Falls Risk Assessment: A Literature Review

Purpose

The purpose of this literature review is to determine falls risk among elderly individuals and identify the most common causes of falls. Also included in this review is an overview of current fall assessment tools and current prevention and treatment procedures. This information will provide insight into the ease of application, reliability and validity of current assessment tools. The results of this review will be used to determine the best fall assessment tool available or to develop a tool that provides accuracy and is easy to administer. This review will also provide current prevention and treatment procedures and provide insight as to future treatment guidelines and tools.

Introduction

One of the greatest concerns for the elderly population, especially those in long term or acute care facilities is the possibility of falls. Consistently the literature suggests that over half of patients in nursing homes and long term care facilities will suffer a fall or multiple falls. The consequences of such falls may result in longer hospital stays, fractures, depression, anxiety, and death. It is reported in the literature that disability, morbidity and mortality rates increase significantly with the occurrence of falls. (Hendrich et al 1995) Falls rob older individuals of their quality of life by reducing mobility and independence. This occurs because of physical injury as well as psychological factors that preclude an individual from reaching their existing potential in the requirements of activities for daily living (ADL’s). Studies consistently revealed fall rates of 24% to 35% for individuals over age 65.(O’Loughlin et al 1993) found that 29% of
individuals over 65 living in a nursing facility fell at least once and 11.5% fell two or more times. Strategies for risk assessment for falls and the prevention and treatment of falls are imperative as these will in turn improve quality of life and reduce morbidity and healthcare costs.

Tinetti et al (1988) describes falls as “an event which results in a person coming to rest unintentionally on the ground or other lower level, not as the result of a major intrinsic event (such as stroke) or overwhelming hazard”. It is consistent among studies that falls are required to be unintentional and there is some contact with the ground or an object. Falls that are caused by syncope or intrinsic factors are most often excluded from the data. However it should be stated that individuals who experience intrinsic episodes such as stroke or other illness are at an increased risk for falls. Rapport et al (1993) found the incidence of falls in a stroke rehabilitation unit was reported in up to 47% of patients. The increase in falls in this population is primarily due to paralysis, loss of strength and coordination caused by the stroke. Age is often considered in the incidence of falls however falls are not attributed to age but more likely attributed to illness or other issues with which the older adult might be dealing.

Falls often result in physical injury and psychological trauma. Grenier-Sennelier et al (1993) found that physical injury will occur in 70% of falls and 10% of injuries result in fractures. They also determined that 4 of 5 fall patients will experience psychological effects and have longer hospital stays. Fractures and head injury are some of the more serious injuries incurred by fall victims. Complications of fractures encountered by patients include restricted movement, requiring a higher level of care or even death. Most deaths from falls are a result of complications of fractures as these individuals are more likely to become bedfast and develop pneumonia. Statistics have shown that more than 75% of deaths from falls occurred in patients over the age of 75 (Ermanel et al 2007).
Victims of falls often develop anxiety from the fear of subsequent falls. This fear can be paralyzing and lead to decreased activity and isolation. Individuals who are fearful of falling are more likely to become sedentary resulting in increased levels of de-conditioning. Decreased activity will then lead to muscle atrophy, decreased strength and range of motion and consequently to subsequent falls. This creates a vicious cycle in which falling and the fear of falling results in the reduction of the patients ability to perform the ADL’s and then to a loss of independence. Oliver et al (1997) stated that the consequences of falls included fear of falling, anxiety, depression, and loss of confidence which leads to greater disability. While rehabilitation programs are a requirement to maintain strength and coordination, depression and loss of confidence make increase the difficulty in administering these programs.

**Causes and Risk Factors**

Falls are the most common cause of injury in old age. Elderly people living in residential care facilities experience three times more falls than those living in the community. Although falls can be caused by multiple factors, impaired mobility caused by gait and balance disorders is one of the most common factors. (Nordin et al 2008) It is imperative to identify causes and risk factors for falls so that it might be possible to recognize individuals who are at risk for falling. The literature has exposed hundreds of diseases and ailments that are considered to be causes and risk factors for falls. In most studies causes and risk factors have been divided into categories to simplify the assessment process. As we age there are many physiological changes that occur slowly over time; the musculoskeletal system will atrophy and lose strength, neurologically balance is lost, coordination and reaction time are reduced, and hearing and vision are compromised. These changes will eventually compromise movement and contribute to the unsteadiness of an individual.
In most cases falls are not the result of a single factor or cause but occur because of multiple factors. The greater the number of risk factors the more likely the patient is to suffer a fall. Tinetti et al (1988) found that a person with four or more risk factors has a 78% possibility of suffering a fall. Risk factors that were documented in the literature include but are not limited to the following: gait instability, step variability, muscular weakness, balance deficit, visual deficit, arthritis (especially pain in more than one joint), depression, cognitive impairment, postural hypotension, history of falls, use of assistive walking devices, confusion, disease, medications (sedatives, depressants, hypnotics), continence issues, environmental factors, patient’s dependence level, and age related changes. Most all risk factors can be categorized as physical defect, mental defect or environmental changes with the most common risk factors documented in the literature being muscular weakness and a history of falls. Musculoskeletal pain and weakness restrict gait, coordination and balance and therefore has a multifaceted effect on the occurrence of falls. History of falls as a risk factor is self explanatory, as a person who falls for the first time typically has some type of physical ailment or defect and then subsequently develops psychological issues (fear and anxiety) that increase the possibility of falls.

