RESEARCH

FACTORS RELATED TO FALLS AND THE FEAR OF FALLING AMONG ELDERLY PATIENTS ADMITTED TO THE EMERGENCY DEPARTMENT

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Abstract

Introduction: This study was conducted to investigate the fear of falling and admissions related to falls, also the associated factors with each of them among elderly patients who are admitted to the emergency department.

Materials and Method: The population of this study consisted of patients aged 65 years and over who were admitted to the emergency department in August 2015. The measurement tool included questions regarding outcomes, functional state, sociodemographic data, balance and walking problems, and admissions to the emergency department due to falls within the past year which was filled by a trained interviewer via semi-structured interviews with the patients and/or their relatives. The logistic regression was applied for the analysis.

Results: Of the 555 patients who were included in the study, 12.6% were admitted because of falls. Admissions due to falls were associated with admissions to the emergency department over the past year due to falls, living in nursing homes, and fear of falling. The fear of falling was shown in 22.2% of the study group, and it was found to be associated with female sex, marital status, falling status, and better functional state.

Conclusion: There was a significant relationship between falls and the fear of falling among older patients admitted to the emergency department. There is need for further prospective studies to better understand the effect of fear of falling on falls.

Keywords: Accidental Falls; Emergency Service, Hospital; Fear; Geriatrics.

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ARAŞTIRMA

ACİL SERVİSE BAŞVURAN YAŞLI HASTALARDA DÜŞME VE DÜŞME KORKUSU İLE İLİŞKİLİ ETMENLER

Öz

Giriş: Bu çalışma, acil servise başvuran yaşlı hastalarda düşme korkusu ile düşme nedenli başvuruları ve ilişkili faktörleri araştırmak amacıyla planlanmıştır.

Gereç ve Yöntem: Bu araştırmanın evreni, 2015 Ağustos ayı içerisinde acil servise başvuran 65 yaş ve üstü hastalardan oluşmuştur. Başvuru sonuçları, fonksiyonel durum, son bir yılda denge ve yürüme sorunu ile düşme nedenli acil servise başvuru ve sosyodemografik verileri içeren ölçme aracı eğitim alan anketör tarafından acil serviste hasta ve/veya hasta yakınları ile yarı yapılandırılmış görüşme yolu ile doldurulmuştur. Lojistik regresyon analizi uygulanmıştır.

Bulgular: Acil servise başvurarak çalışmaya alınan 555 hastanın %12.6'sı düşme şikayeti ile gelmiştir. Huzurevinde yaşama, düşme korkusu ve son bir yıl içinde düşme nedeni ile acil servise başvurmuş olma düşme ile başvuru ile ilişkili bulunmuştur. Düşme korkusu, çalışmaya alınan yaşlıların %22.2'sinde tespit edilmiş olup; kadın cinsiyet, medeni durum, düşme durumu ve daha iyi fonksiyonel durum ile ilişkili bulunmuştur.

Sonuç: Acil servise başvuran yaşlılarda; düşme ve düşme korkusu arasında anlamlı bir ilişki bulunmuştur. Düşme korkusunun düşme üzerine etkisini daha iyi anlamak için prospektif çalışmalara ihtiyaç vardır.

Anahtar Sözcükler: Düşme; Acil Servis; Düşme Korkusu; Yaşlı.

INTRODUCTION

Although falls are not exclusive to the geriatric individuals (1), it is an important health problem which increases morbidity and mortality among geriatric people (2). Moreover, falls can negatively affect the quality of life (3, 4), cause loss of independence in daily activities and create fear and worry among geriatric people (5). According to a report published by World Health Organization (WHO) in 2007, people aged 65 years and older have an annual falling prevalence of 25%–32%. It has been reported that the prevalence of falling increases with age, and that elderly people living in nursing homes fall more often (4). The demand for emergency medical services also parallelly increases with the increasing number of geriatric population in society. Multiple comorbidities and functional disorders are also prevalent among geriatric patients admitted to the emergency department (ED) (3). In a study conducted to investigate the effects of the risk factors associated with falling on quality of life and activities of daily living (ADL) among geriatric patients, it was found that fear of falling (FOF) is the factor that has the most impact on the mental component of the quality of life, and that it affected ADL to a greater extent than the other factors (6).

