

Characteristics of the elderly patients admitted to surgical casualty due to falls: a study from northern Sri Lanka.

T. Kumanan¹, K. Umamathy², G. Karthick¹

1 Department of Medicine,

2 Consultant Orthopaedic Surgeon,
Teaching Hospital Jaffna, Sri Lanka

Key words: falls; elderly

Introduction

Sri Lanka has a rapidly aging population with 22% of Sri Lankans expected to be over 60 years by 2030 [1]. The Northern Province has not been studied in detail in the recent past. However it could be expected that the situation is the same here. The elderly here are further disadvantaged by the fact that most of the offspring have left the province in search of greener pastures to other countries or other parts of Sri Lanka leaving the elderly population more vulnerable.

Falls are an important cause of disability and death among elders. The WHO Global Reports on falls prevention in elderly illustrates that 28 – 35% of elders over 65 years and 32 – 42% of them over 70 years fall annually [2]. Falls lead to physical injuries and restrict activity. They are among the principal causes of morbidity and lead to hospital admissions in the elderly. Thirty percent of people aged 65 years and above living in the community fall at least once per year and this proportion increases with age [3, 4]. About 40% of all serious fall injuries among the elderly including fractures, joint dislocation and head trauma resulted in hospital admissions. Psychological trauma in particular the fear of falling leads to self-limitation in physical activity and consequently loss of independence.

Falls occur due to multiple causes, which may be extrinsic, intrinsic or due to environmental factors. The most important intrinsic factors of falls are decreased mobility, cognitive impairment, use of multiple medications, depression, urinary incontinence, cerebrovascular disease, postural drop in blood pressure, dizziness, fear of falling, impaired visual acuity and a history of falls in the past. Many of these factors can be prevented and can be effective in reducing recurrent falls.

Information on falls in the elderly in Sri Lanka is sparse and there are no studies from the Northern Province of the country. A study carried out in the Colombo and its suburbs

based on hospital data showed that 23% of the elderly (over 65 years) fell in a year [5].

This study was conducted to identify the characteristics of the elderly patients admitted to surgical casualty due to falls at the Teaching Hospital Jaffna, the only tertiary care centre in northern Sri Lanka.

Materials and methods

This is a cross sectional descriptive study, was conducted for a period of 3 consecutive months from April 2012. All patients above the age of 60 years admitted to the surgical casualty at the Teaching Hospital Jaffna with a fall during the study period were recruited to the study. Those admitted with falls following a road traffic accident or when the definitions applied for falls were not met were excluded from the study. Data was collected from all subjects using an interviewer administered questionnaire.

For purposes of this study a fall was defined as an event when a person comes to rest unintentionally on the ground or other lower level, without the influence of any extrinsic force (e.g. pushed down by somebody, knocked down by a car) [2,6]. Memory impairment was assessed using difficulty with 4 questions of the Alzheimer's Questionnaire (AQ) based on a study conducted by Michael Malek-Ahmadi et al [7].

The four questions used were,

1. Does the patient repeat questions/ statements in the same day?
2. Does the patient have trouble remembering the date, year and time?
3. Does the patient have difficulty managing finances?
4. Does the patient have a decreased sense of direction?

Each question was given a score of 1 with a total score of 4. The independence in activities of daily living was estimated using the Katz Index of Independence in Activities of Daily Living (ADL) and was score from 0 to 6. An independent patient had a score of 6 and a very dependent patient had a score of 0.

Data was entered and analysed using the Statistical Package for Social Studies.

Correspondence: T.Kumanan

E-mail: mtkumanan@yahoo.com

Received: 03-12-2016 Accepted: 11-04-2017

 <http://orcid.org/0000-0001-5735-4713>

DOI: <http://doi.org/10.4038/sljs.v35i1.8346>



Results

A total of 100 consecutive patients presented to the Surgical Casualty of the Teaching Hospital Jaffna during the study period. Of these 39 were males and 61 were females.

A history of a fall within the past 1 year was present in 57. Of the fifty nine with chronic illness 34 had a cardiovascular

Age	No
60 – 69	26
70 – 79	40
80 - 89	28
>= 90	6
Total	100

Table 1. Age distribution

With family	79
Alone	14
At elders home	7
Total	100

Table 2. Living status

disease, 6 a respiratory disease, 34 diabetes mellitus, 2 neurological illness and 15 had arthritis. Seventeen had 2 diseases and 8 had 3 or more co morbidities. Cardiovascular disease and diabetes mellitus were the more significant co-morbidities compared to neurological illness and arthritis.

