Doi: 10.47572/muskutd.1371126

An Evaluation of Patients Aged 90 and Over Who Admitted to the Emergency Department

Acil Servise Başvuran 90 Yaş ve Üstündeki Hastaların Değerlendirilmesi

Mustafa ALPASLAN[1], