



ORIGINAL RESEARCH ARTICLE

FALL RISK AMONG OLDER ADULTS RESIDING IN BHARATPUR, CHITWAN, NEPAL

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ABSTRACT

Background: Falls in older people is a common serious health problem that has profound impact on overall health and quality of life of older people. The aim of this study was to assess the fall risk among older adults.

Methods: The descriptive cross-sectional study was carried out among older adults residing in Bharatpur, Chitwan. A total of 98 older adults were selected by using simple random sampling technique. The data were collected by using structured interview schedule and fall risk was assessed by Timed Up and Go (TUG) test. Data were collected from 23rd June, 2019 to 7th July, 2019. Obtained data were analyzed using descriptive and inferential statistics.

Results: The study findings revealed that more than half (60.2%) of the older adults were from the age group of ≤ 79 years, male (63.3%) and almost half (50%) were illiterate. Nearly all (96.9%) older adults were living with their family however, 50% were undernourished (BMI- < 22.9). Majorities (66.3%) were suffering from chronic diseases and had been taking medicine. Majority of older adults reported vision problem (64.3%) and hearing problem (60.2%). However, only 8.2% reported history of fall within last 6-12 months. More than half (59.2%) of the older adults had high risk of fall and found significant association with age ($p=0.039$) and vision problem ($p=0.043$).

Conclusions: More than half of the older adults are in risk of falls. Therefore, more emphasis should be given in screening the older people for fall risk factors as preventive measures.



INTRODUCTION

Falls are a common and serious problem for aged people. Adults older than 65 years of age suffer the greatest number of fatal falls.¹ Approximately, 28 - 35% older people over 64 years of age and 32% - 42% older people of 70 years and above fall each year.² The frequency of falls increases with aging²⁻⁴ and number of chronic or co-morbidities including arthritis, depression, diabetes mellitus and osteoporosis.^{5,6} Environmental hazards play a significant role in occurrence of fall.⁶⁻⁸

Falls are a major threat to older adults' quality of life, causing decline in functional status, physical activities and social status as well.^{9,10} Fractures, contusions, abrasions, and lacerations are the physical consequences of falls.^{11,12} The cost of treatment is high in fall related injuries¹³ and causes a huge burden to family and also the society in terms of healthcare utilization and costs.¹⁴

Moreover, fall injury is the leading cause of premature death among people of 65 and older.⁸ In Nepal, 2.1 million people (8.1 % of the total population) are in age of 60 and above.¹⁵ A study of Nepal reported maximum number of falls occurred in the age group of 60 to 65 years.¹³ Studies showed that older

adult had medium to high risk of fall.^{16,17} Fall risk assessment is important to prevent injuries and reduce the cost of care. Furthermore, addressing the risk factors can reduce the rates of falling.¹⁴ This study aimed to assess the fall risk and risk factors of falls among older adult residing in the community.

METHODS

A descriptive, cross sectional study was conducted to assess the fall risks among older adults aged 70 and above residing in Bharatpur 10, Chitwan. The total population (N) was 242 and sample size was estimated based on 10% prevalence¹⁸ with 95% confidence interval and 5% permissive error. Total sample size was 98. Simple random sampling technique was used to select desired sample. Data were collected from 23rd June, 2019 to 7th July, 2019.

Ethical approval was obtained from CMC Institutional Review Committee (CMC-IRC). All participants were informed about the purpose of the study and informed consent was taken from each respondent prior to data collection. Data were collected by using structured interview schedule through face to face interview method for socio-demographic information and risk factors of falls. In addition, the fall risk was assessed by Timed Up and

Go (TUG)¹⁹ test in terms of balance and mobility ($r=0.99\%$). The level of fall risk was measured by calculating the total time of respondents according to their age obtained from TUG test and classified into two categories (high risk and no risk). For high risk, time more than 10.2 seconds for age group 70-79 and 12.7 for age group 80-99 years to complete TUG test and No fall risk was categorized as time less than 10.2 seconds for age group 70-79 and 12.7 for age group 80-99 years to complete TUG test. Older adults who were unwilling to participate and unable to speak or severely ill, bed ridden were excluded from the study.

The collected data were coded and entered into IBM SPSS for windows version 20. Descriptive statistics such as frequency distribution, percentage, mean, standard deviation, median, and interquartile range were computed to describe socio-demographic characteristics and risk factors. Chi-square test was used to measure the association between level of fall risk and selected variables.

RESULTS

Among 98 respondents, more than half (60.2%) of the respondents were age group of ≤ 79 years, majority were male (63.3%) and half (50%) were illiterate. Very few (23.5%) older adults were working currently. Among them, 18.3% were work as a homemaker and only 5.2% were work as a farmer and business. Almost all (96.9%) respondents were living with their family (Table 1).

Table 1: Respondents' socio-demographic characteristics

n=98

Variables	Frequency (%)
Age group	
≤ 79 years	59 (60.2)
≥ 80 years	39 (39.8)
<i>Median =77.5, IQR (Q3-Q1) =82-73, Min=70, Max:99</i>	
Sex	
Male	62 (63.3)
Female	36 (36.7)
Education status	
Illiterate	49 (50)
General literate	30 (30.7)
Basic level	10 (10.2)
Secondary level	5 (5.1)
Bachelor and above	4 (4)
Working currently	
Yes	23 (23.5)
No	75 (76.5)
Living with family	
Yes	95 (96.9)
No	3 (3.1)

Table 2 depicts that only 8.2% of older adults reported that they had history of falls within last 12 months and majorities (66.3%) had reported history of chronic disease and had been

taking medicines. Regarding chronic diseases, 26.5% were suffering from hypertension, diabetes (22.5%), asthma (7.1%) and only 5.1% were suffering from arthritis and others (skin allergies, chronic gastritis and renal stone) respectively. Similarly, half (50%) of the older adults were undernourished (BMI < 22.9) (not shown in table). Likewise, majorities were reported vision problem (64.3%) and hearing problem (60.2%), whereas 17.3% were suffering from urinary problem. Less than half (48%) of older adults had uses assistive devices and more than half (58.2%) had habit of exercises such as physical exercise, yoga and meditation (Table 2).