Of the 56 patients on regular medication 35 were on antihypertensive, 1 on antidepressants, 12 on diuretics, 1 on an antiarrhythmic drug and 34 on drugs for diabetes mellitus and 7 were on drugs for other conditions. None were on sedative drugs. Nine were on two medications while 12 were on 3 or more types of medication. Antihypertensive and antidiabetic medications were the main factors when considering medications.

Sixty patients reported that they had a fear of falling; 34 had some degree of visual impairment; 54 had fainting attacks, dizziness or vertigo and 26 had some degree of difficulty in walking.

78 patients had no memory impairment, while 22 had some degree of memory impairment. Memory impairment was assessed based on the difficulty of 4 questions of the AQ. Of the 22 with memory impairment 4 scored 3, 5 scored 2, 4

scored 1 and 10 scored 0.

Activities of daily living of these patients were determined using the Katz Index of Independence in Activities of Daily Living. Ninety two of the 100 patients had a score of 6 (complete independence), 1 scored 5, 1 scored 3. Five scored 1 and 1 scored 0 indicating that they were dependent on others for their activities of daily living. Interestingly more than 90% are completely independent.

Environmental factors included inadequate light in 8; slippery surfaces in 40; unsafe staircases in 2 and cracked floor in 7. 43 did not report any environmental factors. Twenty-seven had been using walking assistance devices and 39 had been using footwear when they had the fall. Slippery surface was identified as the major environmental factor.

Within home	64
When standing	17
Rising from the chair	13
In the bathroom	14
In the toilet	08
Climbing up/down the stairs	14
Garden	21
Climbing up/down stairs	04
When standing	09
In side garden	05
Outside home	15
On the road	09
In public place	04
Getting out the car	02

Table 3. Place of fall

Discussion

More females (61%) had falls than males (39%) and this is statistically significant. This may be due to the fact that females are more prone to fractures due to osteoporosis consequently leading to more hospital admissions. Another study done in Sri Lanka shows an incidence rate of fall in females is around 515 per 1000 person years compared to 462 per 1000 person years for males [8].

Most falls (40%) were within the 70 – 79 years age group, followed by the 80-89 years age group, which had 28% of the falls. Our age group stratification is slightly different, however 74% of falls in our study had occurred in those above 70 years. A study by Ranaweera AD et al [8] states that those above 75 were twice as likely to have a fall.

Most (79%) of the patients were living with their families with 14% living alone and 7% in elders' homes. A study done in Colombo showed that 7.3% lived alone compared to 92.7% who lived with someone [8]. The fact that 21% of the patients were living alone or in elders home shows the possibility of a transition from the traditional extended families to a nuclear unit. This could be a post war effect with most of the children leaving the district or perishing in the war. This is of concern as with the aging population more falls and consequent comorbidities could be expected. Larger population studies would be needed to confirm this. However from the above pattern one should consider educating the elders of prevention of falls.

More than 50% of the subjects recalled a fall within 1 year of the index fall. Chronic illness and use of regular medication were seen in more than half of the study subjects. 54% of subjects reported fainting attacks dizziness or vertigo. One fifth of the patients were on two or more drugs and one fourth of the patients had 2 or more co-morbidities.

The study in Colombo showed that participants who had a fall in the previous year had more than fourfold risk of having another fall. The same study also disclosed the fact that the presence of more than two chronic ailments, dizziness, history of falls within the previous year and poor mobility had statistically significant relationship with falls [8]. A systematic review showed that the strongest association for falls was a previous history of falls [9]. This further emphasizes the fact that attention should be paid to primary and secondary prevention of falls. Counselling on prevention of falls when elderly patients with multiple co-morbidities and on poly-pharmacy should be considered a priority in order to reduce falls. Further antihypertensive, antiarrhythmic, diuretics, sedatives and antidiabetic drugs can precipitate falls due to their mechanism of action. Counselling on side effects of these drugs while prescribing and reinforcing them during clinic visits, assessing the risk of falls every year and monitoring side effects should be considered.