Fall Risk Assessment Tools

Reducing the risk of falls requires the utilization of a comprehensive falls risk assessment tool that identifies factors that place an individual at risk. Identification of the appropriate risk factors provides the clinician with the information necessary to recommend the appropriate intervention, treatment, and rehabilitation program. This literature review identified 38 assessment tools, however not all the tools identified were found to be valid and reliable.

Since falls are most often the result of multiple risk factors that are relate to the patient and their environment the assessment tool should include the evaluation of both intrinsic and
extrinsic factors. The assessment tool must be comprehensive attempting to identify all existing risk factors, however since there are so many risk factors it may be necessary to utilize multiple tools. In most facilities the nursing staff is responsible for the implementation of the assessment tool. It is important that the assessment tool utilized be easy to administer, requires little time to administer, and provides quantitative information that is reliable and valid. An appropriate tool would include a functional component, patient history, history of falls, review of medications, limitations of ADL’s, consider environmental components, and mental/emotional status. 

Assessment of this information would identify specific factors that may be the cause of the fall.

The results of this literature found that the Hendrich II Fall Risk Scale is the most inclusive and reliable tool surveyed. Added to the Hendrich II is the functional component Get Up and Go Test which requires the patient to rise from a seated position, walk 10 ft. and return to the chair and be seated. During the walking portion of the test the gait and coordination of the patient should be assessed. The combination of these tests considers the following criteria and awards points for each area with a score of ≥ 5 points showing a person to be at high risk:

- Confusion/Disorientation: 4
- Depression: 2
- Altered Elimination: 1
- Dizziness/Vertigo: 1
- Gender (male): 1
- Antiepileptics: 2
- Benzodiazepines: 1
- Get Up and Go:
  - Able to rise in single movement: 0
  - Pushes up, successful in one attempt: 1
  - Multiple attempts but successful: 3
  - Unable to rise without assistance: 4

Scores of ≥ 5 identify a patient as high risk for falls. (Hendrich et al, 2003)
Prevention and Treatment

While this literature review reveals multiple studies on risk factors and assessment tools, it is very limited in the areas of prevention and treatment. Most treatments involve identifying the specific cause and employing interventions to address the cause. For example, if medications are found to be the cause then they are more closely regulated, removed, or replaced with another medication. When making assessments and determining the appropriate intervention, it is imperative that each intervention be tailored to each to each individual and their needs. If causes are identified and the appropriate treatment is implemented then the clinician will be the most effective in reducing falls.

When developing treatment strategies it is imperative to treat medical conditions and injuries first. For example, a person who has a urinary infection may exhibit confusion and unsteadiness, therefore if the condition is treated with antibiotics then the confusion and unsteadiness caused by the infection will be remedied. Other prevention and treatment strategies include: assessment and removal of inappropriate medications, correcting visual and hearing impairments, assessment and treatment of osteoporosis, implementing the proper use of ambulatory devices, implementing rehabilitation exercises to target strength and loss of balance impairments, and evaluating the living environment for hazards making modifications when necessary.

The use of therapeutic modalities should be employed when treating the patient for muscle atrophy due to immobility, musculoskeletal disorders and pain syndromes that may cause problems with strength, gait, and balance. For example: electrotherapy may be used in the reduction of pain and the strengthening of weakened muscle; diathermy may be used to reduce pain and make tissue more compliant to stretch which will lead to increases in flexibility and
coordination; LASER and diathermy may be used to heal wounds which cause pain and disability. These modalities and others are tools that must be implemented with rehabilitation programs to address the problems of the elderly patients to address their physical ailments and assist them in the prevention of falls.

**Conclusion**

As people age one of their greatest concerns is the ability to maintain their mobility and independence. Injury, illness, and disability, that result in patient falls is a major factor in the loss of independence in the elderly patient. It is imperative that we consider a comprehensive medical approach that will treat conditions and provide treatment and rehabilitation programs that will identify and treat patients at risk for falls.

**References**


