

Original article

Prevalence and Correlates of Falls among Community-Dwelling Elderly of Guwahati City, Assam

¹Dr Anku Moni Saikia , ² Dr Ashok Kumar Das,³ Ms Anjana Moyee Saikia

¹Associate Professor, , Dept. of Community Medicine, Gauhati Medical College, Guwahati, Assam,

²Associate Professor, Dept of Surgery, FAA Medical College, Barpeta, Assam ,

³Statistician, Dept. of Community Medicine, Gauhati Medical College, Guwahati, Assam.

Corresponding author: Dr Anku Moni Saikia.

Abstract:

Falls in elderly are not only associated with injury, hospitalization or morbidity but also an important determining factor for independence, hence quality of life. Most of risk factors for falls are preventable. However, the issue is mostly underreported among the elders in absence of injuries. There is dearth of information on the prevalence of falls among elderly from the north east part of India.

Objectives: To study the prevalence and correlates of falls among community dwelling elderly.

Keywords: elderly, falls, early dementia questionnaire, Katz index

Introduction:

Falls among elderly people are common and are associated with increased morbidity, disability, social isolation, and a lower quality of life and with early entry into residential care in this group [1-2]. Falls are defined as inadvertently coming to rest on the ground, floor, or other lower level, excluding intentional change in position to rest [3]. Even non-injurious falls can have negative impacts such as loss of confidence and activity restriction [4]. Falls have been identified as one of the important geriatric giants. Most of these falls are associated with one or more identifiable risk factors and research has shown that attention to these risk factors can significantly reduce rates of falling [5]. Falls are underreported among elderly population. Most of the time, falls and instability have been considered as normal event due to ageing. Embarrassment and apprehension of enforced loss of independence could also be attributed to this underreporting. Falls lead to reduced levels of independence, poorer quality of life and high level of anxiety [6]. With simple interventions, the prevalence of falls in the community could be reduced. However, this issue is not getting due priority and

documented studies on this issue is not found from the north- eastern region of the country. The present study was conducted to assess the prevalence of falls and its correlates among community dwelling elderly.

Material and methods:

This community based cross sectional study was conducted from 1st June 2013 to 31st August'13. Elderly above the age of 60 years of both sexes and those who were willing to participate were included in the study. Informed consent was obtained from the elderly and also from the caregiver as and when necessary. Necessary approval from Institutional Ethics Committee was obtained. As there has been absolute dearth of data from this part of the country and wide range of variation of prevalence exists, the sample size was calculated considering P as 0.5 [7]. Applying the formula $4PQ/L^2$, allowable error as 10% of prevalence, the sample size was calculated as 400. From 31 municipality wards of Guwahati city, 10 wards were selected randomly and from each ward 40 elderly were interviewed. The first house in the ward was selected randomly. After that, door to door survey was conducted in the selected ward to identify the

residents aged 60 years and above. Definition of falls has been considered as per World Health Organization (WHO) and screened by using two questions: history of falls in the last 6 months and more than 2 falls in last 6 months to define recurrent falls. Seriously ill elderly, elderly with known or diagnosed neuropsychiatric illness having problems to comprehend the questions were excluded. Socio-demographic information, medication history, vision status was recorded in a pre-designed and pre-tested schedule. In taking medication history, type of drugs used was not considered, only number of drugs was considered. Katz Index [8] was used for Functional assessment. Timed Up and Go test was done to assess gait and balance. Inadequate vision has been defined as perceived difficulty in doing his/her day to day activities due to poor vision. Cognitive status was assessed by Early Dementia Questionnaire (EDQ). Early Dementia Questionnaire (EDQ) is more sensitive tool for detection of early dementia as compared to MMSE with a sensitivity of 79.2%, specificity of 52.7% and NPV of 93% [9]. While using EDQ, information was also obtained from an informant, usually the subject's next of kin. This tool was also translated to vernacular medium by one bilingual expert and again translated back to English by another

bilingual expert and one bilingual investigator compared the two for any discrepancy and accordingly modifications have been made. Score above 8 on EDQ has been considered as early cognitive decline or early dementia.

Results and observations:

In the present study, fall was reported by 19.5% of elderly, out of them, 52(66.66%) had recurrent falls. The elderly who had experienced falls in the last 6 months, 11.75% had history of fractures that includes minor cracks fractures of metatarsals and metacarpals to very major fractures like neck of femur .Most of the recurrent falls (71.1%) were reported by females. Majority (71.79%) of the falls occurred at home, only 22(28.21%) falls occurred outside. In the study population, majority of the elderly (81.68%) were in the young old group (60-74 years). Fall was seen to be more with advancing age and a significant association was found between age and prevalence of falls (p=0.0001). More than half (54.25%) of the study population were females and out of them, almost 24% reported falls in the last 6 months. A significant association was found between gender and falls (P=0.0142). Impairment in vision, functional status and gait, cognitive status were found to be significantly associated with prevalence of falls.

