustained an injury that resulted in a doctor visit or restricted activity (CDC, 2008). Unless there is an injury, many elderly people may not seek medical treatment after a fall or discuss the problem with their healthcare provider. Direct medical costs for fall related injuries in the year 2000 totaled approximately 19

billion dollars (CDC, 2008). Repeated falls and instability are very common precipitators of nursing home admission (Rubenstein, 2006). Effective screening and preventive strategies require a better understanding of the causes and risk factors for falling among elderly persons.

Falls have multiple precipitating causes, which makes them difficult to diagnose, treat, and prevent. Some causes include acute illness, chronic disease, or normal age-related changes in vision, strength, and gait (Rubenstein & Josephson, 2006). Currently, the number of elderly people who fall at home and are not injured is unknown. Many elderly people want to continue living independently in their homes. They may fear that they will be admitted to a nursing home or lose independence in another manner if they report a problem with falling. Educating patients, families, and healthcare providers about falls, identifying those most at risk of falling and coordinating risk reduction strategies, are necessary in order prevent falls among the community-dwelling elders (Tideiksaar, 2003).

Significance to Nursing

Health promotion and preventive health services are a significant part of nursing practice. Nurse practitioners care for patients of all ages, many over the age of 65. Nurse practitioners work in a variety of settings in which they could incorporate fall risk screening and recommend prevention strategies. Discovering if patients are falling at home, identifying possible causes, and determining what patients are doing to prevent these falls allows nurse practitioners to help patients make simple changes in their treatment plans and environments to prevent further falls and associated potential injury.

Healthcare providers need to be educated on routine screening for falls, risk factor identification, and early intervention.

The American Geriatrics Society (AGS) (2010a) published clinical practice guidelines for the prevention of falls in older persons. They recommend that all older persons be asked if they have fallen in the past year and, if applicable, be asked about the frequency and circumstances of the fall. If they answer positively to the initial screening, relevant medical history, physical examination, cognitive and functional assessments, and multi-factorial fall risk screening should be completed. This should also be done with older persons who present for treatment of a fall or if they experience difficulty with gait and balance. If there are no falls reported, then periodic reassessment is recommended. Older persons who report a single fall should have a gait and balance assessment. Once risk factors are identified from the multi-factorial assessment, direct interventions need to be tailored to the specific risk factors. Possible interventions include medication management, education, exercise programs, home hazard reduction, and management of foot or visual difficulties (AGS, 2010a).

Problem Statement

Unless there is an injury requiring medical attention, many falls may go unreported to healthcare providers. Individuals who fall, even those who are not injured, develop a fear of falling. This fear may cause them to limit their activities, leading to reduced mobility and physical fitness, and increasing their actual risk of falling (Clemson et al., 2004). If fall risk screening and a home safety checklist were completed on all individuals age 65 years and older, nurse practitioners could better determine fall potential and provide instruction to prevent serious injury. Routine screening could lead

to early detection of fall risk and early intervention, which are fundamental to achieving positive health outcomes in the elderly. This would contribute to independence for as long as possible.

Purpose of the Study

The purpose of this study was to evaluate the prevalence of falls in the elderly in northeast Wisconsin that are not reported to healthcare providers.

Research Question:

The research question is: What is the prevalence of falls in the elderly in northeast Wisconsin that are not reported to healthcare providers?

Conceptual Definitions

Elderly: Rather old; especially: being past middle age (Merriam-Webster's Online Dictionary, 2010).

Fall: An unplanned descent to the floor (or extension of the floor, e.g., trash can or other equipment) with or without injury to the patient (Lueckenotte & Conley, 2009, p. 207).

Northeast Wisconsin: To, toward, or in the northeast; a state in north central United States (Merriam-Webster's Online Dictionary, 2010).

Reported: To give an account of**:** relate (Merriam-Webster's Online Dictionary, 2010).

Operational Definitions

Elderly: Identified in this study as any man or woman age 65 years and older.

Fall: Measured by the self report questionnaire, with examples including sliding out of the chair, tripping, losing balance, and falling on knees.

Northeast Wisconsin: Fox Valley region of Northeast Wisconsin

Reported: Measured on the questionnaire by the study participants as the failure to report, or falls that were not reported to their healthcare provider.

Assumptions

- Elderly individuals may fall and not report it to their healthcare provider.
- Participants in this study will be honest in their responses.
- Surveys are a valid and efficient method to evaluate the prevalence of unreported falls by the participants.

Summary

Falls are a major health concern in the elderly. Healthcare professionals may only be aware of the prevalence of falls in patients who seek medical care as a result of a fall. The primary care setting is an ideal place to screen patients for falls and provide education regarding falls and their prevention. Nurse practitioners are in a position to conduct routine screening for falls at home and identify those patients at risk for falling and subsequent injury. The current study sheds light on this issue so that nurse practitioners can gain awareness of the numbers of patients falling and implement appropriate interventions to prevent falls and resultant injury. Since falls are a major

contributor to loss of independence in the home for the elderly, this is an important topic for primary healthcare providers.

In this chapter, an introduction to the topic and its significance to nursing were addressed. The proposed problem, purpose, research questions, and conceptual and operational definitions of the study were outlined. Study assumptions were identified.

Chapter II

Theoretical Framework and Review of Literature

The purpose of this study was to evaluate the prevalence of falls in the elderly in northeast Wisconsin that are not reported to healthcare providers. This chapter includes a presentation of the theoretical framework for this study and a review of current literature. In the first section, the Health Belief Model (HBM) is discussed, as well as its application to this study. The literature review follows and includes studies on falls in the community-dwelling elderly and use of fall risk assessment tools.

Theoretical Framework

The HBM was used as the theoretical base for this study. The model is used to explain and predict health behaviors by focusing on the attitudes and beliefs of the patient. In the HBM, the perceived threat of a health problem, along with the perceived benefit of taking actions to reduce the threat, are the influencing factors in a person's decision to participate in health-seeking behavior. The HBM was originally developed in the 1950s by a group of researchers at the U.S. Public Health Service interested in improving the public's use of preventive services (Gale, 2002). The underlying premise of the HBM is that people fear disease and that health actions are motivated by the degree of fear and benefits to behavior change. Health behavior is explained in the HBM using several key concepts (McEwen & Wills, 2007):

- Perceived susceptibility: One's opinion of risk of contracting a health condition.

- Perceived severity: One's perception of the severity of the condition and its possible consequences.
- Perceived benefits: One's opinion of the effectiveness of advised strategies to reduce risk or seriousness of impact.
- Perceived barriers: One's perception of the negative consequences of taking the advised health action.
- Cues to action: Events that activate the readiness to act and stimulate behavior change such as physical symptoms, media campaigns, and advice from others.
- Modifying variables: Personality variables, patient satisfaction, and socio-demographic factors that affect one's perceptions and can influence health-related behavior.