Disability and poor mobility are well known risk factors for falls. In our study 26% had some degree of difficulty in walking, however 92% scored 6 on the Katz Index of Independence in Activities of Daily Living indicating complete independence with only 8 having some degree of difficulty in performing their activities of daily living. A systematic review on the characteristics of the elderly patients admitted with falls to the casualty showed that difficulties in

the activities of daily living doubled the risk of falling [10]. Twenty two percent of our study population had some degree of memory impairment. In a study conducted in Colombo amongst residents of an elderly home 66% of elders demonstrating mild to severe cognitive deficits based on MMSE and MoCA [11]. The WHO Global report on falls prevention also reports similar figures [2]. In our study we used a 4 question screen considering the fact that extensive assessment using MoCA or MMSE could not be carried out in a busy casualty setting. This could account for the fact that only 22% showed memory impairment in our study.

Environmental factors play a major role in falls. About 85% of the falls were at home with 64% inside the house and 21% in the garden with slippery surface (in 40%) being reported as the major environmental contributor. Simple measures including keeping the floor dry could be easily practiced and this would significantly reduce the number of falls. Other studies have shown similar results and several studies have reported home safety assessment and modification interventions as effective in reducing the risk of falling [12].

In conclusion, most of characteristics reported in this study are preventable. Improving the awareness of the characteristics associated with falls amongst the elderly population and care givers will help decrease the incidence of falls. Further our cultural values and habits should be considered when advising on prevention of falls. A community based study with a larger population is recommended to further assess the characteristics associated with falls in the Jaffna district.

All authors disclose no conflict of interest. The study was conducted in accordance with the ethical standards of the relevant institutional or national ethics committee and the Helsinki Declaration of 1975, as revised in 2000.

References

1. Siddhisena KAP. Demography of aging in Sri Lanka. In: Aging population in Sri Lanka. United Nations Population Fund 2004; 8 –43.
2. World Health Organization. Ageing, Life Course Unit. WHO global report on falls prevention in older age. World Health Organization; 2008.
3. Tinetti ME, Speechley M, Ginter SF. Risk factors for falls among elderly persons living in the community. *N Engl J Med* 1988; 319: 1701 –7.
<https://doi.org/10.1056/NEJM198812293192604>
4. Nevitt MC, Cummings SR, Kidd S, Black D. Risk factors for recurrent non-syncopal falls. a prospective study. *JAMA* 1989; 261: 2663-8.
<https://doi.org/10.1001/jama.1989.03420180087036>
5. Weerasuriya N, Jayasinghe S. A preliminary study of the hospital –admitted older patients in a Sri Lankan tertiary care hospital. *Ceylon Medical Journal* 2005; 50:18 –9.
<http://doi.org/10.4038/cmj.v50i1.1584>
6. Chu LW, Chi I, Chiu AY. Incidence and predictors of falls in

- Chinese elderly. *Annals Academy of Medicine Singapore* 2005; 34: 60–72.
7. Malek-Ahmadi M, Davis K, Belden CM, Jacobson S, Sabbagh SN. Informant-reported cognitive symptoms that predict amnesic mild cognitive impairment. *BMC Geriatrics* 2012, 12:3 <https://doi.org/10.1186/1471-2318-12-3>
 8. Ranaweera AD, Fonseka P, PattiyaArachchi A, Siribaddana S H. Incidence and risk factors of falls among the elderly in the district of Colombo. *Ceylon Medical Journal* 2013; 58: 100-106. <https://doi.org/10.4038/cmj.v58i3.5080>
 9. Hennekens CH, Buring JE. *Epidemiology in Medicine*, 2ed. Boston/Toronto: Little Brown and company, 1987.
 10. Silviaa D, Ersiliaa L, Francescaa L, et al. Risk factors for falls in community dwelling older people. A systematic review and meta-analysis. *Epidemiology* 2010; 21: 658-68. <https://doi.org/10.1097/EDE.0b013e3181e89905>
 11. Thanthrige RS, Dassanayake S, Dissanayake D. relationship between increased risk of falling and cognitive impairment in residents of an elderly home in the Colombo district. *Ceylon medical Jopurnal* 2014; 59: 21-23. <https://doi.org/10.4038/cmj.v59i1.6735>
 12. Gillespie LD, Robertson MC, Gillespie WJ et al. Interventions for preventing falls in older people living in the community. The Cochrane database of Systematic Reviews Library 2012;9: CD
-