Core Phenomenon: Risk for Falls

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Abstract

Risk for falls, a North American Nursing Diagnosis Association (NANDA) diagnosis, is a common nursing problem that can lead to injury and high healthcare costs. The diagnosis is defined as an increased probability of unintentionally coming to rest on a lower level. It includes possible indicators of falls but does not accurately predict incidence of actual falls. Diverse populations have been studied to determine fall risk factors and ultimately prevent falls. Neuman's Systems Model and Roy's Adaptation Model can also be examined and used to explain falls using the human-environment relationship and associated risk factors. These risk factors are diverse in nature and include intrinsic, extrinsic, and psychosocial causes. Once risk factors have been identified, they can be used to objectively measure and determine patients' fall risk in order to prevent potential falls.

Introduction

Occurrence of falls is a complex problem that can lead to increased mortality and decreased functioning (Rubenstein and Josephson, 2002). In the geriatric population, falls are the most costly form of injury, and costs rise with each subsequent fall (Robertson, Devlin, Gardner, & Campbell, 2001). According to the Centers for Disease Control (2011), healthcare costs for fall-related accidents in the American geriatric population exceeded $19 billion annually. The damaging effects of falls, in combination with the high healthcare costs, increase the importance of recognizing fall risk in order to prevent falls.

Characterizing Risk for Falls

Risk for falls is a nursing diagnosis according to the North American Nursing Diagnosis Association (NANDA). As defined by NANDA, risk for falls is an "increased susceptibility to falling that may cause physical harm" (Wilkinson & Ahem, 2009, p. 230). According to *Taber's Cyclopedic Medical Dictionary* (Venes, 2009d), risk is "the probability that a loss or something dangerous or harmful will occur" (p. 2045), and a fall is "any unexplained event that results in the patient's inadvertently coming to rest on the floor, ground, or lower level" (Venes, 2009a, p. 884). Falls can also be defined based on risk for injury. According to Schoenfelder & Crowell (1999), falls are any "unexpected [events] in which a person finds himself/herself on the ground and the potential for injury exists" (p. 152).

The study of fall prevention is not limited to nursing, as it is a multidisciplinary concern. A division of the Kellogg International Working Group dedicated to preventing falls in the elderly stated that falls are not only accidental occurrences of coming to the ground or a lower surface, but also occur from sustaining a violent blow, loss of consciousness, or sudden onset of paralysis as in a stroke or epileptic seizure (Gibson,

Andres, Isaacs, Radebaugh, &Worm-Petersen, 1987). This definition has since been altered to include falls originating from dizziness or syncope. Researchers also note that falls are not random events but stem from causative factors (Lord, Sherrington, & Menz, 2001).

Other terms can be used to increase understanding of the risk for falls. Balance should be evaluated when determining fall risk, as it is "the ability not to fall" (Fonad, Robins Wahlin, Winblad, Enami, & Sandmark, 2008, p. 128). Fall risk can therefore be determined by assessing level of balance or lack thereof (Fonad et. al, 2008). Mobility, "the ability to move within a living environment" (Venes, 2009b, p. 1497), should also be assessed, as deficits or impairments in mobility could result in an increased risk for falls.

Likewise, alternative NANDA diagnoses, such as risk for trauma and risk for injury, should be considered, as falls can ultimately lead to physical harm. According to Schoenfelder & Crowell (1999), falls are of serious concern as they are the most frequent cause of head injuries. NANDA differentiates the risk for trauma and risk for injury by stating that risk for trauma refers to injury of body tissue by accident, while risk for injury incorporates the interactions between human and environmental systems, resulting in a chance for harm (Wilkinson & Ahem, 2009).

Even after determining a client's risk for falls or related NANDA diagnoses, it should not be assumed that a patient will experience a fall. Fonad et al. (2008) state that diagnosis of risk for falls does not directly correlate with number of actual falls. Rather it should be used to promote a risk-reduced environment.