Table 2: Respondents' fall risk factors

n=98

Fall risk factors	Frequency (%)
History of falls within 12 months	8 (8.2)
History of chronic disease	65 (66.3)
Taking medicine currently	65 (66.3)
Vision problem	63 (64.3)
Hearing problem	59 (60.2)
Urinary problem	17 (17.3)
Use of assistive devices	47 (48)
Exercise habit	57 (58.2)

More than half (59.2%) of the older adults had high risk of fall and 40.8% had no risk of fall (Table 3).

Table 3: Respondents' level of fall risk

n=98

Age in years	Level of fall risk	
	High risk	No risk
≤ 79 years	30 (50.8%)	29 (49.2)
≥ 80 years	28 (71.8%)	11 (28.2)
Total	58 (59.2%)	40 (40.8%)

The level of fall risk was statistically significant with age ($p=0.039$) and vision problem ($p=0.043$). Whereas other variables sex, current occupation, history of falls, history of chronic diseases, number of medicines taking, hearing and urinary problems were not associated with level of fall risk (Table 4).

DISCUSSION

Fall risk is high among older adults. More than half of the older adults were male and almost all were living with their family. However, half of older adults were undernourished and more than half were in risk of fall. Increasing age and vision problem are the factors that influence the risk of fall.

The finding of this study revealed that more than half (59.2%) of the older adult had high risk of fall. However, a study conducted in India showed only 20% of older adults had medium to high risk of falls.^{16,17} Similarly, a study of Malaysia showed only 13.3% of institutionalized elderly had moderate to high risk of falls.²⁰ In our study, only 8.2% of older adults reported history of falls within last 12 months and found no association between the level of fall risk and history of fall. This finding is consistent with the finding of study done in Nepal

Table 4: Association between respondents' level of fall risk with selected variables

Variables	Level of fall risk		χ^2	p-value
	No risk	High risk		
Age in group				
≤79 years	29 (49.2)	30 (50.8)	4.265	0.039
≥80 years	11 (28.2)	28 (71.8)		
Sex				
Male	23 (37.1)	39 (62.9)	0.967	0.326
Female	17 (47.2)	19 (52.8)		
Current occupation				
Yes	13(56.5)	10(43.5)	3.069	0.080
No	27(36.0)	48(64.0)		
History of fall within 12 months				
Yes	3(37.5)	5(62.5)	1.136	1.00
No	37(41.1)	53(58.9)		
History of chronic disease				
Yes	27(41.5)	38(58.5)	0.042	0.838
No	13(39.4)	20(60.6)		
Number of medicines taking				
Taking one medicine	16(43.2)	21(56.8)	0.721	0.603
Taking multiple medicines	8(36.4)	14(53.6)		
Vision problem				
Yes	21(33.3)	42(66.7)	4.089	0.043
No	19(54.3)	16(45.7)		
Hearing problem				
Yes	13(33.3)	26(66.7)	1.502	0.220
No	27(45.8)	32(54.2)		
Urinary problem				
Yes	9(52.9)	8(47.1)	1.252	0.262
No	31(38.3)	50(61.7)		

Significance level at <0.05

and South India, where 13% participants reported a fall in the past.^{13,18} However, a study conducted in United Arab Emirates showed that about half of the respondents had a history of fall in the past two years⁴ and found significant association.^{7, 16}

Similarly, present study found that the level of fall risk is statistically significant with age and vision problem ($p < 0.05$). Similar findings were found in the studies conducted in United State Emirates⁴, United State⁹, Saudi Arabia⁷, Brazil¹² and India^{18,21} which showed that age is statistically significant. Likewise, the studies showed level of fall risk was statistically significant with vision problem.^{16,21,22}

Moreover, in present study, the level of fall risk was not significant with other variables such as sex, chronic diseases, urinary problems, use of assistive devices and taking number of medication ($p > 0.05$). However, other studies found that fall risks was significantly associated with sex^{4,11,18,23} and chronic diseases.²⁴ Study of New England showed significant association between level of fall risk and urinary problem.²⁵ In addition, a study of

United Arab Emirates showed association between fall risk and gender, use of assistive device and number of taking medication daily.⁴ These discrepancies in the findings might be the difference in setting, sample size and health care facilities etc.

There were some limitations in our study. First, this study was conducted in small sample size and single setting so findings could not be generalized. Second, data were collected at one point of time so, unable to determine cause and effects of falls and its risk factors. Third, screening for functional status was not done. Other possible risk factors such as housing conditions could be included in future research to allow a more holistic assessment of risk factors associated with falls. Still, the findings of the study may helpful to take appropriate action to prevent fall risk among older adults.

CONCLUSION

The risk of falls is high among older adults. Majority of older adults have vision and hearing problems and nearly half were

using assistive devices. The risk of falls is high with advancing age and those who have impairment in vision. Therefore, regular fall risk assessment is important for the vulnerable groups to prevent fall injuries and reduce the cost of care.

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CONFLICT OF INTEREST: None

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