There are only a limited number of studies with small samples researched in Turkey examining the FOF and falls among older patients receiving ED care, and to the best of our knowledge, no study has investigated the relationship of FOF and IADL. Besides, little is known about the characteristics of the geriatric patients admitted to ED. Studies on those frail patient groups would lead to better care. So, this study was conducted to determine the FOF and admissions due to falls, also the associated factors with each of them among patients aged 65 years and over who were admitted to the ED.

MATERIALS AND METHOD

The population of this study consisted of patients aged 65 years and over who were admitted to the ED of Dokuz Eylül University (DEU) in Izmir, Turkey, in August 2015. There was no sample selection for the study, and the aim was to reach out to the entire study population. Patients whose general condition was not suitable for interview, those who were sent to the ED from another clinic and those who died in the ED were excluded from the study. For patients who were admitted to the ED more than once, the first admission was included.

A measurement tool suitable for the purposes of the study was prepared by reviewing the literature and acquiring expert opinion. This measurement tool was filled by a trained interviewer through face-to-face interviews with the patients or their relatives.

The dependent variables were the FOF and falls. Age, sex, education, marital status, who they live with, state of falling, having balance and walking problems within the past year, using walking aids, the FOF, how the patient arrived at the ED, visiting the ED within the past year due to falling, outcome in the ED and the ability to perform ADL and instrumental ADL (IADL) were determined. With regards to the FOF, the patients were asked questions on whether they were afraid of falling and whether they were confident while performing daily tasks.

Data were evaluated using the 'SPSS for Windows 18.0'software. Descriptive tables were used to present the variables. The chi-square test was used in comparing the number of admissions to the ED due to falling or other causes with the sociodemographic states, and for comparing the presence of FOF. The number of patients for each variable was shown in the tables for the missing data. Binary logistic regression analysis was applied. A p-value <0.05 was considered significant.

This study was approved by the DEU's Ethics Committee for Non-Interventional Research.

RESULTS

A total number of 9484 patients were admitted to the ED of DEU Hospital in August 2015. Of those patients, 820 (8.6%) were aged 65 years and above. On excluding the elderly patients who were readmitted to the ED, a study population of 755 patients was reached. The chart on how the study population was enrolled is presented in Figure-1 (Figure-1).

Of the 555 patients included in the study, the mean age of the participants was 76.7 ± 7.6 years, and 12.6% were admitted with falls. Other than falls, the most prevalent complaints of the patients were respiratory problems (10.2%), stomach ache (8.8%) and chest pain (6.5%). Patients admitted for falls were admitted to the hospital with trauma diagnosis (90%) at a significantly higher rate than medical diagnosis (10%) (Cardiovascular, gastrointestinal, urinary system, respiratory system, neurological, muscle-skeletal system, toxications, allergical-dermatologic, endocrinological, infections, hematological, ophtalmical- otorhinological diseases were all classified as medical) in comparison with admissions due to other causes [96.7% (admissions classified as medical conditions) vs. 3.3% (trauma diagnosis), p<0.01].

The characteristics of the patients according to whether they were admitted to the ED due to falling or other reasons are shown in Table 1.

Table 1. The characteristics of the patients due to admission cause to the emergency department with falls or other reasons.

Variable	Falls		Other causes		Total		p
	n	%*	n	%*	n	%**	
Gender (n=555)							
Female	39	14.9	222	85.1	261	47.0	0.11
Male	31	10.5	263	89.5	294	53.0	
Age groups (n=555)							
65–74	30	11.7	226	88.3	256	46.1	0.49
75–84	28	12.3	200	87.3	228	41.1	
84 and above	12	16.9	59	83.1	71	12.8	
Marital status (n =549)							
Married	52	11.8	390	88.2	442	80.5	0.36
Single	16	14.9	91	85.1	107	19.5	
State of living (n =542)							
With family	48	11.3	376	88.7	424	78.2	0.16
With children	11	14.3	66	85.7	77	14.2	0.57
Nursing home	5	31.3	11	68.8	16	3.0	0.01