Nursing Theories Related to Risk for Falls

Nursing has studied falls and fall risk through research and application to nursing theory. Nursing research has evaluated fall risk factors in specific populations, while nursing theory uses a more general framework to explore risk for falls. Each theoretical approach, although different in nature, focuses primarily on the end goal of identifying fall risk factors, preventing falls, and promoting patient safety.

Neuman's Systems Theory and Model (Nursing Theory, 2011a) are effective tools for examining the interaction of systems and can be applied to falls. In this theory, the patient's environment is defined as a combination of all intrinsic and extrinsic forces, and the client is recognized as a dynamic being that constantly deals with the interaction of intrinsic and extrinsic factors. The model shown in Figure 1 of the Appendix demonstrates the relationship between a client's personal factors and the environment, taking into account the many stressors that work against the body's lines of defense. How stressors interact can affect whether or not the line of defense is breached and if the patient will therefore be at risk for a variation in health. Compensating for changes in environment can in turn promote and maintain wellness (Nursing Theory, 2011a).

Neuman's Systems Theory can be used to explain risk for falls. Just as a number of stressors may interact to breach the body's lines of defense, risk for falls increases with the combination of multiple risk factors. According to Titler et al. (2011), a higher number of stressors will increase risk for falls. In other words, risk factors such as disease processes, medications, and environmental factors can contribute to an imbalance which results in falls. Only by decreasing stressors, increasing lines of defense, or maintaining a balance between the two can wellness be maintained and falls prevented.

Similar to Neuman's System's Model, Roy's Adaptation Model (Nursing Theory, 2011b) recognizes the client as separate from the environment. However, instead of focusing on the mutual interaction of intrinsic and extrinsic factors, Roy focuses on a person's need to adapt to environmental changes. Adaptation occurs when the person reacts positively to changes using innate or acquired mechanisms. If adaptation or maladaptation occurs, wellness or illness will inevitably follow. As adaptation can occur at a variety of levels, illness and wellness can be measured on a continuum based on the interaction between person, environment, health, and nursing (Nursing Theory, 2011b; Current Nursing, 2011). Similarly, if a client is unable to adapt to risk factors, a fall will likely

occur. In this way, risk for falls can be examined and explained using Roy's Adaptation Model. Risk for falls not only takes into account the compound interaction of multivariable risk factors in accounting for fall risk, but also measures risk level on a continuum or range of different levels (Weber & Kelley, 2010). Risk factors alter the patient's state of health towards illness when applied to risk for falls; a higher number of stressors will increase fall risk (Titler et al., 2011). However, according to Roy's Adaptation Model, despite increased fall risk, a fall will occur only if a client is unable to adapt to these stressors (Nursing Theory, 2011b).

Corresponding Nursing Research for Identifying Fall Risk Factors

Many studies have assessed fall risk in elderly patients, as age-related deficits in cognition and physical strength are suspected to increase risk for falls (Fonad et al., 2008). Fonad et al. (2008) studied nursing home patients with somatic illnesses and/or dementia to determine fall risk in the geriatric population by recording incidence of falls over a four year span. Fall occurrence was measured using a questionnaire designed to assess four quality indicators: fall risk assessments, occurrence of falls, fall-related injuries, and assumed causative factors including medications and restraints (Fonad et al., 2008). This study found that use of specific medications and restraints increased risk for falls and fall-related injuries. Findings indicated that falls were prevented by use of bedrails, wheelchairs, and gait belts. However, sleeping pills and benzodiazepines were found to increase fall occurrence and fall-related fractures. Since patient safety is of utmost concern, these risk factors should be heeded by nurses in order to predict and prevent falls in the geriatric population (Fonad et al., 2008).

Titler et al. (2011) similarly studied fall risk factors in the elderly population. Using suspected causative agents for falls, demographic factors and clinical conditions were examined alongside intrinsic factors to determine fall risk. Categories studied include age, gender, ethnicity, marital status, religion, occupation, medical diagnoses, and comorbidities. The sample included patients over 60 years of age who were admitted into acute care settings. Results were measured using an unspecified fall risk assessment tool that determined overall fall risk. Findings indicate that mental disorders, anemias, psychoses, and various diagnostic tests and disease treatments are among statistically significant fall risk factors. Awareness of these indicators for risk for falls can be applied by nurses in the healthcare setting to implement appropriate interventions, ultimately preventing falls and associated injury (Titler et al., 2011).