The key concepts described above are divided into three main categories of the HBM: individual perceptions, modifying factors, and likelihood of action. Individual perceptions are factors that affect the perception of illness or disease, including perceived susceptibility and perceived severity. Modifying factors include demographic variables, perceived threat, and cues to action. The likelihood of action involves the probability of behavior change; it is the likelihood of taking the recommended preventive health action. The combined factors above often result in action or behavior change, as long as rationale accompanies the decision (Current Nursing, 2010; McEwen & Wills, 2007). The HBM as depicted in the model and the three categories are discussed below in more detail as they apply to this study.

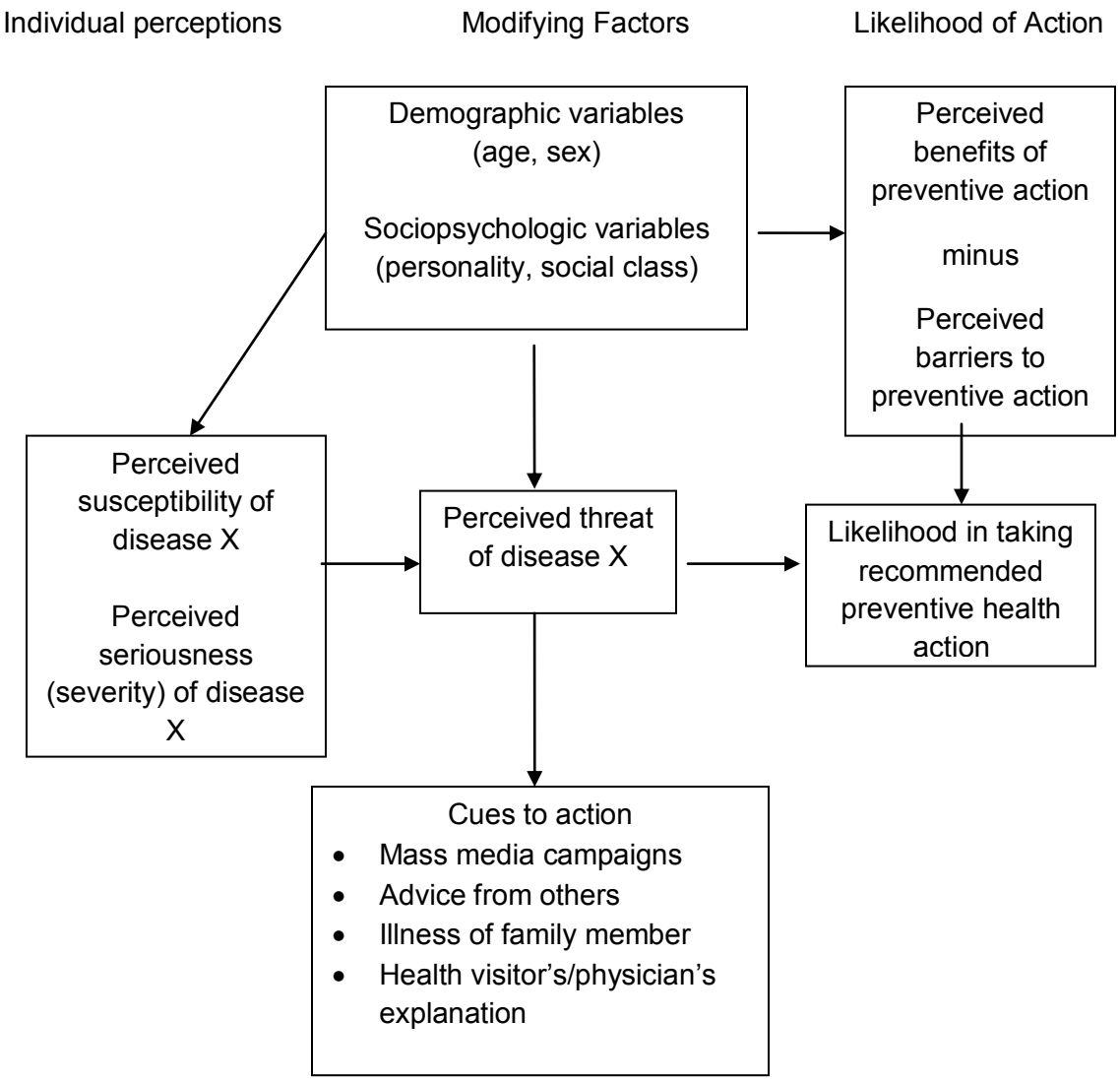


Figure 1. Theoretical Propositions of the Health Belief Model (Current Nursing, 2010).

Individual perceptions.

According to the HBM, people's behavior is influenced by their perception that they are susceptible to poor health outcomes and that taking action will result in a desirable outcome. Motivation to change also comes from the belief that the barriers to taking action are outweighed by the benefits (McEwen & Wills, 2007). By reporting falls to healthcare providers, factors that increase the risk of falls can be identified and

appropriate action taken to avoid the poor health outcomes often associated with falling. Elderly patients will be more motivated to report the falls if they believe that the benefit of reporting the falls will outweigh the risk. Many people may believe that the risk of reporting falls is loss of independence or removal from their home for closer monitoring in a nursing home or assisted living facility.

Modifying factors.

Falling at home is a very concerning health problem in the elderly that can lead to serious medical complications. The fear of falling is concerning to the elderly and can be used as a motivator to take measures to prevent falls in the home. In order for people to make changes in their homes to prevent falls, they have to believe that the changes will benefit their health and that they are capable of making such changes. By acknowledging their fear and susceptibility to falls, patients can make changes in their behavior to prevent falls. Such changes include wearing non slip shoes, using assistive devices, keeping walkways and stairs clutter-free and well lit, avoiding loose rugs, and using nonslip bath mats and grab bars. Many variables influence people's perceptions regarding susceptibility and severity of falling. Some examples include educational level, socioeconomic status, age, and sex. Elderly people might already be aware that they have an increased risk for falls, and women may know that their increased risk of osteoporosis puts them at greater risk for fractures caused by a fall. There are also those who are not aware of their risk and behavior change is influenced by different cues, such as commercials on the television, flyers in the community, advice from others, education from healthcare providers, and their own personal reasons, such as a loved one who suffered a fall (Current Nursing, 2010).

Likelihood of action.

