

PREVALENCE AND DETERMINANTS OF FALL AMONG ELDERLY RESIDENTS IN SENIOR HOUSES IN BAGHDAD

^{*1}Saveem Omran Jasim, ²Dr. Muna Atalla Khaleefah Ali and ³Dr. Tariq Jassim Mohammed

¹Board Community Medicine, Al Karkh General Hospital, Baghdad, Iraq.

²FICMS/Community Medicine, Consultant, Director of Non Communicable Diseases (NCD) Prevention and Control Department General Directorate of Public Health / MHO. Baghdad, Iraq.

³DRMR Specialist of Rheumatology, AL Kharkh General Hospital/ MOH. Baghdad, Iraq.

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*Corresponding Author: Saveem Omran Jasim

Board Community Medicine, Al Karkh General Hospital, Baghdad, Iraq.

ABSTRACT

Introduction: Falls and their causes in senior housing are a major public health issue. 30% of older people fall each year, rising to 50% for those over 80. The study's goal is to assess and the prevalence of fall among Elderly at risk in senior houses in Baghdad and identify their perceptions and the underlying determinants so as to reduce the risk of falls and consequent injury **Method:** A cross-sectional study analyzed 123 elderly participants aged 60+ from two nursing homes, focusing on their history of falls in the past 12 months. Data included personal information, daily activity, medication, and chronic diseases. For those with a history of falls, further details such as care setting, consequences, and location were collected. **Results:** most elderly (83.74%) have no history of fall while (16.26%) of them have history of fall. The study identified significant associations between gender, daily activity dependency, and aid use with fall history among elderly participants. Female gender, dependent daily activity, and aid use were linked to a higher likelihood of fall. No significant associations were found with age, marital status, living status, education level, and drug use. Moreover, the majority of elderly without chronic diseases had no fall history. **Conclusion:** Fall risk in the elderly is affected by factors like daily activity levels, gender, aid usage, and presence of chronic diseases. Reducing fall risks involves encouraging physical activity, promoting independence, and managing chronic conditions. A comprehensive approach to fall prevention, addressing both indoor and outdoor environments, is crucial.

KEYWORDS: Moreover, the majority of elderly without chronic diseases had no fall history.

INTRODUCTION

The prevalence of falls and its determinants among elderly living in senior houses is a significant public health concern. Research has indicated that approximately 30% of elderly experience at least one fall annually, with this rate increasing to 50% for those aged 80 and above.^[1] The world health organization defines a fall as "an event which results in a person coming to rest inadvertently on the ground, floor, or other lower level".^[2] Falls among elderly can have a variety of negative consequences, including disability, loss of independence, decreased daily functioning, increased mortality, and fear of fall.^[3-5] In most developed countries, old age is associated with an increased risk of death. Age, comorbidities, a lack of physical exercise, and urine incontinence are among the risk factors for

falls among senior people that have been described in the literature.^[2, 6] Age, gender, and race are risk factors that cannot be changed. Although obesity seems to be linked with a higher likelihood of falling, having a body mass index (BMI) of 40 kg/m² could potentially lower the risk of injuries resulting from falls, as mobility restrictions may be present.^[7] Comorbidities like hypertension (HTN) and diabetes mellitus (DM) also increase the risk of fall. In contrast, modifiable factors include polypharmacy, excessive alcohol consumption, lack of exercise, and environmental risks like poor interior design, insufficient lighting, and uneven flooring or surfaces. Several studies from throughout the globe have investigated geriatric fall risk. The annual prevalence of falls in the USA is 22%.^[8] Other studies from other countries, such as Ecuador, Japan, Ethiopia, India, and the UK, have estimated the prevalence of falls each year

