Research Article

Risk status of falls: A study among the elderly residing in selected old-age homes, Bengaluru

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ABSTRACT

Background: The older adults living in old-age homes are increasing. Falls among older people are a major public health concern. Screening for risk status of falls among the elderly is crucial in preventing many problems among them. **Objectives:** The objectives of the study were to assess the risk status of falls among elderly population residing in old-age homes in field practice area of a tertiary care hospital, Bengaluru. **Materials and Methods:** A cross-sectional descriptive study conducted in the selected old-age homes. Data were collected by interview method using fall risk assessment tool part 1. Fall risk component was assessed and interpreted by scoring under low, medium, and high risk for falls. The elderly were also interviewed for a history of other comorbidities. Data were analyzed using SPSS. **Results:** Among the total 220 elderly population, 5% had high risk for falls and 24.5% had medium risk for falls. Among 127 (57.7%) who had comorbidities, 9 (81.9%) of them have high risk for falls and the association is highly significant. **Conclusion:** Falls are more common among females. Risk for falls was high among elderly population with comorbidity.

KEY WORDS: Falls; Risk Status; Elderly; Comorbidity; Old-Age Home

INTRODUCTION

As the second-most populous country in the world, India has 103 million people above 60 years of age, which comprise 8.6% of whole population.[1] This group of population faces diverse problems. The primary area of concern is the health with many psychological and medical issues.[2] Falls among the elderly are one of the issues and pose a serious risk to the well-being of the older adults.[3] Falls are treated as one of the "geriatric giants." Recurrent falls are significant cause of injuries and fatality in the elderly and are a record of poor physical and mental status.[2]

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The number of the elderly shifting to old-age homes is growing. With reduced family support and caretakers, higher number of geriatric population in India takes their own responsibility. Falls among older adults are a significant public health problem in terms of expenses of health services, morbidity, and mortality. Screening for risk status of falls among the elderly is crucial in preventing many problems among them. Relatively limited research been done in this regard. Hence, this study was conducted to screen for the risk status of falls among the elderly.

Objective

The objective of the study was to assess the risk status of falls among elderly population residing in old-age homes in field practice area of a tertiary care hospital, Bengaluru.

MATERIALS AND METHODS

A cross-sectional descriptive study was conducted in the urban field practice area of a tertiary care hospital, Bengaluru,

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for a period of 3 months (July–September 2016). All the old-age homes in the urban field practice area were enlisted. By simple random sampling, the old-age homes were selected. After taking the approval from the institutional ethical committee and the consent from the participants, all elderly persons from seven old-age homes were interviewed.

Sample Size

Considering the previous study by Ratnaprabha *et al.* among the elderly in a rural area of Karnataka, where the risk of falls was 31.45%,[4] with an allowable error of 20% using the formula $4pq/l^2$; the estimated sample size is 217. It is rounded off to 220.

The history of falls in the past 1 year and the risk of falls were collected using a pre-tested structured and validated questionnaire by interviewing the participants. All the older adults above the age group of 60 years residing in the old-age homes were interviewed using fall risk assessment tool (FRAT)[5] scale part 1. General information of subjects was collected after taking their informed consent. Approval from the institutional ethical committee was taken before the study. FRAT has three parts, part 1 is fall risk status, part 2 has risk factor checklist, and part 3 has action plan. Part 1 of the scale was considered for the present study which has four components:

1. Recent falls (Any past complaint of falls)
2. Medications (such as sedatives, anti-depressants, anti-Parkinson's, diuretics, anti-hypertensives, and hypnotics),
3. Psychological factors (depression, anxiety assessed using geriatric depression scale, and generalized anxiety disorder questionnaire-7, respectively),
4. Cognitive status (AMTS: Hodkinson Abbreviated Mental Test Score).

The participants scoring 5–11 were at low risk of falls, 12–15 = medium risk, and high risk = 16–20. Any history of other comorbidities such as hypertension, diabetes, osteoarthritis, stroke, incontinence, and vertigo were also considered. Blood pressure of the study participants was measured.

Data was collected and compiled in MS Excel sheet. Data was analyzed using SPSS software version 20.0. Chi-square test of significance was applied.

Table 1: Demographic details of the study population (*n*=220)

Variable	Frequency (%)
Gender	
Female	132 (60)
Male	88 (40)
Age (years)	
60–65	55 (25)
66–75	82 (37.3)
>75	83 (37.7)
Marital status	
Married	83 (37.9)
Divorced	24 (11)
Widowed	106 (48.4)
Unmarried	6 (2.7)
Education	
Literate	191 (86.82)
Illiterate	29 (13.18)

RESULTS

Out of 220 older adults who were interviewed, 132 (60%) were females and 88 (40%)were males [Table 1]. Falls were reported more among females 54 (40.9%) as compared to males 26 (29.5%). Table 2 shows 80 (36.4%) people reported a history of fall in past one year and 14 (6.4%) of them experienced recurrent falls in last one year. The risk status of falls was assessed and the mean score was found to be 9.38 ± 3.054 with a range of 5–17.In the study population, 5%

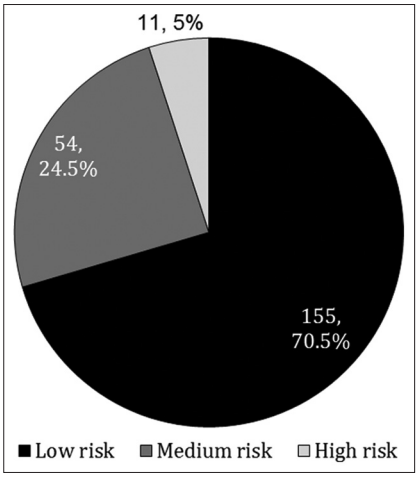

Figure 1: Risk status of falls among the study population (*n*=220)