Variable	Falls		Other causes		Total		p
	n	%*	n	%*	n	%**	
Other	3	12.0	22	88.0	25	4.6	0.95
Level of education (n =548)							
Illiterate	6	7.7	72	92.3	78	14.2	0.03***
Elementary school graduate	21	10.5	179	89.5	200	36.5	
Middle school graduate	19	15.0	108	85.0	127	23.2	
High school graduate	14	17.3	67	82.7	81	14.8	
University graduate	10	16.1	52	83.9	62	11.3	
Balance and walking problems (past year) (n=555)							
Yes	7	13.2	46	86.8	53	9.5	0.89
No	63	12.5	439	87.5	502	90.5	
Walking aid use (n=551)							
Yes	13	18.0	59	82.0	72	13.0	0.14
No	57	11.9	422	88.1	479	87	
Fear of falling (n=554)							
Yes	25	20.3	98	79.7	123	22.2	0.00
No	45	10.4	386	89.6	431	77.8	
Admission to the emergency department due to falling in the past year (n=555)							
Yes	9	24.3	28	75.7	37	6.6	0.02
No	61	11.7	457	88.3	518	93.4	
Ability to perform ADL (n=550)							
Yes	67	12.9	450	87.1	517	94.0	0.51
No	3	9.0	30	91.0	33	6.0	
Ability to perform IADL (n=550)							
Yes	62	13.2	407	86.8	469	85.2	0.25
No	7	8.6	74	91.4	81	14.8	

*Row percentage; ** Column percentage; *** Chi-Square in Slope

Table 2. Characteristics of the patients due to fear of falling status.

Variable	Yes		No		Total		p
	n	%*	n	%*	n	%**	
Gender (n=554)							
Female	68	26.2	192	73.8	260	46.9	0.03
Male	55	18.7	239	81.3	294	53.1	
Age groups (n=553)							
65–74	48	18.8	208	81.2	256	46.3	0.11
75–84	54	23.9	172	76.1	226	40.9	
84 and above	21	29.6	50	70.4	71	12.8	
Marital status (n =548)							
Married	106	24.0	335	76.0	441	80.5	0.02
Single	15	14.0	92	86.0	107	19.5	
State of living (n =516)							
With family	101	23.9	322	76.1	423	82.0	0.62
With children	13	16.9	64	83.1	77	14.9	0.14
Nursing home	7	43.7	9	56.3	16	3.1	0.05
Level of education (n =547)							
Illiterate	20	25.6	58	74.4	78	14.3	0.69***
Elementary school graduate	29	14.5	171	85.5	200	36.6	
Middle school graduate	40	31.5	87	68.5	127	23.2	
High school graduate	24	30.0	56	70.0	81	14.6	
University graduate	8	12.9	54	87.1	62	11.3	
Balance and walking problems (past year) (n=554)							
Yes	12	23.1	40	76.9	52	9.4	0.87
No	111	22.1	391	77.9	502	90.6	

Variable	Falls		Other causes		Total		p
	n	%*	n	%*	n	%**	
Walking aid use (n=551)							
Yes	22	28.5	50	71.5	72	13.1	0.06
No	100	20.8	379	79.2	479	86.9	
Falling status (n=553)							
Yes	25	35.7	45	64.3	70	12.7	0.00
No	98	20.2	385	79.8	483	87.3	
Admission to the emergency department due to falling in the past year (n=553)							
Yes	13	35.1	24	64.9	37	6.7	0.05
No	110	21.3	406	78.7	516	93.3	
Ability to perform ADL (n=550)							
Yes	121	23.4	396	76.6	517	94.0	0.02
No	2	6.0	31	94.0	33	6.0	
Ability to perform IADL (n=550)							
Yes	117	24.9	352	75.1	469	85.3	0.00
No	5	6.1	76	93.9	81	14.7	
Distribution according to ED diagnoses (n=553)							
Gastrointestinal	31	26.0	88	74.0	119	21.5	0.25
Cardiac	19	22.0	67	78.0	86	15.6	0.97
Neurologic	13	15.1	73	84.9	86	15.6	0.08
Other	60	22.9	202	77.1	262	47.3	0.72

Characteristics of the patients due to fear of falling status

Out of all, 22.2% of the patients had FOF. The characteristics of the patients with FOF are shown in Table 2.