to be 16.5-37.4%.^[9,10] In Canada, a recent study revealed that the prevalence of falls in the past year was 34.5%, while the rate of seeking medical attention for falls was 20.2% and the fear of fall was 38.8%.^[11] Other researchers have reported that 26.9% and 43.3% and 26%. A study conducted in Saudi Arabia investigated the prevalence of falls among older adults. The study found that the prevalence of falls was around 27.4%. Other studies might report slightly different percentages, but these variations could be due to different methodologies or population samples.^[12] A study in the United Arab Emirates (UAE) revealed that roughly 50% of elderly participants had experienced a fall incident in the preceding two years, with females and those aged 70 years more likely to fall than their male and younger counterparts, respectively. Estimating the burden and risk factors of falls among older people is a vital first step in preventing this problem because, like other regions of the world, the Middle East is undergoing a demographic transition that is increasing the proportion of the elderly in the population.^[13] However, there appears to be a wide variation in the burden of falls because of differences in environmental and population factors.

The aim of this study is to assess and prevalence of fall among elderly in senior houses in Baghdad, to define their perception to fall and to identify the underlying determinants so that health care providers and careers may provide preventive measures to reduce the risk of fall and related injury.

METHOD

A cross sectional study was conducted in two Al-Rashad nursing home and Al-Suleikh nursing home in Baghdad.

Data was collected from December 2022 through March 2023. All elderly aging 60 years and more accept to participate in the study were included. Those with cognitive impairment were excluded. Data was collected on socio demographic criteria (age, gender, Marital state, Education state), Daily activity was assessed utilizing modified BARTHEL SCALE SCORING (1-5 score is dependent while 6 score is independent), Living status assessed as WHO EPIDEMIOLOGY OF FALL, No. of drugs used (monotherapy or polytherapy), Frequency of fall, history of Chronic diseases. If the subject had have history of fall, further information was collected on Place of care, Consequence of fall, Time of fall, using aid, Place of fall.^[14-16] Statistical analysis was done using SPSS 22, frequency and percentage used for categorical data, mean, median and SD for continuous data. Chi-square used for assessed association between variables. P-value less or equal to 0.05 was consider significant.

RESULTS

A total of 123 residents participated in the study. with a mean age of 69.8 ± 7.7 years and more than half (58.5%) belonged to age category of 60-69 years. More than three fourth (77.2%) were men. More than one third (36.6) were married a similar proportion (37.4%) were divorced Nearly 10% had higher education. The vast majority (had independent daily activity score (.95.9%) and elderly lived with their family (95.1%) (table 1), As shown in table 1.

Table 1: distribution of elderly according to sociodemographic features.

variables		frequency	Percentage
Age groups (years)	60-69	72	58.5
	70-79	36	29.3
	80-89	13	10.6
	>90	2	1.6
Gender	Females	28	22.8
	Males	95	77.2
	Single	18	14.6
Marital state	MARRIED	45	36.6
	DIVORCED	46	37.4
	WIDOW	14	11.4
Education state	ILLITRATE	28	22.7
	PRIMARY	44	35.8
	Secondary	39	31.7
	Higher	12	9.8
Daily activity	Dependent	5	4.1
	Independent	118	95.9
Living status	With partner	6	4.9
	WITH	117	95.1

One fourth of the residents used walking aids, mostly cane. five residents were inactive and 3 used wheeled

chair. 56.9% of elderly have no previous history of drug use, 52% of elderly have past medical history of chronic

diseases, 75.6% of elderly no used any aid. As shown in table 2.

Table 2: distribution of elderly according to chronic diseases and disability.

variables		frequency	Percentage
No. of drugs used	<i>No</i>	70	56.9
	<i>Monotherapy (1-2 drug)</i>	47	38.2
	<i>Polytherapy (≥ 3 drugs)</i>	6	4.9
Chronic disease	<i>No</i>	59	48.0
	<i>Yes</i>	64	52.0
Using aid	Yes	30	24.4
	Nothing	93	75.6

As shown in fig 1; most of elderly (84%) had no history of fall during the previous 12 months. most of the rest reported 1-2 incidents of fall.