Cues to action begin with understanding variables that increase the risk of falls, identifying the barriers and benefits to making changes in their environment that can prevent falls. Feelings of support from family, friends, and healthcare providers will increase the likelihood that patients will take the necessary steps to prevent falling. Another factor that can motivate people's behavior change is the feeling that others who are important in their lives approve and support the change. There are many different reasons for behavior change or cues to action. An illness or injury of a loved one often sparks behavior change. For example, an elderly woman who has a family member or friend who fell down at home and broke a hip may take extra caution to prevent falls. The HBM provides guidelines for screening and fall prevention program development, allowing healthcare providers to understand and address barriers to behavior change (Current Nursing, 2010; McEwen & Wills, 2007).

Case Study

Robert is a 72-year-old male who presents to his primary care provider for his yearly physical exam. During the exam, the provider notices large bruises on Robert's right hip and back. When asked about the bruises, Robert stated that he tripped when he was walking up the basement stairs and fell into the banister. The provider became concerned and asked several questions regarding falling at home, home safety, and mobility. Robert shares with his provider that he often loses his balance and falls at home but does not seek medical care because he is not injured. He brushes off the frequent falling, stating that he is just clumsy. Robert lives alone in a two-story house, his wife passed away 5 years ago, and he has two sons who live in the area. The

healthcare provider completes a full neurologic and musculoskeletal exam on Robert, with normal results, with the exception of a little unsteadiness while standing on one foot. Although his physical exam was normal, the provider is not convinced that Robert is completely safe from falling at home. She provides him with education and gives him a home safety checklist to ensure that he is doing everything he can to make his home as fall-proof as possible. She also gives him a list of, and explanation of, muscle strengthening exercises to do at home and offered to have a physical therapist come to the home one time to help him make the environment safer. Robert declined the offer for physical therapy services.

This is a perfect example using the HBM. Robert does not believe that the falls are of concern, thus he has a low perceived severity and is not threatened by the falls. Robert has not yet been injured to the point of requiring healthcare, so he did not inform his healthcare provider about the frequent falling at home. He lives alone and does not have a support system encouraging him to seek help. Although advised and educated on ways to make the home more safe, Robert does not appear ready to act to change his health behavior. Although he listened politely to the strengthening exercises and accepted the home safety checklist, he declined a physical therapist coming into his home and continued to pass the falls off as clumsiness.

If nurse practitioners are able to screen the patients and find cues suggestive of fall risk, they can educate patients to reduce risks before a fall occurs. Nurse practitioners have the opportunity to be proactive instead of reactive, which could contribute to decreased healthcare costs, improve independence, and increase overall well-being in the elderly.

Literature Review

According to Rubenstein and Josephson (2006), identifying effective interventions to prevent falls and fall related injuries are major areas of research and policy development in geriatrics. There has been a major increase in the number of randomized controlled trials in the past few years that have evaluated various fall prevention interventions. Several studies revealed the positive outcomes associated with routine fall risk screening and identification of risk factors and preventative measures. There are numerous studies on the multi-factorial causes of falls (Keskin et al., 2008); however, there are limited studies specifically aimed at unreported falls in community-dwelling elderly. Despite the lack of research found related to frequency of falls in community-dwelling elderly, the review below provides a summary of the literature on fall risk and interventions in the elderly.

Multi-factorial risk factors for falls.

Moylan and Binder (2007) reviewed practical aspects of evaluation and management of falls in the ambulatory setting, with the idea that older patients should be screened for falls or changes in mobility with their annual health maintenance exam. They discussed the multi-factorial nature of falls and the need for a systematic approach to reduce the incidence of falls, with the first step being the identification of patients most at risk. Moylan and Binder recommended an initial screen where healthcare providers inquire specifically about: (a) falls or changes in mobility, (b) two or more falls in 6 months, (c) any falls resulting in serious injury, and (d) fear of falling. Based on responses, a complete evaluation would be triggered and appropriate interventions defined. Additionally, healthcare providers should be aware of other signs that may indicate falls, because many older patients may not remember falling or may not report

falls for other reasons, such as embarrassment or fear of loss of autonomy. Unexplained bruises, altered cognition, personality changes, or disturbances in gait or balance may be indicative of falls. Evaluating patients who have fallen can identify modifiable factors; a comprehensive physical examination is an essential part of the evaluation. If triggered during the comprehensive examination, additional visual, neurological, cognitive, muscle strength, balance, and gait assessments should be completed.

Environmental factors often play a role in falls in the elderly, but healthcare providers are unable to observe the potential hazards in the individual's home. Many communities have occupational therapy services with home programs to assess and modify environmental risk factors. Although most falls are multi-factorial in origin, complex and multifaceted interventions for every patient is wasteful and inefficient, suggesting the use of individualized interventions based on individual assessment (Moylan & Binder, 2007).

In a randomized controlled trial completed over 12 months, Lord et al. (2005) studied whether an individualized fall prevention program consisting of exercise, visual, and counseling interventions could reduce physiologic fall risk and actual falls in older people. The study sample included 620 participants aged 75 years and older recruited from a health insurance database. The sample was divided into three groups; (a) an extensive intervention group (EIG) which received individualized interventions consisting of exercise and strategies for maximizing vision and sensation, (b) a minimal intervention group (MIG) which received brief advice, and (c) the control group (CG) which received no intervention. A physiological profile assessment (PPA) was developed and used to

calculate an overall fall risk score and to compare individual performance on each physiological test.

The data were analyzed using SPSS and Stata 7 statistical software. Continuous physical performance scores were compared by linear regression analysis, and the number of falls in the three groups was compared by calculating incidence ratio rates. The results of the PPA test were used to implement individualized interventions for preventing falls in a large sample of older adults. Additionally, an assessment was completed based on the PPA to determine whether a minimal intervention using brief advice would also constitute an effective intervention. At the 6-month follow-up, EIG had significantly lower PPA fall risk scores than the control group.

The EIG showed significant improvements in tests of knee flexion strength, sit-to-stand times, and tests of visual acuity and contrast sensitivity, but had no improvement in balance. The rate of falls and injurious falls within the trial period were similar in the three groups. This study showed that while falls were not prevented, the individualized intervention program did reduce some fall risk factors.

A randomized trial by Clemson et al. (2004) was completed to test whether a multi-faceted community-based program called “Stepping On” was an effective intervention in reducing falls in at-risk elderly people living at home. Study recruits consisted of 310 community residents ages 70 years and older who had a fall in the previous 12 months or were concerned about falling. The Stepping On program was a small-group learning program which aimed to improve fall self-efficacy, encourage behavior change, and reduce falls. Important aspects of the program included lower limb balance improvement and strength, improving home and community environmental and behavioral safety, encouraging regular visual screening, and medication review.