Falls have also been studied in the pediatric population (Harvey et al., 2010). In a study conducted by Harvey et al. (2010), seven existing fall assessment tools were examined to determine fall risk factors and predict falls in patients younger than 17 years of age. The goal of this study was to create a predictive model for falls that can be used to prevent fall occurrence. Congruent with other studies, findings indicate that past falls are the most accurate predictor of future falls. Furthermore, while the other tools were found to have a variety of flaws, the Cummings Scale was found to be the most viable falls assessment tool, as it is not only accurate, but also user-friendly. However, the researchers determined that future study and assessment was needed before making further conclusions in selecting a viable pediatric fall assessment tool (Harvey et al., 2010).

Risk for falls has been studied not only according to age-related populations, but also according to intellectual disabilities. According to Wagemans and Cluitmans, 57% of observed patients with intellectual disabilities experienced a fall within a 33-month observation period (as cited in Willgoss, Yohannes, & Mitchell, 2010). Willgoss et al. (2010) performed a systematic review of literature to assess fall risk factors, identify effective nursing interventions, and make recommendations for action in preventing falls in this population. The literature was examined to determine the relationship between various intellectual disabilities and falls, specific injuries, and risk factors. Findings indicate that patients with intellectual disabilities experience high fall occurrence and risk is

multifactorial. Relevant fall risk factors in clients diagnosed with intellectual disabilities include age, epilepsy, mobility, and behavioral issues. Age was a significant factor, as physiological degeneration can occur at age 35. Epilepsy is also associated with increased fall risk, as seizures are unexpected and often result in falls.

According to Wagemans and Cluitmans (as cited in Willgoss et al., 2010), although decreased mobility is a risk factor in most populations, high independent mobility is what puts patients with intellectual disabilities at a higher risk for falls. This is because those who are mobile have increased opportunity to fall due to more frequent activity. Finally, it was determined that clients who are easily distracted or impulsive are more likely to experience an alteration in balance which could result in a fall. Based on these findings, the authors recommend promoting a safe environment, assessing fall risk through balance and gait screening, and managing patient medications (Willgoss et al., 2010).

Qualifying and Quantifying Risk for Falls

As discussed above, risk for falls can be caused by a range of factors. Influencing factors and causes can be intrinsic, extrinsic, and/or psychosocial. Using these factors, a variety of tools and models can then be used to measure and determine risk for falls.

Intrinsic Risk Factors

Intrinsic factors that cause falls are those that happen within the body. Findings indicate that demographic factors, comorbidities, and symptoms of various disease processes can increase risk for falls (Shoenfelder & Crowell, 1999; Titler, Shever, Kanak, Picone, & Qin, 2011; Fonad et al., 2008). Demographic factors include age, sex, marital status, and history of previous falls. Age can be a related factor in fall risk. According to Hu et al. (1993) and Dunn et al. (1992), people younger than two years of age or over 60 years old have an increased risk of falling (as cited in Shoenfelder & Crowell, 1999). It is expected that children will experience falls as a part of their physical development and growth (Harvey, Kramlich, Chapman, Parker, & Blades, 2010); however, falling is not a normal part of becoming elderly (Fonad et al., 2008). Also, females and unmarried individuals are more likely than other populations to experience falls (as cited in Shoenfelder & Crowell, 1999). The most important demographic, however, is past fall occurrence. Previous falls are the best indicator for future falls (Fonad et al., 2008).

