Original Research Article

Falls in elder ones

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ABSTRACT

Background: Falls are a common and serious health problem with devastating consequences. The aim of present study was to find the prevalence of fall in elder ones and search for the causes so that preventive measures can be taken.
Methods: 102 participants including males and females were interviewed to find the prevalence and causes of fall from 1st January to 29th February 2020. Data was collected and analyzed.
Results: In present study, there was history of fall in 12 (25%) males and 22 (40.74%) females. 3 (6.25%) males and 8 (14.81%) females had history of one fall, 4 (8.33%) males and 9 (16.66%) females had history of 3 falls while 5 (10.41%) males and 5 (9.25%) females had history of more than two falls. In fallens, 10 (83.33%) males and 17 (77.27%) females were above 80 years of age. Fall was associated with fracture in 4 (33.33%) males and 7 (31.81%) females. Diabetes was present in 25 (52.08%) males and 40 (74.07%) females, hypertension was seen in 30 (62.5%) males and 23 (42.59%) females while Coronary heart disease was present in 13 (27.08%) males and 8 (14.81%) females.
Conclusions: Prevalence of fall in senior citizens in our study was 25% in males and 40.74% in females. The major contributing factors for fall injuries were aging, visual impairment, previous history of fall, depression, and joint problem. Females had a higher risk of fall compared to males.

Keywords: Falls among elderly, Injury in India, Risk factors, Unintentional injuries

INTRODUCTION

A fall is defined as "unintentionally coming to the ground or some lower level. It happens other than as a consequence of sustaining a violent blow, loss of consciousness, sudden onset of paralysis as in stroke or an epileptic seizure.[1] ProFane defined a fall as "an unexpected event in which the participants come to rest on the ground, floor, or lower level.[2] Falls are one of the major problems in the elderly. Falls are considered one of the "Geriatric Giants". Recurrent falls are an important cause of morbidity and mortality in the elderly. Falls are a marker of poor physical and cognitive status.[3] Falls are a main cause of morbidity and disability in the elderly. More than one-third of persons aged 65 years or more fall each year. In half of such cases the falls are recurrent.[3]

Rashmi and Lalita has pointed out that hip fractures in elderly people are almost always the result of falls. Regular exercise increases muscle strength, coordination and flexibility. It reduces the tendency to fall. Exercise reduces the risk of fall by 10%. Balance training

programs reduces the risk by nearly 20%. The elimination of environmental hazards, the avoidance of drugs which impair balance and management of neuromuscular disorders play a role in fracture prevention.[4]

Fall is an event caused by age associated diseases like Parkinson's disease, cognitive decline and musculoskeletal problems with impairment of sensory system, righting reflex and decrease in lean body mass. The incidence of falls increases with advancing age. It is one of the leading causes of death in elderly due to its complications. Amongst it is 50% hip fracture. Visual cognition syncope vestibular defect, neuromusculoskel medication, serious injuries and fractures, restricted mobility and loss of independence leading to functional decline, psychological fear of falling (post fall and permanent disability).[4] The risk doubles or triples in the presence of cognitive impairment or history of previous falls.[5]

In 2010, the American Geriatrics Society (AGS) and the British Geriatrics Society (BGS) issued fall prevention guidelines. It requires the patient to have either a history of at least 2 falls in the past year or to present with a fall. The guidelines urge primary care physicians to screen their patients yearly and to implement tailored, multifaceted interventions for at-risk patients. The guidelines recommend the development of an individualized exercise regimen (strength, gait, and balance exercises) for all patients at risk.[6] European Food Safety Authority recommended Vitamin D for the people over age 60 years to reduce the risk of falling and bone fractures.[7] A 2014 review concluded that exercise interventions may reduce fear of falling in older adults immediately after the intervention, without evidence of long-term effects.[8]

Recurrent falls, defined as more than two falls in a six-months period, should be evaluated for treatable causes. An immediate evaluation is required for falls that produce injuries or are associated with a new acute illness, loss of consciousness, fever or abnormal blood pressure.[9] According to the WHO among elderly, nearly 37.3 million falls require medical attention every year. Also, 646,000 individuals die from falls each year. Fall rate increases with advancing age resulting in morbidity, mortality, and loss of independence.[10]

Aims and objectives

Aims of the study were to find the prevalence of fall and to find the risk factors of fall among the elderly.

METHODS

This cross-sectional analytical study was conducted among 102 elderly in the community by Department of Medicine of Srinivas Institute of Medical Sciences and Research Centre, Mangalore, Karnataka India from 1st January to 29th February 2020. The study was carried out

in several different locations. The participants in the study were both men and women from upper middle class and 65-year-old or above. Informed consent was obtained before the start of the study and participation in the study was voluntary. Socio-demographic variables included in the questionnaire were age, gender, residence, marital status, level of education, and nature of work.