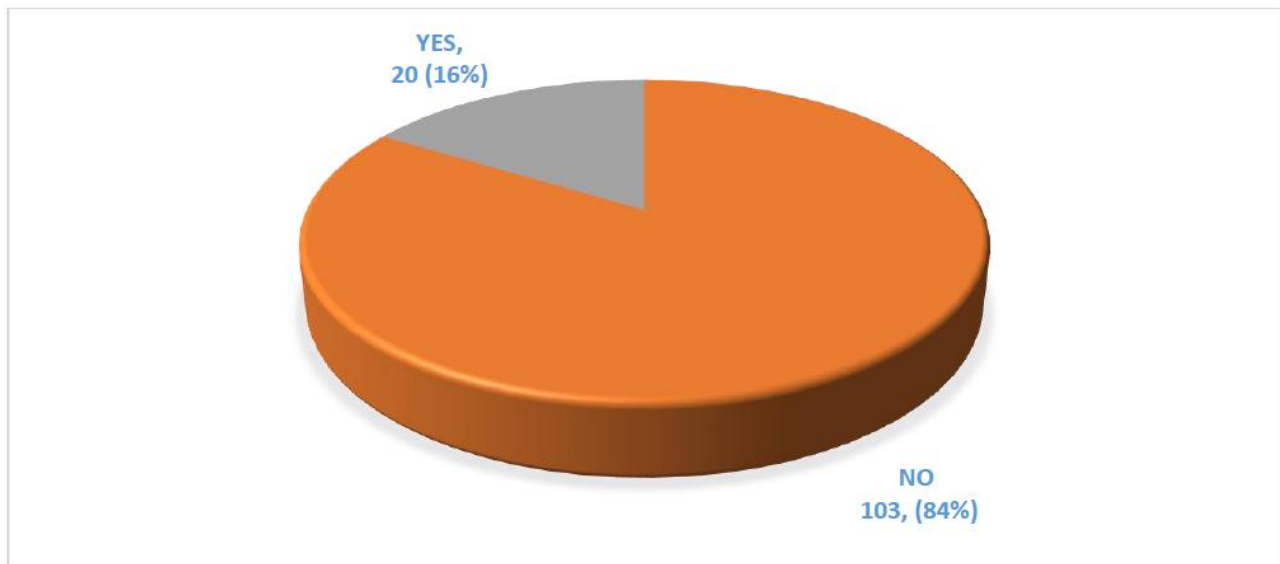


Fig 1: history of fall among elderly.

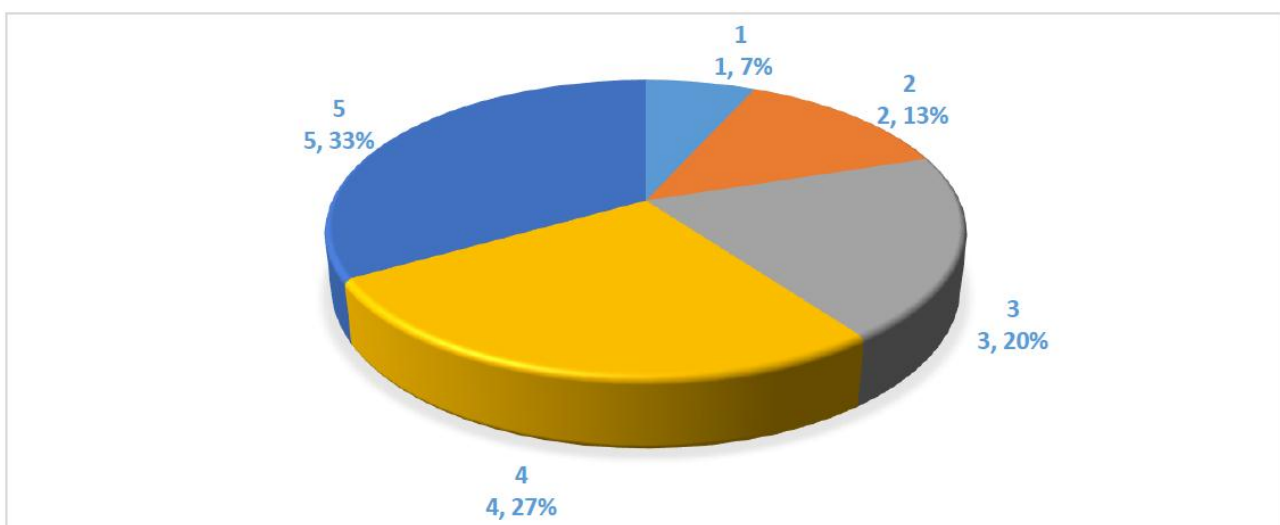


Fig 2: Frequency of fall.