Comorbidities also contribute to increasing risk for falls. According to Tinettie et al. (1998), the presence of an acute illness is a contributing factor in increasing fall risk (as cited in Shoenfelder & Crowell, 1999). Arthritis and osteoporosis inhibit bone strength and joint function, therefore altering movement patterns. Altered mobility from these two diseases can result in decreased strength, pain, fatigue, discomfort, and difficulty ambulating, which also increase fall risk (Edelman & Mandle, 2010). Anemia and depression have also been identified as statistically significant contributors in falls. Similarly diabetes, renal failure, and fluid and electrolyte disorders can be used to predict falls (Titler et al., 2011), as can vascular disease and history of myocardial infarction. Physical ailments are not the only intrinsic comorbidities that can increase risk for falls; any mental status change does so as well (Shoenfelder & Crowell, 1999).

Not only do diseases cause an increased risk for falls; often their associated symptoms also increase the risk. As suggested by Edelman and Mandle (2010), vision, hearing, blood pressure, and mobility are associated fall risk factors. One of the highest risks for falls is decreased mobility, caused by impaired balance and muscle weakness (Titler et al., 2011). Previous orthopedic treatments can affect mobility or balance, therefore increasing risk for falls. Alterations in elimination increase fall risk by increasing need for ambulation to meet toileting needs. In patients with altered mobility, this more frequent ambulation and rising from chairs or beds will put patients at a higher risk. Orthostatic hypotension, faintness, or dizziness increase chances of falling, as patients may lose balance (Shoenfelder & Crowell, 1999).

Extrinsic Risk Factors

Extrinsic factors, those outside of the patient, can also increase fall risk. According to Fonad et al. (2008), "environmental factors are the primary reason for falls" (p. 127). Lack of handrails in stairways, obstructed walkways, slippery floors and surfaces, inadequate lighting, and cracks or irregularities in walkways are common causes of falls (Edelman and Mandle, 2010). Similarly, Shoenfelder and Crowell (1999) indicate that lack of gates on stairways, lack of ramps or door thresholds, and lack of antislip materials in showers pose safety hazards that increase fall risk. Unfamiliar surroundings can lead to confusion-related falls, and lack of protection over sharp corners can result in injury-related falls (Shoenfelder & Crowell, 1999). Although wheelchairs and bedrails are commonly used for increasing the safety of patients, findings from Fonad et al. (2008) indicate that these mechanisms can often cause falls as patients attempt to climb out of wheelchairs or beds.

Medications and ingested drugs, which can have various physiological or psychological effects on the body, also cause risk for falls. According to Fonad et al. (2008), consumption of antidepressant drugs is correlated with fall risk. Similarly, Shoenfelder and Crowell (1999) state that use of tricyclic antidepressants is a fall risk factor and that antianxiety medications, hypnotics, and tranquilizers have similar effects. Many medications can cause symptoms such as dizziness, vertigo, and weakness, which increase risk for falls as they inhibit balance and mobility (Webber & Kelley, 2010).

Psychosocial Risk Factors

Social and physiologic factors sometimes work together to increase fall risk. These factors are known as psychosocial (Venes, 2009c). Psychosocial factors related to falls include fear of falling, depression, and inability to leave a facility. Fear of falling may lead to decreased physical activity, which increases risk for falls as it alters balance and mobility. Past falls are the best indicator of future falls, and fear of falling again increases future fall risk (Fonad et al., 2008; Weber & Kelley, 2010). Depression increases fall risk, as it may alter mobility and balance by decreasing reaction time and coordination (Shoenfelder & Crowell, 1999). Vellas et al. (1987) indicate that patients who are homebound or have difficulty leaving their homes are at a higher risk for falls (as cited in Shoenfelder and Crowell, 1999). These fall risk factors can be caused by, or can cause, decreased muscle strength and balance as well as increased fear of falling (Willgoss et al., 2010).

Quantifying Risk for Falls

Once fall risk factors have been identified, it is important to frequently determine and measure a patient's risk for falls. Risk should be determined upon admission to a facility, after any changes in status, following a fall, and during patient transfers. Once a baseline fall risk has been determined, reassessment should occur frequently. Many fall risk assessment tools exist and vary based on facility. Assessment tools should, however, quantify risk for falls based on identified statistically relevant risk factors and may rank risk on a numerical scale (Lynn, 2011).

