

Falls in Elderly Patients with Stroke

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Abstract

The present review aims to identify the prevalence of falls, to describe the factors related to falls among elderly stroke patients, and to demonstrate the desired interventions to prevent falling among those patients. This review was conducted using PubMed, SCOPUS, Web of Science, and Medline to determine the incidence, risk factors, and favorable procedures to prevent and manage falls among elderly stroke patients. Falls lead to injuries, fractures, and impairments of the quality of life. Elderly stroke patients are more susceptible to falling than their healthy peers, which may result in greater restrictions on activity and mobility. Previous studies have documented the incredible prevalence of falls among the elderly who have suffered a stroke. Our study led to the conclusion that falls should be assessed to determine how to prevent and control them among elderly stroke patients. Physical therapy and rehabilitation modalities have a key role to play in improving the health status and prevent falling among those patients. (**International Journal of Biomedicine. 2020;10(4):330-333.**)

Key Words: stroke • falls • elderly • rehabilitation

Stroke is documented as the second commonest cause of death worldwide, after cardiac diseases, and they cause a high rate of disability, mortality, and morbidity worldwide.^(1,2) Despite the worldwide decrease in the mortality rate in the last decade, the number of elderly people with stroke and fatal stroke increases each year, more in Asia than in America or Europe.⁽³⁾

Stroke commonly occurs among elderly populations, afflicting nearly 9% of the elderly between 65 and 79 years and around 15% of those older than 80 years.⁽⁴⁾ By 2030, the number of stroke survivors among elderly populations may increase to approximately 10 million.^(4,5)

Falls among stroke patients

Falls are considered as the most common health issue following a stroke, leading to high rates of mortality and morbidity.⁽⁶⁾ The falling rate among stroke patients has ranged between 25% and 44%, particularly among those who are experiencing locomotor dysfunction.^(7,8) Falling is a common complication among the aged population, increasing disability and dependence.⁽⁹⁾ Approximately, 90% of the injuries among the

elderly result from falling,⁽¹⁰⁾ leading to a high economic burden for healthcare. Fractures commonly occur as a consequence of falls among the elderly, specifically hip fractures, which cause a potential disability and disturbance of health overall. In elderly stroke survivors, the risk of hip fracture is 4 times higher than among their peers in the general population.^(10,11)

Characteristics of falling among elderly stroke patients

The falling features and circumstances for elderly and non-stroke patients have been assessed in early studies.^(12,13) Nevertheless, studies that assess falling in post-stroke patients are limited. One previous study found that 50% of their studied sample of post-stroke patients had a history of falling related to disturbed balance and insufficient attention.⁽¹⁴⁾ Another study reported that chronic stroke patients who suffered from falling had disturbed mobility and inability to perform their daily activities, with higher levels of depression and anxiety than stroke patients with no falling history.⁽¹⁵⁾ However, it was documented that post-stroke patients commonly fall,⁽¹⁶⁾ and risk factors of falling are numerous among stroke survivors.^(14,15) Some studies have reported that the incidence of falling among older adult patients reaches 76%,^(17,18) and other studies have reported that the incidence of falling among stroke patients is approximately 30%.^(16,19) Other studies have reported that falling after a stroke results in injuries and that 20% of these injuries require a medical attention.^(12,20)

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Despite a prior study that found similar characteristics among falling and non-falling stroke survivors in motor control and mobility, falling patients showed higher disabilities and comorbidities,⁽¹⁵⁾ indicating that stroke associated with disabilities commonly contribute to falling. Also, another study concluded that stroke patients with orthostatic hypotension are commonly susceptible to falling.⁽²¹⁾ Regarding the circumstances of falling, there is clearly a strong association between disability and falling risk. It is expected that falling can commonly take place in association with daily home activities, such as feeding, washing, showering, and toileting. In addition to falling related to daily home activities, patients commonly fall because of slips or trips. Geriatric literature has reported a high prevalence of slips and trips on such small obstructions as sidewalk cracks, carpets, curbs, cords, and roots of trees.^(12,22) Also, stroke survivors may slip or trip on ice or wet surfaces because of diminished vision or other sensory abilities.