Chronic Diseases and Disability

More than half (52%) of elderly had chronic disease. As shown in fig 2; 24 19.5% were hypertensive, 9% diabetic, and 13.8% had both hypertension and diabetes.

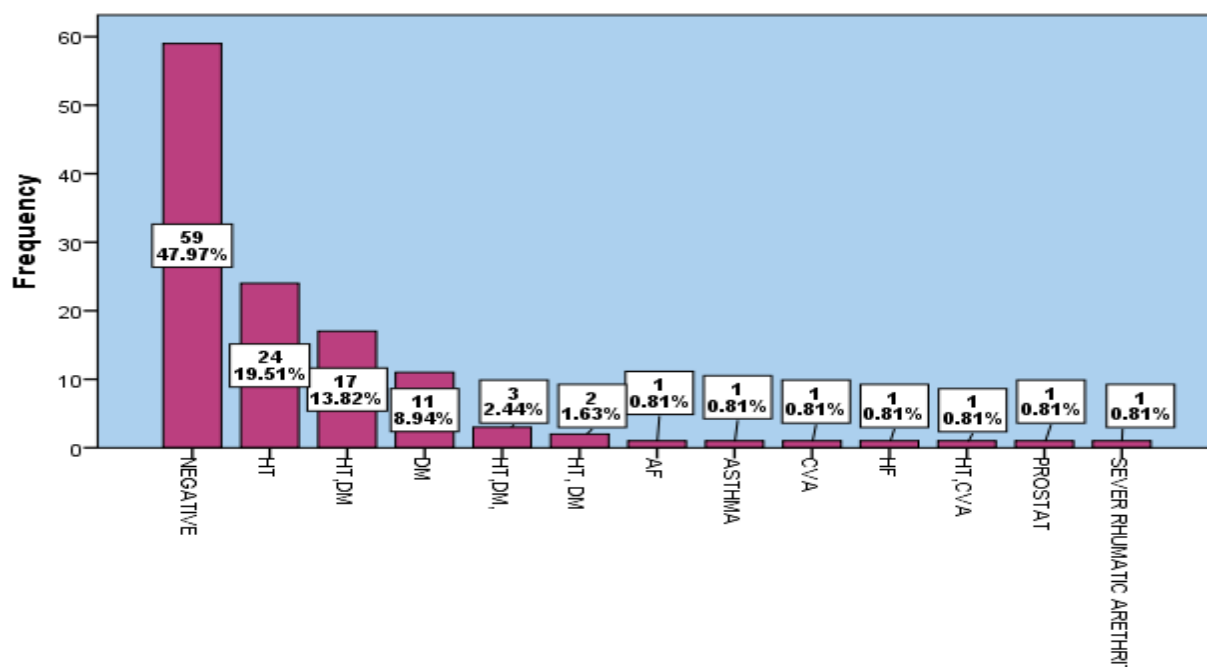


Fig 3: Distribution of elderly according to past medical history.

Nearly half of the residents were on medication, only 5% had poly therapy. As shown in table 3; 6 elderly need hospital caring after fall, 3 elderly need hospital admission, 70% of the fall incidents occurred at daytime,

History of Fall

Regarding the site of fall nearly two thirds (65%) occurred indoor.

Table 3: distribution of elderly according to fall situation (elderly have fall only).