Specific to determining fall risk, there are many assessment tools that can be used to objectively assess risk for falls. Berg's Balance Scale can be used to assess fall risk, as decreased balance increases risk. Physical therapists perform the test and assess transfers, sitting, standing, stepping, and standing on a single leg. Activities for patients who are able to ambulate independently also include reaching and picking up an object from the floor (Fonad et al., 2008).

Some tools put a numeric value to specific indicators of fall risk, while others check factors associated with past falls. Assessment tools differ, but all use risk factors to determine level of fall risk. Although there is a large selection of assessment tools, there is some controversy regarding which tools are most effective (Harvey, 2010). Further research should be performed, evaluating multiple tools, in order to determine which is most

effective in measuring risk for falls based on environment, assessed population, and presented risk factors.

Conclusion

Risk for falls is a significant problem in many populations, as falls have the potential to cause physical harm and are the most costly form of injury in the American healthcare system. This phenomenon is studied by multiple disciplines and can be examined using Neuman's Systems Model and Roy's Adaptation Model, which incorporate both the environment and person in determining patient safety. Likewise, numerous studies have been completed to determine fall risk factors overall and in specific populations. In order to ensure patient safety, prevent occurrence of falls, and decrease fall-related healthcare costs, nurses can and should measure these risk factors using assessment tools to determine appropriate and accurate diagnosis of risk for falls.

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Appendix

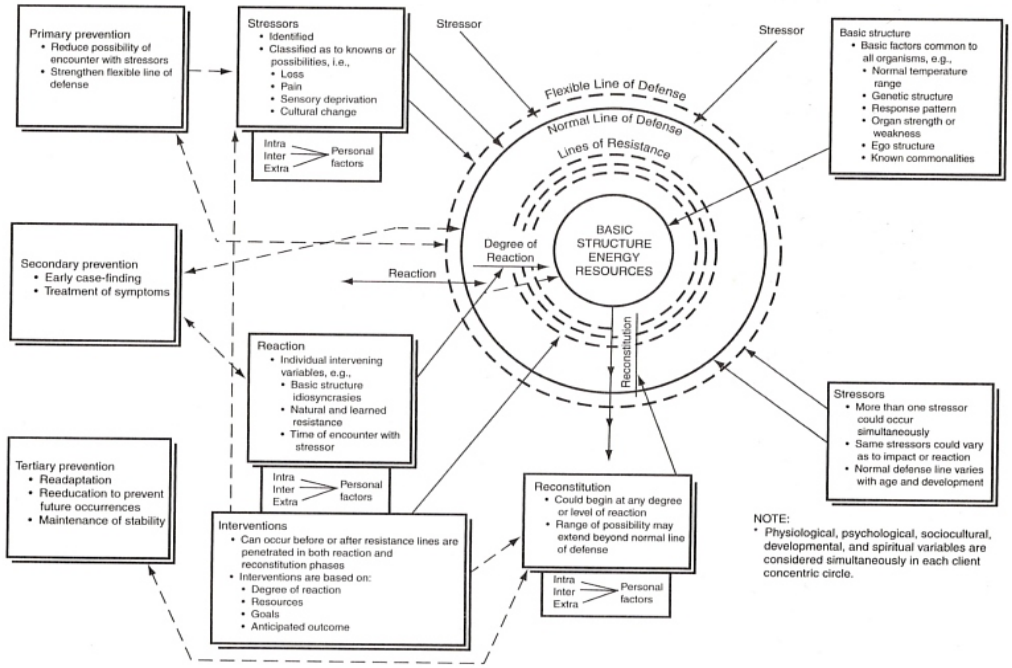

Figure 1. Neuman's systems model. Adapted from Neuman's Systems Model PowerPoint Overview, 2011. Retrieved from http://neumansystemsmodel.org/NSMdocs/nsm_powerpoint_overview.htm