Falling history has documented that falls are likely associated with physical and mental impairments, including carelessness in some home details, such as alcohol drinking, poor quality of sleep, tying shoes, and the use of assistive devices. Therefore, the prevention of falling after a stroke should not concentrate only on improving range of motion and muscle strengthening but also on modifying associated risk factors of falling.

Risk factors for falling among elderly stroke patients

Generally, independent risk factors for falls among the elderly include muscle weakness, recurrent falling, psychological medications, visual or other sensory deficiency, disturbed gait, walking deficits, physical restrictions, anxiety, dizziness, depression, cognitive dysfunction, orthostatic hypotension, incontinence, diabetes, female gender, receiving poly medications, and being older than 80 years.⁽²³⁾

Recently, a systematic review demonstrated that among the elderly population some risk factors have a strong relationship to falling, such as falling history, disturbed gait, using walking aids, neurological diseases, vertigo, and use of antiepileptic medications.⁽²⁴⁾ Also, an observational study found that lesions of the white-matter area of the brain are likely a risk factor predictor for falling.⁽²⁵⁾ Further, it has been documented that the falling risks are directly related to the pain severity of musculoskeletal disorders, the number of affected joints, and amount of interference with daily living activities.⁽²⁶⁾ Orthostatic hypotension is commonly prevalent among the elderly, leading to gait impairment and falling.⁽²⁷⁾ Moreover, another study on four elderly subjects documented that obstructive sleep apnea leads to falling-related injuries.⁽²⁸⁾

Regarding falling among elderly stroke patients, in addition to the previous risk factors, a recent study found a positive correlation between the prevalence of falling and indoor tripping hazards with no differences between stroke patients and non-stroke peers, suggesting that for stroke patients there is a greater risk of falling outdoors than indoors.⁽²⁹⁾ Stroke patients have a higher susceptibility to falling than matched controls,^(30,31) and the risk of falls increases with high physical disabilities.⁽³²⁾ Both indoor and outdoor environments may raise the probability of falls among stroke survivors, specifically

those experiencing physical limitations.^(33,34) The majority of outdoor predictors for falling are sidewalks and sidewalk obstructions,⁽³⁵⁾ however, the indoor predictors are associated with tripping risks, such as poor light and loose carpets.⁽³⁶⁾ Anxiety and fear of falling are additional risk factors observed among those who fall outdoors.⁽³⁷⁾ Fear of falling may be combined with social factors that prevent the survivor from asking family members or neighbors to assist with walking.⁽³⁸⁾

Prevention of falling among elderly stroke patients

Previous studies have shown several successful treatment modalities for preventing falls and associated risk factors.⁽³⁹⁻⁴¹⁾ An effortless and easy modality having a highly beneficial influence is a home assistant to pick up anything that presents a risk of tripping and to clean up clutter and clear walking pathways at home. Generally, treatment modalities for preventing falling among the elderly are classified into particular or multi-section treatment. The particular, evidence-based treatment for preventing falls among the elderly include home evaluation and adjustment for those at high-risk, adherence to exercise training such as gait training, strengthening, balance, and stretching exercises, and receiving more than 700IU of vitamin D supplements per day.⁽⁴²⁻⁴⁴⁾ However, the multi-section treatment shows beneficial effects to prevent falling among the elderly, including reviewing and reducing psychological medications,⁽⁴²⁾ assessing and treating orthostatic hypotension,⁽²³⁾ rapid cataract surgery for an impacted eye,⁽⁴²⁾ wearing multifocal glasses when outdoors,⁽⁴⁵⁾ using anti-slipping shoes outdoors during winter,⁽⁴⁶⁾ and cardiac pacing in cardiac inhibitory carotid sinus syndrome.⁽⁴⁷⁾ Multi-section treatment is strongly recommended because it assesses individualized risk factors for falling and planning the intervention program for reducing that risk.⁽⁴²⁾

Acknowledgments

This publication was supported by the Deanship of Scientific Research at Prince Sattam bin Abdulaziz University.

Competing Interests

The authors declare that they have no competing interests.

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