Inclusion criteria

Males and females >65 years of age who were willing to participate in the study were included.

Exclusion criteria

Males and females >65 years of age who were not willing to participate in the study and males and females <65 years of age were excluded.

The data collection was done by personal interviews. Data was collected in Microsoft excel sheet, analysis was done and statistics was taken out using percentages

RESULTS

In present study, there were 5 (10.41%) males and 12 (22.22%) females in 65-69 years age group, 12 (25%) males 13 (24.07%) females in 70-74 years age group, 13 (27.08%) males and 22 (40.74%) females in 75-79 years age group while there were 18 (37.5%) males and 17 (31.48%) females above 80 years of age. Thus, more number of males were above 80 years of age and more number of females were from 75-79 years age group (Table 1).

Table 1: Age and sex distribution.

Age distribution (in years)	Males N (%)	Females N (%)
65-69	5 (10.41)	12 (22.22)
70-74	12 (25)	13 (24.07)
75-79	13 (27.08)	22 (40.74)
80 or more	18 (37.5)	17 (31.48)
Total	48 (47.05)	54 (52.83)

Table 2: Fall details.

H/o fall	Males N (%)	Females N (%)
Total	12 (25)	22 (40.74)
No. of falls		
1 fall	3 (6.25)	8 (14.81)
2 fall	4 (8.33)	9 (16.66)
>2 fall	5 (10.41)	5 (9.25)
Age wise		
<80 years	2 (16.66)	5 (22.72)
>80 years	10 (83.33)	17 (77.27)
Associated with fracture	4 (33.33)	7 (31.81)

In present study, out of 102 participants, there was history of fall in 12 (25%) males and 22 (40.74%) females. 3 (6.25%) males and 8 (14.81%) females had history of one fall, 4 (8.33%) males and 9 (16.66%) females had history of 3 falls while 5 (10.41%) males and 5 (9.25%) females had history of more than two falls.

In fallens, 10 (83.33%) males and 17 (77.27%) females were above 80 years of age. Fall was associated with fracture in 4 (33.33%) males and 7 (31.81%) females. Thus, fall occurred in more number of females. Falls occurred more above 80 years of age in both males and females.

Table 3: Medical condition.

Medical condition	Males	Females
	N (%)	N (%)
Diabetes	25 (52.08)	40 (74.07)
Hypertension	30 (62.5)	23 (42.59)
Coronary heart disease	13 (27.08)	8 (14.81)

In present study, out of total 102 participants, diabetes was present in 25 (52.08%) males and 40 74.07%) females, hypertension was seen in 30 (62.5%) males and 23 (42.59%) females while Coronary heart disease was present in 13 (27.08%) males and 8 (14.81%) females. (Table 3). Thus, diabetes was more frequently present females while hypertension and Coronary heart disease was seen more frequently present in males.

Table 4: Associated impairment.

Associated impairment	Males	Females
	N (%)	N (%)
Visual impairment	14 (29.16)	13 (24.07)
Hearing impairment	17 (35.41)	12 (22.22)
Dementia	7 (14.58)	8 (14.81)
Depression	12 (25)	12 (22.22)
Arthritis	21 (43.75)	32 (59.25)
>4 medications	15 (31.25)	16 (29.62)
Imbalance	13 (27.08)	16 (29.62)
Incontinence	5 (10.41)	5 (9.25)

In present study, out of total 102 participants, Visual impairment was seen in 14 (29.16%) males and 13 (24.07%) females, hearing impairment was seen in 17 (35.41%) males and 12 (22.22%), dementia was seen in (14.58%) males and 8 (14.81%) females, depression in 12 (25%) males and 12 (22.22%) females and arthritis was seen in 21 (43.75%) males and 32 (59.25%) females (Table 4). Thus, vision and hearing impairment was more frequent in males while arthritis was commonly seen in both sexes (Table 4).

DISCUSSION

In present study, there were 5 (10.41%) males and 12 (22.22%) females in 65-69 years age group, 12 (25%) males and 13 (24.07%) females in 70-74 years age group, 13 (27.08%) males and 22 (40.74%) females in 75-79 years age group while there were 18 (37.5%) males and 17 (31.48%) females above 80 years of age (Table 1).