In the logistic regression analysis; admission with falls to the ED was associated with admissions from nursing homes (OR = 3.4, p = 0.01, 95% CI =1.14-10.11), the FOF (OR = 2.18, p<0.01 , 95% CI =1.27-3.74), and admission to ED with a fall in the past year (OR =2.4, p =0.02, 95% CI = 1.08-5.34), where the FOF was associated with female gender (OR =1.53, p<0.01, 95% CI =1.02-2.29), being married (OR = 1.94, p =0.02, 95% CI =1.07-

3.49), history of a fall (OR =2.18, p <0.01, 95% CI =1.27-3.73), and the abilities to perform ADL (OR =4.74, p = 0.01, 95% CI = 1.12-20.12) and IADL (OR = 5.06, p <0.01, 95% CI = 2.00-12.82) (Table 3 and 4).

Table 3. General Characteristics of Patients.

Variable	Beta	p	OR	95% CI
Living in nursing home	1.224	0.01	3.40	1.14-10.11
Presence of fear of falling	0.783	<0.01	2.18	1.27-3.74
Presence of admission to the emergency department due to falling in the past year	0.879	0.02	2.40	1.08-5.34

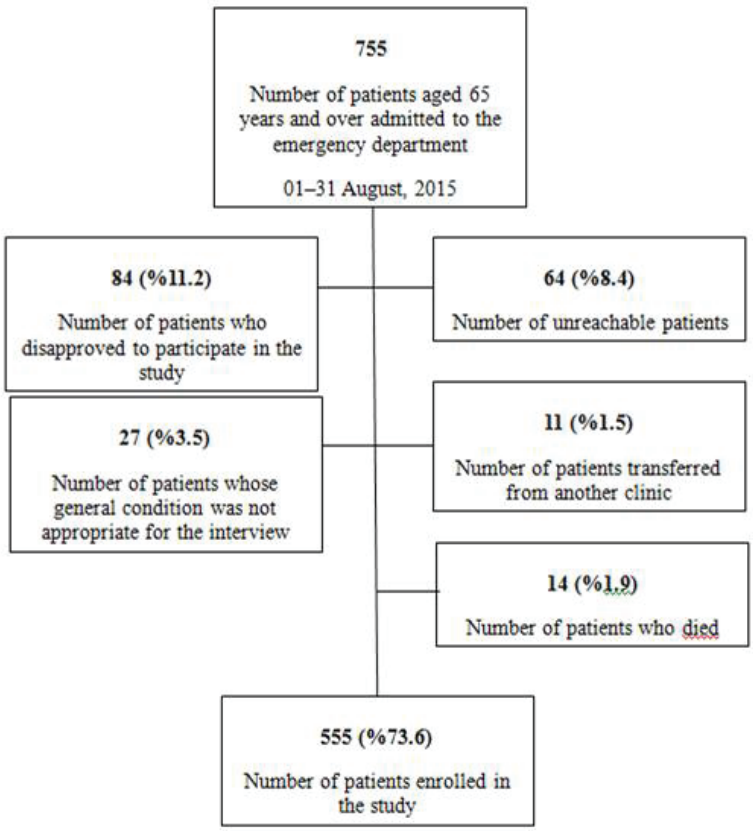
Table 4. The variables associated with fear of falling by the logistic regression model.