Variables		frequency	% from fall only
Place of caring	hospitalized	6	30
	Not hospitalized	14	70
Consequence of fall	FASE & LIP SUTURING	1	6
	FOOT ABRASION	1	6
	HAND ABRASION & fracture	1	6
	HOSPITAL admission	3	18
	LEG ABRASION	1	6
	NEGATIVE	9	58
Time of fall	Whole day	5	25
	DAYTIME	14	75
	NIGHT	1	5
Place of fall	OUTDOOR STREET	7	35
	INDOOR	13	65

Results showed that the relation between age and fall was not significant. History of falls was highest among the age category of 60-69 yr. shown in table 3, there is significant association between gender and fall history, fall incidents was higher among women as compared to men (32.1% versus 11.6 respectively). The percentage of fall was significantly higher among elderly with dependent daily activity A significant association was also detected with the use of aid. Also, the rate of fall was significantly higher among those with chronic

diseases. on the other hand no significant association was detected with marital state, living status and education level, drugs used) ory, as shown in table 4.

Table 4: Association between fall history and sociodemographic features.

variables		Fall history		Total	P-value
		No	Yes		
Age group (years)	60-69	59	13	72	0.8
		81.9%	18.1%	100.0%	
	70-79	31	5	36	
		86.1%	13.9%	100.0%	
	80-89	11	2	13	
		84.6%	15.4%	100.0%	
	>90	2	0	2	
		100.0%	0.0%	100.0%	
Gender	Females	19	9	28	0.017
		67.9%	32.1%	100.0%	
	Males	84	11	95	
		88.4%	11.6%	100.0%	
Marital state	DIVORCED	38	8	46	0.9
		82.6%	17.4%	100.0%	
	MARRIED	38	7	45	
		84.4%	15.6%	100.0%	
	UNMARRIED	15	3	18	
		83.3%	16.7%	100.0%	
	WIDOW	12	2	14	
		85.7%	14.3%	100.0%	
Living status	With partner	6	0	6	0.6
		100.0%	0.0%	100.0%	
	With	97	20	117	
		82.9%	17.1%	100.0%	
Education state	Secondary	32	7	39	0.7
		82.1%	17.9%	100.0%	
	higher	10	2	12	
		83.3%	16.7%	100.0%	
	ILLITERATE	22	6	28	
		78.6%	21.4%	100.0%	
	PRIMARY	39	5	44	
		88.6%	11.4%	100.0%	
Daily Activity level	Dependent	2	3	5	0.03
		40.0%	60.0%	100.0%	
	Independent	101	17	118	
		85.6%	14.4%	100.0%	
Using aid	No	83	10	93	0.006
		89.2%	10.8%	100.0%	
	Yes	20	10	30	
		66.7%	33.3%	100.0%	
Chronic Diseases	No	55	4	59	0.007
		93.2%	6.8%	100.0%	
	Yes	48	16	64	
		75.0%	25.0%	100.0%	
Drugs used	monotherapy	38	9	47	0.34
		80.9%	19.1%	100.0%	
	no	61	9	70	
		87.1%	12.9%	100.0%	
	poly	4	2	6	
		66.7%	33.3%	100.0%	

P-value ≤ 0.05 (significant).