Tinetti et al found that 68% were females. Intrinsic causes for falls were more prevalent in people >70 years. Musculoskeletal causes and visual defect were common. Multiple aetiologies were also seen in many elderly.[3] In present study, out of 102 participants, there was history of fall in 12 (25%) males and 22 (40.74%) females. 3 (6.25%) males and 8 (14.81%) females had history of one fall, 4 (8.33%) males and 9 (16.66%) females had history of 3 falls while 5 (10.41%) males and 5 (9.25%) females had history of more than two falls. In fallens, 10 (83.33%) males and 17 (77.27%) females were above 80 years of age. Fall was associated with fracture in 4 (33.33%) males and 7 (31.81%) females (Table 2). Sulaiman et al found that out of 357 eldery, 47% were male, 46.5% were older than 70 years. 57% of the elderly gave a history of a fall. Prevalence of fall was higher in females than in males by 14%. Prevalence of these falls gradually increased with age up to the age of 90 years. 60-69 years (34%), 70-79 years (49%), 80-89 years (65.5%), and above 90 years (63%).[11]

Chacko et al found that among 655 rural elders, the prevalence of fall is 26%. Most of the falls occurred during morning hours (39.1%). Elderly aged above or equal to 80 years (OR=3.28) and dizziness (OR=3.27) were found to be significantly associated with fall.[12] Joshi et al conducted a cross-sectional survey of 200 subjects. 103 (51.5%) subjects had fallen. Fracture was reported in 21.3%, and other injuries occurred in 79.6%. Fractures among females (26.4%) were reported more frequently (16%). Fracture was seen more in urban subjects (29.4%) compared with rural subjects (13.4%).[13]

Pothiraj et al found the proportion of falls to be 24.98% (n=512). The mean age of faller's was 71.86±7.49 years. Falls were seen more among the older adults with advancing age (P=0.000). 49.41% of the respondents had sustained falls for more than one time in the past 1 year.[14] In present study, out of total 102 participants, diabetes was present in 25 (52.08%) males and 40 74.07%) females, hypertension was seen in 30 (62.5%) males and 23 (42.59%) females while coronary heart disease was present in 13 (27.08%) males and 8 (14.81%) females (Table 3).

Pothiraj et al found that 50.3% reported to be on medication. Among fallens, 62.30% were under medications. Participants who were under medications (58.3%) had >4 medications/day and 41.7% had <4. 35.44% were on antihypertensive and 31.23 were on antidiabetic drugs. Among nonfallers, only 46.26% were

on medication. 51.1% consumed >4 medication. Significant association was found with number of medications χ^2 (1n=1030)=4.653, P=0.031).[14]. In present study, out of total 102 participants, visual impairment was seen in 14 (29.16%) males and 13 (24.07%) females, hearing impairment was seen in 17 (35.41%) males and 12 (22.22%), dementia was seen in (14.58%) males and 8 (14.81%) females, depression in 12 (25%) males and 12 (22.22%) females and arthritis was seen in 21 (43.75%) males and 32 (59.25%) females (Table 4).

Titaporn et al found that 60.1% of participants had a diagnosed medical condition like hypertension, hyperlipidemia, diabetes mellitus, benign prostate hypertrophy, or heart disease. 66.0% used antihypertensive drugs, antihyperlipidemia drugs, and antihyperglycemic drugs.[15] He found that 73.9% reported no falls since age 60, with the rest acknowledging one or more falls. Of the 26.1% fallens, 21.1% reported falling one or two times since turning 60. Only about one in ten had fallen in the six months preceding the study.[15]

Titaporn et al found that hazardous home environment was more common than others. Physical weakness, medication side effects, and lack of assistive devices, improper footwear and losing one's balance due to being jostled, bumping into furniture, etc.) were the most commonly mentioned.[15]

Titaporn et al found that 65.1% fell outdoors than indoors (11.3%). He reported falls in both locations. 68.3% outdoor falls occurred in the area surrounding the house. Indoor falls were most common in frequently used areas like kitchen, bedroom, and living room.[15]

CONCLUSION

Prevalence of fall in senior citizens in our study was 25% in males and 40.74% in females. The major contributing factors for fall injuries were aging, visual impairment, previous history of fall, depression, and joint problem. Females had a higher risk of fall compared to males. Evaluation of the morbidity profile among elderly people, and the impact of chronic conditions on functional disability and psychological well-being should be done in senir citizens to prevent fall.

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ANNEXURE

Questionnaire.

Age
Education
Working or not
Muscle weakness or musculoskeletal problems or arthritis
History of fall or falls
Use of four or more prescription medications
Depression
Impairments in gait, balance
Urinary incontinence
Global cognitive impairment, dementia
Diabetes, hypertension
Pain syndromes
Vision or hearing impairment
Activities of daily living
H/o a violent blow
Sudden onset of paralysis as in stroke or an epileptic seizure
Syncope
Environmental hazards. These included poor illumination, equipment tubing, inappropriate footwear, pets, hard to reach items, floor surfaces that are uneven