Variable	Beta	p	OR	95% CI
Gender (Female)	0.427	0.03	1.53	1.02-2.29
Marital status (Married)	0.663	0.02	1.94	1.07-3.49
Falling status (Yes)	0.780	<0.01	2.18	1.27-3.73
Ability to perform ADL	1.558	0.02	4.74	1.12-20.12
Ability to perform IADL	1.623	<0.01	5.06	2.00-12.82

DISCUSSION

This study evaluated the falls and the FOF in geriatric patients admitted to the ED. Out of 555 patients enrolled in the study, 12.6% were admitted because of falls. Admission to ED with falls was 20% in the study by Carpenter et al., 14% in the study by Young in Australia (7, 8). Faul et al. have shown that 17% of the emergency medical service calls were because of falls (9). Özşaker et al. have reported that 36% of the elderly patients admitted to ED in last 5 years were with history of falls (10). Our results are in concordance with those studies. This study determined that living in a nursing home, and the FOF was associated with falls. According to WHO 2007 report, geriatric people living in nursing homes fall more frequently, with 40% of them falling again every year (4). Kerem et al. stated that there were more falls among those living in nursing homes (11). Tuncay et al. found a significant relationship between the risk of falling and the FOF (6). These findings are compatible with the results of our study. Various studies have also shown that previous falls are a significant risk factor for future falls (12-14). In parallel with these studies, we observed that admittance to the ED due to falling within past year increased the risk of falling. Female sex, having walking as well as balance problems, muscle weakness, and low level of education are also described as risk factors for falls (3, 15, 16). However, in the present study, there was no significant difference between the number of patients admitted for falls and for other reasons in terms of their functional status,

Figure 1. The chart on how the sample of the study was enrolled.



sex, balance and walking problems in past year, the use of walking aids, and education. Geriatric people represent a heterogenous group, and these individuals included in our study may have formed a different group compared with those in the prior studies due to their comorbidities, and education level. Moreover, in the region being serviced by our hospital, there is easy access in terms of healthcare facilities that may have contributed to these results. There was no significant difference between the number of patients admitted due to falls and for other reasons in terms of discharge and hospitalization. Hospitalization rates due to falls, and higher number of admissions due to traumatic falls than medical causes were found to be compatible with the literature (3, 17).

In this study, it was found that female sex, being married, falling status, and the ability to perform ADL and IADL increased the FOF. In agreement with these findings, the FOF was found to be higher among women and patients who have history of falling within the past year (18-20). Greenberg et al. also showed that women were more inclined to express their FOF (18). Besides, according to a WHO report, women fell more often than men, and living alone increases the FOF which differs from our study (4). In the studies by Yörük et al.

and Erdem et al., FOF was more frequent in the widowed and single individuals (19,20). In contrast with these findings, the FOF in our study was higher among married patients which could be due to the higher prevalence of married people in the population included (80.5%). In a study conducted on 146 people aged 50 years and over who were admitted to the ED, it was shown that the perceived risk of falling is related to functional decline and death, independent of sex (18). Yıldırım et al. have found that there is a significant relationship between the FOF and dependency in ADL, and the FOF directly and negatively affects the quality of life (21). Özşaker et al. found that 37% of geriatric patients admitted to the ED limit their activities due to the FOF (10). In a study conducted in Brazil, a significant relationship was found between low FOF and being independent in IADL (22). In this study, it was found that the rates of the FOF are higher among individuals who can perform IADL. It may be hypothesized that people with well-functional state may have developed the FOF because they were more active. Studies researching the relationship between the FOF and IADL among geriatric patients in ED are limited and we were not able to locate such study among Turkish older patients. So, there is need for new studies on this subject. The difference in some of the findings in our study from the literature may have stemmed from short-term nature of the present study.

Limitations of this study were that it was conducted in a period of one month, and in only one university hospital. Thus, it would not be appropriate to make generalizations regarding the results. On the other hand, the higher number of patients comprising this study than those in previous studies in Turkey was the strength of this study.

In conclusion; this study found that living in a nursing home, a history of ED admissions due to falling within past year and FOF were associated with falls. Moreover, female sex, being married, having fallen in past year, and the ability to perform ADL and IADL were associated with FOF. Patients with falls also used ambulances more often, and the use of ED and 112 hotline ambulance services by the geriatric population will gradually increase in parallel with the changes in the structure of the population. We believe that demonstrating the relationship of falls, FOF, functional status, and other factors among geriatric patients admitted to the ED could help with the development and implementation of preventative measures and treatment methods for this vulnerable group and would lead to better care.

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CONFLICT OF INTEREST

None Declared

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