The participants were followed for 14 months, with weekly 2-hour sessions conducted for 7 weeks and a follow up visit at home with occupational therapy within 6 weeks of completing the program. Falls were measured monthly using a calendar mailed by the participant. The intervention group had a 31% reduction in falls, indicating that the Stepping On program was effective in preventing falls in community-dwelling elderly people. Adherence was measured at the end of 14 months, with 59% of the participants still doing their exercises routinely, although only 41 % were doing the strength exercises with ankle weights. Of the program participants, 72% initiated a vision assessment during the follow up period. Additionally, 70% of program participants adhered to at least 50% of the home visit recommendations, including modifying home hazards. Data were analyzed using cumulative incidence ratios in the comparison of the proportions of people in the intervention and control groups who had one or more falls during the 14 months of follow up and the proportion of those who had two or more falls during follow-up. All falls were analyzed using a negative binomial regression model, taking into account the total number of falls and the length of time of follow-up (Clemson et al., 2004).

According to Clemson et al. (2004), evidence showed that multi-factorial interventions conducted by healthcare professionals can prevent falls, particularly if targeted to those at risk. Although the population targeted was an at-risk population, participants were relatively healthy and less frail than those recruited in previous successful multi-factorial studies. The study results supported that falls can be prevented by improving lower limb strength and balance and environmental and behavioral home safety. Results also supported the importance of regular medication

reviews and eye exams. The Stepping On program provided clinically significant evidence that is effective in preventing falls in the elderly living at home.

Rubenstein (2006) suggested that most effective and cost-effective fall reduction programs involve systematic fall risk assessments, targeted interventions, exercise programs, environmental inspection, and hazard reduction programs. Rubenstein conducted a meta-analysis of 12 retrospective studies that evaluated elderly persons after a fall and specified a "most likely" cause, and identified several reoccurring causes for falls. Accidental or environmental-related causes were the most frequently cited cause, accounting for 30% to 50% of the falls. Gait problems and weakness were the second most common precipitating causes for falls, ranging from 10% to 25% of the cases. Dizziness, drop attacks, confusion, postural hypotension, visual disorders, and other causes were also mentioned to a lesser degree. Rubenstein found that single specific causes for falls cannot be extracted because of the multi-factorial nature of most falls. According to Rubenstein, identifying risk factors for falls is much more useful than trying to identify specific causes retrospectively. Post fall assessments are also important in revealing otherwise undetectable, treatable conditions and risk factors. Once the cause or risk factors for falling are determined, appropriate interventions can be implemented. The most effective approaches were found to be exercise programs and environmental assessment and modification.

Fall risk interventions and healthcare providers.

Views from healthcare providers on fall risk assessment were evaluated in a study by Fortinsky et al. (2004). This cross sectional study was conducted to determine the extent to which healthcare providers addressed evidence-based fall risk factors in older patients. The authors also sought to identify reported barriers encountered by

healthcare providers when intervening or referring older patients with identified fall risk factors. The study participants included emergency department physicians, hospital discharge planners, home health nurses, and primary care physicians who were educated by the Connecticut Collaboration for Fall Prevention (CCFP) on fall risk factors.

The purpose of the CCFP was to incorporate evidence-based fall risk assessment and management into everyday practice in healthcare settings. There were multiple strategies designed to improve knowledge, attitudes, and behaviors of targeted providers concerning fall risk assessment and management. The CCFP implementation team instructed healthcare providers to assess all older patients for the presence of seven fall risk factors, and then manage risk factors by either direct intervention or referral. The sample consisted of 33 healthcare providers. Data collection was done through self-reported practices and barriers which were identified during a structured interview.

The assessment for the presence of seven evidence-based fall risk factors included: gait and transfer impairments, balance disturbances, multiple medications, postural hypotension, sensory and perceptive deficits, foot and footwear problems, and environmental hazards. Of 41 potential participants, 33 interviews were completed, with lower completion rates among emergency room and primary care physicians. Intervening with or referring older patients for gait and transfer impairments and balance disturbances were the most common reports among the respondents. The healthcare providers were least likely to intervene or refer for foot or footwear problems and sensory and perceptive deficits. The most commonly reported barrier to successful intervention was patient compliance. Lack of availability of other healthcare professionals and lack of Medicare reimbursement were the most commonly reported barriers to patient referral.

The authors concluded that patient education is a necessary adjunct to healthcare provider training. After exposure to the CCFP implementation team, the majority of healthcare providers reported directly intervening or referring patients when addressing fall risk factors; although, there continued to be room for improvement (Fortinsky et al., 2004).

Tinetti et al. (2008) conducted a nonrandomized study to compare rates of injuries from falls in a region where clinicians were exposed to interventions to change clinical practice and a region where clinicians had not been exposed to such interventions. Tinetti et al. stated that although evidence and mandates were in place, falls were often ignored in clinical practice. Barriers to incorporating fall prevention evidence into practice include ignorance about falling as a preventable condition, time constraints, insufficient reimbursement, perceived lack of expertise, and inadequate referral patterns among providers. Marketing new services and developing referral networks were noted to facilitate fall prevention efforts among clinicians. The intervention included educating providers on recommended strategies for preventing falls including modifying medications; managing postural hypotension and visual and foot problems; reducing hazards; and training in balance, gait, and strength. The healthcare providers were encouraged to incorporate fall risk assessments, treatments, and referrals into their practice.

The group of healthcare providers who had been exposed to the intervention was similar in size to the group of healthcare providers who were not exposed to the specific interventions. The intervention and usual care regions in Connecticut consisted of 58 and 53 zip code tabulation areas (ZCTAs) respectively. The sample in each ZCTA consisted of primary care clinicians, outpatient rehabilitation facilities, home care

agencies, emergency departments of acute care hospitals, and senior centers with similar socio-demographic characteristics of the population of persons age 70 years or older (Tinetti et al., 2008). The occurrences of serious fall related injuries and use of medical services were determined through the Connecticut Health Information Management (CHIME) database, in which all healthcare facilities in the sample area reported. Pre-intervention data were collected during a 2-year period to estimate rates of fall related injuries and use of medical services. Intervention efforts occurred for another 3 years, and evaluation took place over a 2-year period resulting in the entire study lasting over 7 years.

Results of the study demonstrated a 9% decline in the rate of serious fall-related injuries in the intervention region, and an 11% decline in the use of fall-related medical services in the intervention group when compared to that in the usual-care region. This study was conducted in an attempt to disseminate evidence from randomized controlled studies into practice, and as the results indicate, proper intervention education and implementation led to lower fall related injuries and decreased use of medical services related to falls among the elderly (Tinetti et al., 2008).