DISCUSSION

Falls are prevalent among the elderly globally, and the frequency is growing due to a variety of causes. Previous research has revealed that falls are frequently the consequence of a broad range of risk factors.^[17,18] The risk factors contributing to falls include age, mobility limitations, medication use, cognitive decline, and environmental hazards.^[19] A study by Tinetti et al. demonstrated that targeted interventions, such as exercise programs, medication review, and home safety assessments, can effectively reduce the risk of falls in senior houses.^[20] Therefore, it is crucial for healthcare providers and older living facilities to identify and address these risk factors to improve the overall well-being of elderly residents. In current study (16.26%) of elderly residents have history of fall similar to study in Iraq^[21], this is less than the prevalence reported by Alsaif et al, among elderly Saudis (44.2%)^[22], Almawlawi in Qatar 34%^[16], all previous research the sample collected from general population in current study the sample collected from senior house population. The prevalence in these studies are notably higher than that reported in England (28%)^[23], Canada (34%)^[24], Ecuador (37.4%)^[25], and the United States (22%)^[26]. Interestingly, studies from Asian countries show lower prevalence rates: China (11%)^[27], Japan (16%)^[28], and Malaysia (4%)^[30]. These differences between countries may be attributable to varying ethnicity and cultural factors influencing falls among older adults and research methodology. Falls occurring indoors were found to be the most common, accounting for 83% of falls in this study, which aligns with the findings from Yeong UY et al. in Malaysia^[30] and Almawlawi et al. in Qatar.^[16] However, this is inconsistent with other research that reported a lower prevalence of indoor falls by Kamel et.al in Egypt.^[31] The study by Almawlawi et al. discovered that stair-related falls were more frequent than bathroom-related falls, which is contrary to the current results.^[16] Furthermore, in this study, 20% of participants experienced falls in a places outside their home, which is consistent with another study conducted in Malaysia.^[30] In current study 32.1% of females having a history of falls compared to only 11.6% of males. The relationship between age and the risk of fall has produced varied results across different studies. While numerous studies have reported that the likelihood of falls increases with age (28-30), this study found no significant association between advancing age and the occurrence of falls among elderly individuals. In addition, gender was identified as a contributing factor to falls in our study, a finding that aligns with previous research conducted in Japan, which discovered a stronger link between musculoskeletal pain and trips or falls among elderly people.^[30] Contrasting results were observed in a German study, where fall rates increased with age in men but not in women.^[32] Conversely, a study in Nigeria reported that women were more prone to falls than men.^[33] These divergent findings across different countries regarding the influence of age and gender on fall risk among the elderly may be attributed

to unexplored biological, social, or environmental factors. Further research is needed to elucidate the complex interplay of these variables and their impact on fall risk in older populations. A strong relationship between daily activity levels and fall history was observed in the study, with 60% of elderly individuals with dependent daily activities experiencing falls, compared to just 14.4% of those with independent daily activities. This finding is consistent with prior research suggesting that greater independence in daily activities is associated with a reduced risk of falls.^[20] One possible explanation for this relationship is that individuals with independent daily activities may have better physical function, balance, and muscle strength, which are known to protect against falls.^[34] Additionally, engaging in regular physical activities can enhance overall health and well-being, further reducing the risk of falls among older adults.^[35] On the other hand, elderly individuals with dependent daily activities may have more difficulties with mobility, balance, and muscle strength, which can increase their susceptibility to falls.^[36] Furthermore, a significant association was identified between the use of aids and fall history. Among those who did not use any aids, 89.2% had no history of falls, whereas only 33.3% of elderly individuals who used any aid reported no history of falls. findings, like those of other analyses, demonstrated that using a walking assistance was related with a twofold risk of fall among the older population, despite some research' claims to the contrary.^[12,13] A significant proportion (93.2%) of elderly participants without a past medical history of chronic diseases in this study had no fall history. This finding is in line with previous research suggesting that the absence of chronic diseases is associated with a reduced risk of falls among older adults.^[12] Chronic conditions, such as diabetes, hypertension, and cardiovascular disease, can contribute to balance impairments, decreased muscle strength, and reduced mobility, all of which are known risk factors for falls.^[13] Moreover, certain medications used to manage these chronic conditions can also increase the risk of falls due to side effects such as dizziness, hypotension, and impaired cognition.^[13] These findings emphasize the importance of managing chronic diseases and their associated risk factors to minimize the risk of falls among the elderly. Interventions such as regular physical activity, medication management, and proper treatment of chronic conditions can contribute to a lower risk of falls in older adults.^[14]

CONCLUSIONS AND RECOMMENDATIONS

The risk of falls among the elderly is influenced by determinants factors such as daily activity levels, gender, aid usage, and chronic disease presence. Encouraging physical activity, promoting independence in daily activities, and managing chronic conditions can help reduce fall risks. A multifaceted approach to fall prevention is essential, considering both indoor and outdoor environments. Further research is required to understand the complex interplay of these factors and their impact on fall risk in diverse elderly populations.

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