Table 1. Age wise distribution of falls

Age(In years)	Falls				Total	
	Yes	%	No	%		%
60-74	16(5.73)	20.51	263(94.27)	81.68	279(100)	69.75
75-84	51(49.51)	65.38	52(50.49)	16.15	103(100)	25.75
>85	11(61.11)	14.10	7(38.89)	2.17	18(100)	4.5
	78(19.5)	100	322(80.5)	100	400	100

Note- Figures in brackets indicate row wise percentage.

X²=112.4,P<0.0001

Table 2. Relationship between gender and falls

Gender	Falls				Total	
	Yes	%	No	%		%
Male	26(14.21)	33.33	157(85.79)	48.76	183(100)	45.75
Female	52(23.96)	66.67	165(76.04)	51.24	217(100)	54.25
	78(19.5)	100	322(80.5)	100	400	100

Note- Figures in brackets indicate row wise percentage.

$X^2=6.02$, $P=0.0142$

Table 3. Relationship between falls with certain variables

	Falls				Total		X^2, P
	Yes(n=78)	%	No(n=322)	%		%	
Vision							
Normal	17	21.79	125	38.82	142	35.5	7.948, P=0.0048
Impaired	61	78.21	197	61.18	258	64.5	
Functional Status							
Normal	67	85.90	301	93.48	368	92	4.903, P=0.0268
Impaired	11	14.10	21	6.52	32	8	
Number of Drugs taken							
0	2	2.56	12	3.73	14	3.5	8.346, P=0.0394
12	19	24.36	48	14.91	67	16.75	
3-4	32	41.03	185	57.45	217	54.25	
>4	25	32.05	77	25.91	102	25.5	
EDQ Dementia							
Yes	31	39.74	14	4.35	45	11.25	78.79, P<0.0001
No	47	60.26	308	95.65	355	88.75	
Gait Test							
Normal	15	19.23	212	65.84	227	56.75	55.572, P<0.0001
Impaired	63	80.77	110	34.16	173	43.25	

Note- Percentage indicate column wise percentage

Discussion:

This prevalence of falls, in the present study, is somewhat lower than reported in other studies done in India [10-15]. However, this is a matter of concern as

falls without any injuries in this age bracket is most likely to be ignored. Higher prevalence of recurrent falls among the fallers is a significant observation as they are more prone to future falls and subsequent impairment

without interventions. Higher female preponderance among recurrent fallers could be explained on the ground of characteristic physiological decline and social issues in the prevailing cultural context. The prevalence of falls in Indian older adults ranges from 14% to 53% in Indian older population [16]. Thakur and his Co-worker [17] in their study done in urban areas found a lower prevalence 7.8% which was not in conformity with the present finding. Low prevalence was also found in a hospital based study in India [18]. Considering the effect of falls on the quality of life, it is very much crucial to have a database for formulating strategies for effective interventions. The present finding of significant relationship of falls with advancing age was in conformity with other studies done across the globe [10, 11, 19-22]. There is a great scope of preventive strategies in elderly that helps to prevent the occurrence of falls. Identification of risk factors and its management are crucial in this regard.

Physiological and social factors put women at higher risk of falls. Women predominate in the present study and significant relationship of falls with gender was in consistent with other studies [11, 23]. On the contrary, no significant association was reported between gender and falls in another study [13].

Gait and balance impairment and functional limitation have been identified as significant risk factors for falls [5, 11]. Poor visual acuity, visual factors such as reduced visual field, impaired contrast sensitivity, and the presence of cataract may explain the association between visual impairment and falls [24]. Gait and balance and functional status could be improved or promoted through some lifestyle modifications in this age. Identification of modifiable risk factors and interventions at the earliest is crucial in this context.

Frank dementia or other neuropsychiatric cases could not be included inspite of their high susceptibility to falls.

Early dementia cases found to be positive on EDQ had a significant relationship with falls. Cognitive impairment is associated with an increased fall risk, but the method used to define cognitive impairment and the types of fall outcome are both important in quantifying risk. Executive function impairment, even subtle deficits in healthy community-dwelling older adults, was associated with an increased risk for any fall [25]. Cognitive impairment or dementia has been identified as an important risk factor for falling in many studies [23, 26-28]. Subjects with cognitive impairment, having functional limitations found independently associated with increased risk of falling among older adults [23].

Several types of drugs are associated with a significant risk of falls, the so-called 'fall risk increasing drugs [29]. However in the present study, only the number of drugs taken at a time was considered irrespective of the pharmacological type of medicines. In spite of that, a significant relationship was found between number of drugs taken and falls. Medications are often associated with an increased risk of falls and it is generally accepted that the risk of falls increases with the number of medications taken, with those taking four or more medications at greater risk of falling [30-31]

The major limitation of the study is recall bias and non-inclusion of elderly with critical illness and neuropsychiatric illnesses like known dementia. They are the more at risk of falls. Hence, the actual magnitude of the problem may be much bigger than the present finding. Different type of drugs taken by the elderly could not be considered.

Conclusion:

More in-depth studies with bigger sample size are required to address this issue. The finding may be valuable for effective policy formulation to prevent falls. Screening of falls and fall risk assessment need to be included as a routine practice in geriatric care.

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