The literature review supports that elderly patients should be screened for falls and changes in mobility with their annual health exams. Due to the multi-factorial nature of falls, research suggests that a systematic approach to identify those at risk and manage falls is necessary. Exercise and strength training, education, hazard reduction, medication management, and vision screening are all interventions shown to decrease fall risk in the elderly (Clemson et al., 2004; Lord et al., 2005; Rubenstein, 2006). The literature also suggests that healthcare providers need education in assessing and screening patients for falls and necessary follow-up and management once a fall risk is

identified. Many barriers to incorporating fall prevention into practice by providers were identified and interventions to decrease the barriers applied. Once providers were educated, and fall prevention screening was implemented, fall risks and rates declined in the elderly (Fortinsky et al., 2004; Tinetti et al., 2008).

Summary

In this chapter, the HBM was introduced and identified as an appropriate framework to guide this study. Relevant research was also reviewed. Research indicates there is a high risk of falls in the elderly and complications can occur from falling. However, it is the attitudes, perceptions, and fears of elderly patients that can motivate behavior change related to fall prevention. The decision to take preventive measures and remove environmental hazards in the home is supported by the concepts of the HBM.

Elderly individuals may not always report falls to their primary care providers. They might not feel it is a problem if they are not injured, or they may be afraid that they will be removed from their homes. With the large number of elderly people in our society living at home independently, it is crucial to screen for falls when they come for routine examinations to identify risks and implement appropriate interventions. By discovering if there are large numbers of elderly people living in the community who are falling at home and not informing their primary care providers, healthcare providers can make a point to screen all individuals for falls. Screening in a nonjudgmental way at all office visits, along with proper management of risk factors, may allow the elderly to continue living safely and independently in their homes.

Chapter III

Methodology

The purpose of this study was to evaluate the prevalence of falls in the elderly in northeast Wisconsin that are not reported to healthcare providers. In this chapter, the study design, sample, setting, data collection procedures, and data analysis are discussed. Protection of human participants and limitations of the study are also addressed.

Research Design

A descriptive research design is suitable for exploring the prevalence of unreported falls by the elderly. This design was appropriate for this study because the goal was to assess people who are age 65 years and older living in the community who fell at home in the last 6 months and did not report this to their primary care provider. Frequencies of unreported falls were assessed. Although there are many causes for falls, including disease and medications, it is not possible to control these extraneous variables, thus the researcher acknowledged that they exist and did not attempt to control them. According to Polit & Beck (2008), using descriptive studies to document the prevalence of health-related conditions and behaviors are necessary in order to develop effective interventions.

Population, Sample, and Setting

The target population for this study included people age 65 years and older who attend a community senior center in northeastern Wisconsin. A convenience sample of

100 participants was sought with the following inclusion criteria: (a) age 65 and older; (b) able to read, write, and speak English; and (c) agreeable to participate in the study and complete a questionnaire. Questionnaires were distributed to agreeable participants who fit the inclusion criteria at the senior center.

Data Collection Instruments

The questionnaire that was used for this study consisted of demographic questions and researcher-developed questions related to falls at home (Appendix A). The demographic questions included items on age, gender, race, marital status, living arrangements, income, and education level. The researcher-developed questions consisted of closed-ended and fill-in-the-blank type questions regarding previous falls at home, number of falls in the last 6 months, and reported follow-up for any falls. A pilot study of five participants was completed to determine the effectiveness of the questionnaire prior to data collection.

Using a self-structured questionnaire was appropriate for this study as it enables the researcher to obtain anonymous responses from a large sample of participants. The advantages of using questionnaires for self-report are that they are less costly and less time consuming to administer (Polit & Beck, 2008). Questionnaires also offer the advantage of anonymity and eliminate biases, which are critical in obtaining honest information from the participants about falling at home.

Data Collection Procedures

Prior to data collection, approval to conduct the study was obtained from the University of Wisconsin Oshkosh Institutional Review Board (IRB) for Protection of

Human Participant (Appendix B). All responses were anonymous and questionnaires were placed in an envelope upon completion. Written permission was obtained from the director of the senior center to solicit participants and collect data for the study (Appendix E).

The study participants were from a community senior center in northeastern Wisconsin. A table was set up at the senior center with a sign about the study (Appendix C) to encourage participation in the questionnaire. A bowl of candy was placed on the table. Questionnaires were distributed to all seniors who fit the inclusion criteria and were willing to participate. The researcher sat at the table actively recruiting participants by simply asking them if they would be willing to complete a short survey on falls. Data were collected for 3 days. Information sheets introducing the study and questionnaires (Appendix D) were given to those who met the inclusion criteria, and anonymity was ensured. Informed consent was implied through completion of the survey.

Data Analysis Procedures

The study used a descriptive design. The data obtained from the questionnaires were analyzed using the descriptive statistics of frequencies and total percent of the sample that have unreported falls. Descriptive statistical techniques were used to summarize the data in a clear and understandable way. Demographic data and responses to questions related to falls at home and medical treatment were tabulated using frequencies for each item.

Study Limitations

- The risk of response bias, or participants responding in a way that they think the researcher wants them to answer, due to the reliance on self-reported falls.
- The sample is limited to one geographic area, thereby limiting generalization of the findings.
- The questionnaire used in the study was developed by the researcher and did not undergo reliability and internal consistency testing. Face validity of the questionnaire was evaluated during a pilot study.

Summary

In this chapter, a description of the study design, sample, setting, and methods for data collection were discussed. Methods to protect human participants and limitations of the study were also described. A descriptive design was used to study the prevalence of unreported falls in the elderly. The researcher used a convenience sample who attended one community senior center in northeastern Wisconsin. Data were collected using a researcher-developed questionnaire consisting of items related to demographics, falls, and whether or not the falls were reported to healthcare providers. By understanding the prevalence of unreported falls in elderly patients, the researcher can raise awareness in primary care providers regarding the importance of routine fall risk screening and favorable outcomes that can occur with intervention.

Chapter IV

Findings and Discussion

The purpose of this study was to evaluate the prevalence of falls in the elderly in northeast Wisconsin that are not reported to healthcare providers. The study was done to answer the following research question:

What is the prevalence of falls in the elderly in northeast Wisconsin that are not reported to healthcare providers?

The results of this study were analyzed and described in this chapter. Demographic data and descriptive statistical tabulation of the questionnaire results are presented.

Description of Sample

A total of 77 participants completed questionnaires. The questionnaires were completed by a convenience sample of adults age 65 years and older at a senior center in northeast Wisconsin. A pilot study was conducted to test face validity of the questionnaire, and a total of 5 questionnaires were completed and returned. Participants had no questions or incomplete answers, so the five completed questionnaires were included in the total, and no changes were made to the questionnaire. All of the 77 completed surveys were answered in full and all participants fit the inclusion criteria. The inclusion criteria included men and women (a) age 65 years and older; (b) able to read, write, and speak English; and (c) agreeable to participate in the study and complete a questionnaire.

