PREVALENCE OF FALL AND SOME FACTORS ASSOCIATED WITH FALLS IN OLDER PEOPLE WITH DEMENTIA

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ABSTRACT

Background: *Falls are common in people with dementia. Examining the fall rate and the multiple factors is necessary to inform fall-risk screening, caregiver education and support, and prevention strategies for this high-risk population of older adults.* ***Aim:*** *The aim of the study was to assess the prevalence of fall and identify some factors associated with falls in older people with dementia.* ***Methods:*** *A cross-sectional study was conducted on outpatients with dementia aged ≥ 60 years old. Dementia was diagnosed by neuropsychiatrists following DSM-5 criteria.* ***Results:*** *A total of 87 participants was recruited in the study (mean age: 76.84±8.38 years; female: 65.52%). 26 (29.89%) participants experienced a fall at least once in the previous year. 11 participants (12.65%) had two or more falls. Falls in older adults with dementia were associated with gender (female) and polypharmacy (p<0.05).* ***Conclusion:*** *The prevalence of falls among people with dementia was quite high, especially in female and participants with comorbidities. This highlights the need for effective fall preventions that target people with dementia.*

Keywords*: Fall, dementia, risk factors*

1. INTRODUCTION

Falls are common in people over the age of 65, with an increase in prevalence in people with dementia[6]. The annual incidence of falls in this patient group is about 70–80%, at least twice the incidence of falls in cognitively normal older people[2]. Dementia can increase falls rate by impairing judgment, gait, visual-spatial perception, and the ability to recognize.

Previous studies showed that 65.7% of participants with dementia had at least one fell during 12 months[3]. Sharma (2018) had shown that 48.8% of first fell were accompanied by a fracture. The falls are the result of the interaction between the factors of life, medical care, the behavior of the subject and the environment. Many risk factors can be changed or modified to help prevent falls. They include: history of falls; gait disorder; dizziness and vertigo; confusion; muscle weakness; vitamin D deficiency; environment-related; vision problems; foot pain or poor footwear; use of medicines (such as tranquilizers, sedatives, or antidepressants); even some over-the-counter medicines can affect balance and how steady you are on your feet; medical history (such as postural hypotension, Parkinson, cardiovascular disease, diabetes)[4]

Examining the fall rate and the multiple factors is necessary to inform fall-risk screening, caregiver education and support, and prevention strategies for this high-risk population of older adults. Therefore, this study was conducted to assess the prevalence of fall and identify some factors associated with falls in older people with dementia

2. SUBJECTS AND METHODS

2.1. Study design

The cross-sectional study

2.2. Study subject

Patients who are 60 years old and over have been diagnosed with dementia according to DSM V criteria[5] by the

neurologist at the National Geriatrics Hospital

Inclusion criteria: participants aged 60 years old and over, exam and treatment at National Geriatrics Hospital, have a caregiver who either lives with the participant or visits for at least four hours per week.

*Exclusion criteria: a*cute and malignant diseases (advanced cancers, end-stage chronic diseases, acute myocardial infarction, stroke);; clinical evidence of schizophrenia, severe depression, psychiatric or bipolar disorder (according to DSM-IV TR criteria); alcoholism or substance dependence (according to DSM-V criteria), currently, or within the past 2 years; severe loss of vision, hearing or communicative ability (according to the interRAI Community Health Assessment); participant or caregiver unwilling to participate in the study

2.3. Sample size.

This is a cross-sectional study. The sample size was calculated following the formula:

$$n = Z^2_{(1-\alpha)}.\frac{p.(1-p)}{d^2}$$

- n: the smallest sample to study have significance

- $Z_{(1-\alpha)}$ =1.96 with 95% confidence intervals

- p=27.6% the rate falls among dementia patients in the past study[6].

- d=0.1 is random error

Thus, the study's sample size was calculated to be at least 77 participants, and with an allowable margin of error of 10%, the required sample size was determined to be at least 85 participants.

2.4. Location.

The National Geriatric Hospital.

2.5. Time.

The study was conducted from July to December in 2021.

Variables:

- Demographic characteristics: gender, age, educational level, living status

Fall characteristic: falls within the last 12 months, number of falls in the last 12 months, falls location, falls injury. Fall characteristic was obtained through interview the caregiver.

Dementia: was diagnosed by neuropsychiatrists following DSM-5 criteria.

The type of dementia include: vascular, Alzheimer, Mix and Others

The factors associated with falls: age (60-69, 70-79, ≥80), gender, living status, polypharmacy (the concurrent use of 5 or more than 5 medications at the same time), comorbidities (the co-occurence of more than one diseases in the same individual)

2.6. Data analysis

The process of data coding, entry was done by using Redcap software and data analysis was done by SPSS software version 22. Descriptive statistics were adopted to examine characteristics data: frequency, percent, mean. Statistical significance was defined as any p-value less than 0.05.