Table 2: Distribution of history of falls in the study population (*n*=80)

History of falls	Sex		Total	Age			Total
	Females	Males		60–65 years	66–75 years	>75 years	
One fall	45 (83.3)	21 (80.77)	66 (82.5)	13 (81.25)	23 (82.14)	30 (83.3)	66 (82.5)
Recurrent falls	9 (16.7)	5 (19.23)	14 (17.5)	3 (18.75)	5 (17.86)	6 (16.7)	14 (17.5)
Total	54 (100)	26 (100)	80 (100)	16 (100)	28 (100)	36 (100)	80 (100)

*Figures in parenthesis indicate percentages

of them had high risk of fall ,while 155 (70.5%) and 53 (24.5%) of the people had low and medium risk for falls [Figure 1].Among study participants 127 (57.7%)of them had co-morbidities and 9 (81.9%) of them have high risk for falls which is highly significant(Chi Square = 14.061, *P* = 0.001) [Table 3].

DISCUSSION

In the present study among the 220 study participants 37.3% belonged to the age group of above 75 years. A history of recurrent falls was observed among 14 (17.5%) of the participants. One hundred and twenty-seven (57.7%) of the participants had comorbidities and hypertension seen in most, i.e., 42.72% of the participants.

Figure 1 shows the risk status of falls and 5% of them have high risk of fall and 24.5% of them have medium risk of fall [Figure 1]. In a similar study by Lotheti *et al*.[6] observed that risk status of fall was high among 2% and medium among 16% of the study participants. Sirohi *et al.* in their study conducted in Haryana[7] observed that the prevalence of fall risk among the elderly was 36.8% out of the study population of 496.7. It was 57.7% in another study by Alshammari *et al*.[8] Among 60–65 years, 16.36% have medium risk of fall, whereas 3.64% have high risk. About 32.54% have medium risk of fall among >75 years. Similar result was also found in a study done by Alshammari *et al*.[8] and Lotheti *et al*.[6]

Table 3: Association of falls risk with comorbidities *(n*=220)

Comorbidities	Risk status of falls			Total
	Low risk	Medium risk	High risk	
Present	77 (49.7)	41 (75.9)	9 (81.9)	127 (57.7)
Absent	78 (50.3)	13 (24.1)	2 (18.2)	93 (42.3)
Total	155 (100)	54 (100)	11 (100)	220 (100)

Chi-square=14.061, *P*≤0.001

Table 4: Age-wise distribution of risk status of falls (*n*=220)

Age (years)	Scoring			Total
	Low risk	Medium risk	High risk	
60–65	44 (80)	9 (16.36)	2 (3.64)	55 (100)
66–75	60 (73.15)	18 (21.95)	4 (4.8)	82 (100)
>75	51 (61.44)	27 (32.54)	5 (6.02)	83 (100)

*Figures in parenthesis indicate percentages

As the age increases, the risk of falls increases.[9,10-12] Delbaere *et al.* in Ghent University[10] observed the similar result which can be explained that deterioration in strength with increasing age. However, in the present study, it was observed that the prevalence of falls was low among oldest old [Table 4], which may be due to the minimal mobility itself among the oldest old. The association between the risk of falls and comorbidities (hypertension, diabetes, osteoarthritis, vertigo, and stroke) was found to be statistically significant; similar results were seen in a study done in Karnataka by Ratnaprabha *et al*.[4] The same study showed that 27.4% of population had high risk of falls compared to 5% in our study [Table 5]. In the present study, it is found that 36.4% of people had a history of falls in the past 1 year and 14 (6.4%) of them experienced recurrent falls in the past 1 year. Similar study conducted in an institution in Pondicherry reported 34.6% of the history of falls.[13] About 12.35% of the elderly in a community dwelling in Washington had a history of fall once in the past 1 year.[14] A study done by Suguna *et al.* observed that 76% of patients had fallen within 6 months and 24% of patients had fallen in the past 1 year.[15] A telephonic survey which was done in the USA among 1709 elderly, it was observed that 9.6% of them had a history of fall once in the past 3 months.[10]

The sample size in the present study is small which cannot be represented to the whole elderly population is one of the limitation of the study. However, higher response rates are one of the strengths of the present study.

CONCLUSION

The study concludes that falls are more common among females. Risk for falls was high among elderly population with comorbidity such as hypertension and osteoarthritis. An interdisciplinary approach to elderly population who are at risk is necessary to reduce the morbidities occurring out of

Table 5: Distribution of risk status of falls among the elderly with comorbidities (*n*=127)

Comorbidity	Low risk	Medium risk	High risk	Total
Hypertension	51 (46.4)	33 (44)	4 (19.04)	88 (42.72)
Diabetes mellitus	30 (27.4)	24 (32)	7 (33.4)	61 (29.62)
Osteoarthritis	12 (10.9)	5 (6.6)	4 (19.04)	21 (10.19)
Stroke	4 (3.5)	7 (9.3)	2 (9.48)	13 (6.32)
Vertigo	1 (0.9)	4 (5.4)	0 (0)	5 (2.42)
Cardiovascular diseases	12 (10.9)	2 (2.7)	4 (19.04)	18 (8.73)
Total	110 (100)	75 (100)	21 (100)	206 (100)

*Figures in parenthesis indicate percentages

falls. Geriatric friendly environmental conditions should be promoted.

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