Demographic Characteristics

The demographics of the sample of participants (n=77) consisted of 52 (67.5%) females and 25 (32.5%) male participants. They ranged in age from 65 years to 91 years, with a mean age of 73.2 years. Table 1 represents a summary of the frequencies and percentages of demographic variables of the sample.

Table 1

Demographic Variables of the Sample (n=77)

Demographic Variables	Frequency	Percent
Gender		
Male	25	32.5
Female	52	67.5
Marital Status		
Single/Never Married	3	3.9
Married	38	49.4
Divorced/Separated	5	6.5
Widowed	31	40.3
Race		
White	76	98.7
Hispanic	1	1.3
African American	0	0.0
Native American	0	0.0
Asian	0	0.0
Other	0	0.0
Household Income		
Less than $25,000	37	48.1
$25,001 - $50,000	33	42.9
Greater than $50,000	7	9.1

Table 1 (cont.)

Demographic Variables	Frequency	Percent
Highest Level of Education		
Some High School	9	11.7
High School Diploma or GED	32	41.6
Some College	11	14.3
Associates Degree/Trade	5	6.5
Bachelor's Degree	11	14.3
Some Graduate School	2	2.6
Graduate Degree	7	9.1
Do you live		
Alone	34	44.2
With Spouse	37	48.1
With Family/Roommate	4	5.2
Assisted Living	0	0.0
Other	2	2.6

Discussion of Findings

The research question was: What is the prevalence of falls in the elderly in northeast Wisconsin that are not reported to healthcare providers? Question 8 on the questionnaire asked the study participants if they had fallen at home in the last 6 months. If they responded no, they were instructed to stop. If they responded yes, five additional questions regarding falls were asked.

According to the data, 16 (20.8%) of the participants had fallen at home in the last 6 months. Of those who fell, 12 (75%) reported falling one time, two (2.6%) reported two falls, and one each (1.3%) fell three and four times. The participants were then asked if they saw their healthcare provider after any of their falls; four (25%) said yes, while 12 (75%) did not see their healthcare provider after the falls. Participants were then asked if there was ever a fall in the last 6 months that they did not report to their healthcare provider, and 12 (75%) answered yes and four (25%) of the participants answered no. A summary of the findings is found in Table 2.

Table 2

Falls and Report of Falling (n=77)

Fall-Related Questions	Frequency	Percent
In the last 6 months have you fallen at home?		
Yes	16	20.8
No	61	79.2
How many times have you fallen at home?		
1	12	75.0
2	2	12.5
3	1	6.3
4	1	6.3
Did you see your healthcare provider after any of the falls?		
Yes	4	25.0
No	12	75.0

Table 2 (cont.)

Fall-Related Questions	Frequency	Percent
Did you ever fall in the last 6 months and NOT report it to your healthcare provider?		
Yes	12	75.0
No	4	25.0
Were you injured as a result of any of the falls in the last 6 months?		
N/A – no response	3	18.8
Bruises	6	37.5
Head Injury	1	6.3
Other	3	18.8
Multiple Injuries	3	18.8

Although the data suggest that 20.8% of respondents ages 65 years and older fell at home in the previous 6 months, it is less than estimated by previous research. Previous research estimated that 30% to 40% of community-dwelling elders ages 65 years and older fall each year (Lueckenotte & Conley, 2009). In addition to falling at home, 75% of the participants who fell did not report it to their healthcare provider. There is no specific data available to confirm the number of unreported falls in community-dwelling elders ages 65 years and older. Reasons cited by the participants for not reporting the falls to their healthcare providers included “it wasn’t necessary,” “I wasn’t hurt,” “figured the pain would go away,” and “I didn’t want pain pills.” The majority reported that because they were not injured, it was not necessary to see their healthcare provider. In addition to those who reported falls, whether they sought healthcare or not,

information regarding injuries as a result of any falls was solicited. Of the 13 who reported injuries, nine reported bruises, one had bruises and cuts, two had a broken foot, and one “cut their head open.”

The participants in this study were all members of a northeast Wisconsin senior center. Activities available at this center included yoga, line dancing, cards, bingo, pool, and support groups.

Summary

In this chapter, the study findings in relationship to the research question were presented. The number of community-dwelling elders, age 65 years and older, who reported falling at home was 20.8%, slightly lower than reported in previous studies. The participants were all using a senior center. There were no previous data available on the numbers of unreported falls in the elderly, but the data found during this study showed that 75% of those who fell did not report it to their healthcare provider. The main reason for not reporting the falls was that they were not injured and it was not necessary.

Chapter V

Summary, Conclusions, and Recommendations

The purpose of this study was to evaluate the prevalence of falls in the elderly in northeast Wisconsin that are not reported to healthcare providers. This chapter contains a summary of the research study exploring the prevalence of unreported falls by the elderly. Conclusions made based on study findings and implications of the findings for nursing practice, education, and research will be discussed.

Study Summary

As one of the most common health concerns in the elderly, falls are estimated to occur in one-third of persons residing in the community each year (Rubenstein & Josephson, 2002). Further, fear of falling and loss of confidence occurs in about 50% of fallers, limiting their daily activities with the tendency to become socially isolated (Keskin et al., 2008).

The purpose of this study was to evaluate the prevalence of falls in the elderly in northeast Wisconsin that are not reported to healthcare providers. While numerous studies have been done on the subject of falls in the elderly, the number of those falls that go unreported to healthcare providers is unknown. This information is important to help healthcare providers discover why falls are going unreported and to remind them to screen the elderly for falls at least once a year according to the AGS guidelines (AGS, 2010a).

The Health Belief Model (HBM) provided the theoretical framework in which this research study was based upon. The focus of this framework is on the beliefs and

behaviors of community-dwelling elderly and their motivation for behavior change, in this case, reporting falls to their healthcare provider and appropriate interventions to reduce the risk of falls. Elderly people are more likely to report the falls to their provider if they feel the benefit outweighs the risk. The benefit is that factors that increase the risk of falls can be identified and appropriate action taken to avoid the poor health outcomes often associated with falling. Many people may believe that the risk of reporting falls is loss of independence or removal from the home for closer monitoring in a nursing home or assisted-living facility. By acknowledging their fear and susceptibility to falls, patients can make changes in their behavior to prevent falls. The HBM provides guidelines for screening and fall prevention program development, allowing healthcare providers to understand and address barriers to behavior change (McEwen & Wills, 2007). The participants in this study were users of the senior center with available classes, such as yoga and dance, which could mean that they are taking appropriate measures to decrease fall risk by increasing strength and mobility without even knowing it.