Ethical consideration

Ethical approval has been performed in accordance with the Declaration of Helsinki and have been approved by the Hanoi Medical university (IRB00003121) on December 31, 2020

3. RESULTS

Table 1. Demographics characteristic (N=87)

Variables		**Numbers of participants (n)**	**Percentage (%)**
Age Mean ±SD: 76.84±8.38	60-69	18	20.69
	70-79	36	41.38
	≥ 80	33	37.93
Gender	Male	30	34.48
	Female	57	65.52
Living status	Family	78	89.69
	With caregivers	3	3.45
	Alone	6	6.86
Dementia type	Vascular	13	14.94
	Alzheimer	46	52.88
	Mix	18	20.69
	Others	10	11.49

In the total 87 participants, female subjects accounted for 65.52%, higher than the male subjects accounted for 34.48%. The ratio of female/male is 1.9. The age of sample was ranged from 60 to 96 with the mean age was 76.84±8.38 years old. The greatest distribution was generated by people aged from 70 to 79, with percentage of 41.38%. There was 89.69% of participants lived with their family; 3.45% older people lived with caregivers and 6,86% older people lived alone. Of the 87 participants, a high percentage of dementia were Alzheimer with 52.88%; followed by mix dementia with 20.69%, vascular dementia with 14.94% and the other with 11.49% respectively.

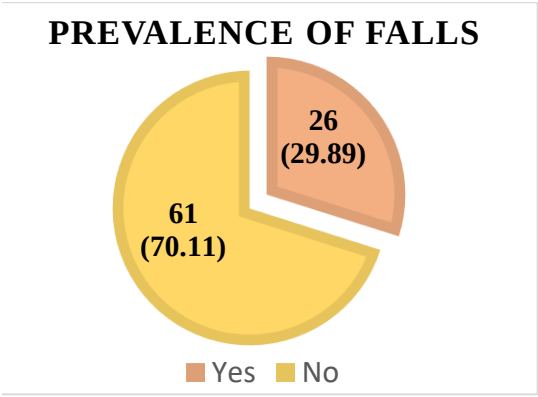

Figure 1. Prevalence falls (N=87)

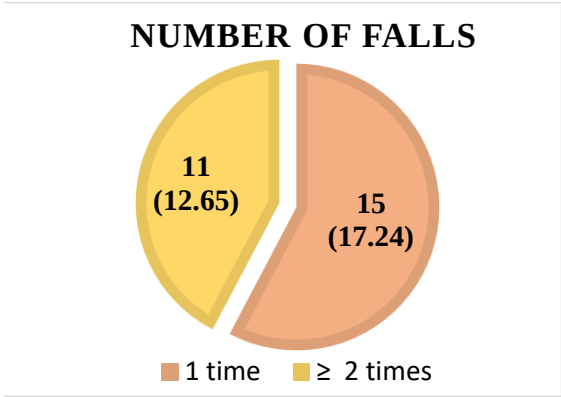

Figure 2. Number of falls (N=87)

Of the 87 total participants, 26 (29.89%) participants experienced a fall at least once in the previous year. Firgue 2 showed the number of falls of the participant in the previous 12 months. 11 participants (12.65%) had two or more falls.

Table 2. Characteristics of falls in older participants (N=87)

Variable		Numbers (n)	Percentage (%)
Falls location	In the bedroom	14	41.17
	Bathroom/ toilet	9	26.47
	Stairs	3	8.82
	Floor or outside the house	6	17.65
	The other	2	5.88
Falls injury	No injury	11	40.74
	Mild injury	10	37.04
	Fracture bone	4	14.81
	Hospitalization	2	7.41

Table 2 showed the characteristics of falls among the participants. The majority of falls occurred at home (41.17%). Moreover, a high percentage of falls were caused by a losing balance, followed by slippery floor and as a consequence of dizziness. Regarding the consequences of falls, the majority were no injury or mild injury and hospitalization rate was only 7.41%.

Table 3. Assocaition between demographic and falls risk (N=87)

Variable		Falls		p
		Yes (n=26)	No (n=61)	
Gender	Male	5 (19.23%)	25 (40.98%)	0.03
	Female	21 (80.77%)	36 (59.02%)	
Age	60-69	4 (15.38%)	14 (22.95%)	0.12
	70-79	10 (38.46%)	26 (42.62%)	
	≥ 80	12 (46.16%)	21 (34.43%)	
Living area	Urban	20 (76.92%)	47 (77.05%)	0.05
	Rural	6 (23.08%)	14 (22.95%)	
Living status	Family	22 (84.62%)	56 (91.81%)	0.15
	The other	4 (15.38%)	5 (8.19%)	
	No	24 (92.31%)	50 (81.97%)	
Polypharmacy	Yes	14 (53.85%)	29 (47.54%)	<0.01
	No	12 (46.15%)	32 (52.46%)	
Comorbidities	Yes	14 (53.85 %)	18 (29.51%)	0.069
	No	12 (46.15%)	43 (70.49%)	

There was an association between gender and fall, in which the prevalence of falls in female was higher than in male (p=0.03). There was an association between polypharmacy and fall. In which, people who with polypharmacy had the prevalence of falls higher than those without polypharmacy (<0.01).