The target population for this study was elderly people, age 65 years and older, who attend a community senior center in northeastern Wisconsin, and 77 participants completed the questionnaires. Participation was voluntary and all of the participants received a written or verbal explanation regarding the study.

A researcher-developed questionnaire was used as the tool for this study. Data were analyzed using descriptive statistics. The demographics of the sample of participants (n=77) consisted of 52 (67.5%) females and 25 (32.5%) males. The age range was shown to be 65 years to 91 years of age with a mean age of 73.2 years. Responses to the screening questions were tabulated by frequencies and percentages, and distribution tables were utilized to display the data.

Conclusions

Moylan and Binder (2007) suggested that elderly patients be screened for falls or changes in mobility with their annual health maintenance exam. If fall risk is triggered from the comprehensive examination, then additional assessment and individualized interventions should be implemented. According to Moylan & Binder, many older patients may not remember falling or may not report the falls for reasons such as embarrassment or fear of loss of autonomy, so healthcare providers need to be aware of other signs that may indicate falls. Unexplained bruises, altered cognition, personality changes, or disturbance of gait or balance may be indicative of falls. Additionally, Clemson et al. (2004) completed a randomized trial to test whether a community-based program called Stepping On was effective at reducing falls in elderly people living at home. The program included balance and strength improvement, environmental and behavioral safety, and encouraged regular eye exams and medication reviews. Those who completed the program had a 31% reduction in falls, indicating that the Stepping On program was effective in preventing falls in the community-dwelling elderly people.

Based on the findings of the study, the following conclusions were reached:

1. The frequency of falls in the elderly over age 65 years in this sample was 20.8%, slightly lower in comparison to findings of studies reviewed in the literature (Keskin et al., 2008; Rubenstein & Josephson, 2002). This could be attributed to the fact that participants were senior center users.
2. The percentage of those that fell and did not report it to their healthcare provider was 75%.
3. The main barriers to reporting the falls to their healthcare provider were that the participants felt it was unnecessary since they were not injured.

Implications for Nursing

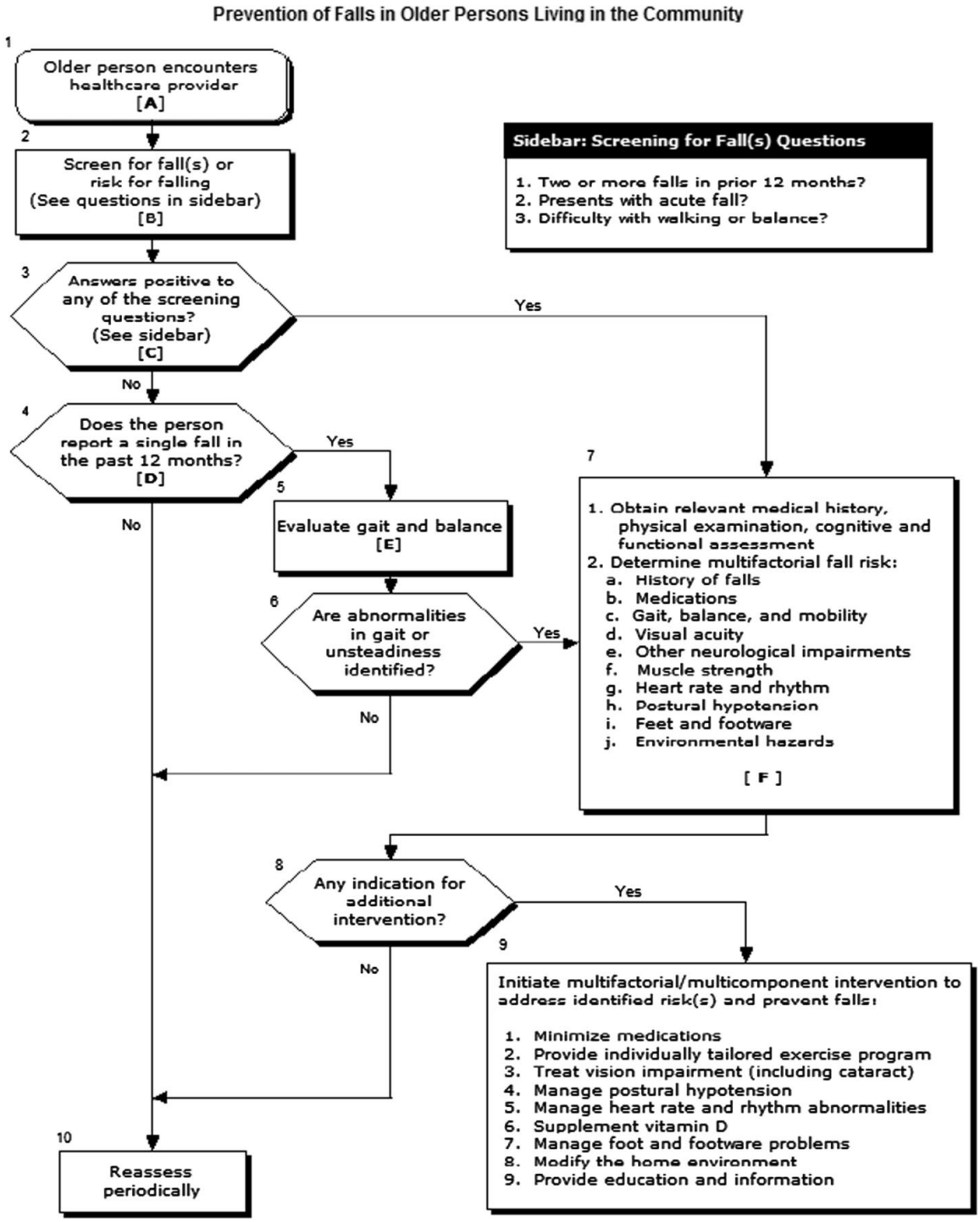
Health promotion and preventive health services are a large part of nursing practice. Nurse practitioners who provide care for elderly patients have a unique opportunity to address issues related to falling, including early identification and intervention. Given the variety of settings in which nurses practice, the ability to increase awareness and knowledge of falls, screening tools, and the recommended screening guidelines is limitless. The need clearly exists for increased fall risk screening, early identification, and intervention in the elderly. Studies have shown that earlier interventions result in decreased risk for falling (Clemson et al., 2008).

Fortinsky et al. (2004) and Tinetti et al. (2008) conducted separate studies on the practices and barriers to fall risk screening among healthcare providers. Barriers to fall intervention and referral included lack of patient compliance, insufficient reimbursement, ignorance about falling as a preventable condition, and time constraints. Providers were exposed to interventions to incorporate fall risk assessments into their visits. Data showed increased numbers of interventions and referrals, decreased fall rates and injuries, and decreased use of medical services related to falls among the elderly to those providers exposed to interventions and education. While there was some improvement in the awareness and use of fall risk assessments in healthcare providers, there is still a need for improvement in education of healthcare providers in appropriate fall risk assessments.

Results from this study demonstrated that 75% of elderly patients who fell at home did not report it to their healthcare provider. In order to intervene and prevent falls, routine fall screening must be initiated and universal. The AGS published clinical practice guidelines for the prevention of falls in older persons. Their recommendation is

that all older persons be asked if they have fallen in the past year and, if applicable, be asked about the frequency and circumstances of the fall. If they answer positively to the initial screening, a multi-factorial fall risk assessment including a focused history, physical exam, functional assessment, and environmental assessment should be completed. Direct interventions tailored to the identified risk factors should follow the multi-factorial risk assessment. An algorithm for further intervention depicted below:

Figure 2. Algorithm for Further Intervention (AGS, 2010b)



Limitations

The researcher has noted the following limitations:

- The sample was taken from those who attend a senior center and were apparently active, which limits generalization to the overall population of elderly aged 65 years and older.
- The use of a convenience sample in the northeast region of Wisconsin may have limited the representativeness of the sample, limiting generalization to the overall population of the elderly aged 65 years and older.
- There was a lack of diversity of participants in the study with the majority of the sample (98.7%) being White.
- The questionnaire was developed by the researcher and was not tested for validity or reliability; although a pilot study with five participants was completed, which did not demonstrate the need to change the original questionnaire.

Recommendations for Future Research

This researcher makes the following recommendations for future research:

1. There appears to be a need for further development and testing of quality tools for assessing fall risk in the community dwelling elderly.
2. Replicate this study with a larger sample and with a diverse population in other geographical areas.
3. Perform a qualitative study to identify the perceptions of the community-dwelling elderly regarding reporting falls to their healthcare provider.

4. Perform a quantitative study to explore the number of healthcare providers who routinely screen for falls in patients aged 65 years and older while assessing barriers to routine screening.

Summary

In this chapter, a study summary was provided. Of those surveyed, 20.8% reported falling, with 75% of those not reporting the fall to their healthcare provider. Implications for practice were addressed and recommendations for future research were outlined.

APPENDIX A

QUESTIONNAIRE

Questionnaire

Please answer each question by circling one answer or filling in the blank.

1. Gender: Male Female
2. Age:_____
3. Marital Status: Single/Never Married
   Married
   Divorced/Separated
   Widowed
4. Race: White African American Asian
   Hispanic Native American Other_____
5. Household Income: Less than $25,000
   $25,001-50,000
   Greater than $50,000
6. Highest Level of Education Completed: Some High School
   High School Diploma/GED
   Some College
   Associate Degree/Trade School
   Bachelor's Degree
   Some Graduate School
   Graduate Degree
7. Do you live: Alone
   With Spouse
   With Family/Roommate
   Assisted Living
   Other_____

8. In the last 6 months have you fallen at home? (ex. slid off chair, tripped, lost balance, or fell on knees)

YES NO

If you answered no, stop. Thank you for your participation

If you answered yes to #8 above, continue on with the remaining questions.

9. How many times have you fallen in the last 6 months? (if unsure, please estimate) _____

10. Did you see your health care provider after any of your falls?

YES NO

11. Did you ever fall in the last 6 months when you did NOT report the fall to your health care provider?

YES NO

12. If applicable, briefly state why you did NOT report the fall(s) to your health care provider?

_____

13. Were you injured as a result of any of the falls in the last 6 months? Circle all that apply:

Bruises

Broken ribs

Head injury

Broken hip

Other (explain):_____

APPENDIX B

UW OSHKOSH IRB APPROVAL

December 3, 2010

Ms. Courtney Beaudette
W7259 Fox Hollow Lane
Greenville, WI 54942

Dear Ms. Beaudette:

On behalf of the UW Oshkosh Institutional Review Board for Protection of Human Participants (IRB), I am pleased to inform you that your application has been approved for the following research: Prevalence of Unreported Falls in the Elderly.

Your research has been categorized as EXEMPT. This means you will not be required to obtain signed consent. However, unless your research involves only the collection or study of existing data, documents, or records, you must provide each participant with a summary of your research that contains all of the elements of an Informed Consent document, as described in the IRB application material. Permitting the participant, or parent/legal representative, to make a fully informed decision to participate in a research activity avoids potentially inequitable or coercive conditions of human participation and assures the voluntary nature of participant involvement

Please note that it is the principal investigator's responsibility to promptly report to the IRB Committee any changes in the research project, whether these changes occur prior to undertaking, or during the research. In addition, if harm or discomfort to anyone becomes apparent during the research, the principal investigator must contact the IRB Committee Chairperson. Harm or discomfort includes, but is not limited to, adverse reactions to psychology experiments, biologics, radioisotopes, labeled drugs, or to medical or other devices used. Please contact me if you have any questions (PH# 920/424-7172 or e-mail:rauscher@uwosh.edu).

Sincerely,

Dr. Frances Rauscher
IRB Chair

cc: Dr. Sharon Chappy
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APPENDIX C

RESEARCH STUDY FLYER

Research Study

Are you:

- 65 years or older?
- Able to speak and understand English?
- Interested in participating in research study?

See the information sheet about the study and the attached short survey. Enjoy a piece of candy!

APPENDIX D

ABOUT THE STUDY INFORMATION SHEET

About the Study

Thank you for taking the time to read this material. My name is Courtney Beaudette, RN, BSN, and I am a graduate student at the University of Wisconsin Oshkosh completing requirements to be a Family Nurse Practitioner. As part of my education, I am conducting a research study about falls in the home. Please fill out this questionnaire; it should take about 10 minutes to complete and is completely anonymous. If you are willing to complete the questionnaire, please do not write your name on the paper, and return it to this envelope when you are finished.

Thank you, I greatly appreciate you participation in this study.

APPENDIX E

THOMPSON COMMUNITY CENTER PERMISSION

November 2, 2010

I give permission to Courtney Beaudette, graduate nursing student at the University of Wisconsin Oshkosh, to solicit participants from the Thompson Community Center in order to complete her study titled "Prevalence of Unreported Falls in the Elderly." I understand that she will set up a table at the Center and will have materials there to explain her study. I understand that participation is voluntary. I give her permission to return to the Center as many days as she needs in order to get her anticipated 100 participants during the months of November 2010 and April 2011.

Sincerely,

Dick Swanson, Director

Thompson Community Center
820 W. College Ave.
Appleton, WI 54914
920-225-1700

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