DISCUSSION

The average age of participants in this study was 76.84 years old (SD=8.38). It was similarly found in the previous research in Japan with the average age of participants was 77.5 years (SD=8.1) and research in Tawai with mean age 77.3 ± 9.0 years[7].

The prevalence of falls in older patients with dementia was 29.89% (single fall 17.24% and multiple falls 12.65%), which was similar to the result

of Asada et al. conducted in community-dwelling from Yamanashi (Japan)[7]. However, the prevalence of falls in our study was lower than the study of Allen in the UK outpatients (65.7% of participants with dementia had at least one fall during 12 months)[3]. Malaysia's research has shown that 65% of participants fell one or more times in the follow-up year, with 43% reporting multiple falls[8]. The differences could be due to differences in the sample size, culture and medical care conditions across countries.

We observed that the majority of falls occurred in the bedroom (41.17%). This result was in line with the results of the previous study: the majority of falls occurred at the bedside while they were getting up from their beds (72.2%)[9]. However, another research found that the bathroom was the place where participants fell the most. The bathroom was found to be a hazardous space carrying risks of falls, such as a slippery floor, poor lighting and a shortage of handrails and non-slip mats. Imbalance, dizziness, slipping were frequent causes of falls. This is also the main reason pointed out from previous research[93–95]. The fracture rate in our research was higher than in the research of Van Doorn, which showed the fracture rate was 2.8% [10].

There was a significant difference between gender in fall risk ($p<0.05$). It was the similar found in Malaysia's research, had significant differences were found between males and females in falls rate. The studies indicated that the fall rate in females was higher than in males. A finding in Maryland's research reported that female elderly people had fallen risk higher compared to male counterparts[10].

There was a significant difference between polypharmacy in fall rate. It was consistent with the research in the UK on the association between falls and polypharmacy (4 and over) in people 60 and over[11].

CONCLUSION

The prevalence of falls among people with dementia was quite high, especially in female and participants with comorbidities. This highlights the need for effective fall preventions that target people with dementia.

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TỶ LỆ NGÃ VÀ MỘT SỐ YẾU TỐ LIÊN QUAN TRÊN NGƯỜI CAO TUỔI CÓ SA SÚT TRÍ TUỆ

TÓM TẮT

Đặt vấn đề: *Ngã thường gặp ở người có sa sút trí tuệ. Việc xem xét tỷ lệ té ngã và các yếu tố liên quan là cần thiết để cung cấp thông tin sàng lọc nguy cơ ngã, giáo dục và hỗ trợ người chăm sóc cũng như các chiến lược phòng ngừa cho nhóm người cao tuổi có nguy cơ cao này.* ***Mục tiêu:*** *Mục tiêu của nghiên cứu là đánh giá tỷ lệ ngã và xác định một số yếu tố liên quan đến ngã ở người cao tuổi có sa sút trí tuệ.* ***Phương pháp nghiên cứu:*** *Nghiên cứu cắt ngang được thực hiện trên bệnh nhân ngoại trú có sa sút trí tuệ ở độ tuổi ≥ 60. Sa sút trí tuệ được chẩn đoán bởi các bác sĩ tâm thần kinh theo tiêu chuẩn DSM-5.* ***Kết quả:*** *Tổng cộng có 87 người tham gia được tuyển dụng trong nghiên cứu (tuổi trung bình: 76,84 ± 8,38 tuổi; nữ: 65,52%). 26 người tham gia (29,89%) đã bị ngã ít nhất một lần trong năm trước. 11 người tham gia (12,65%) bị ngã từ hai lần trở lên. Ngã ở người cao tuổi có sa sút trí tuệ có liên quan đến giới tính (nữ) và việc sử dụng nhiều thuốc (p<0,05).* ***Kết luận:*** *Tỷ lệ ngã ở người cao tuổi có sa sút trí tuệ khá cao, đặc biệt là ở phụ nữ và những người có đa bệnh lý. Điều này nhấn mạnh sự cần thiết của các biện pháp ngăn ngừa ngã hiệu quả trên người cao tuổi có sa sút trí tuệ.*

Từ khóa: *Ngã, sa sút trí tuệ, yếu tố nguy cơ*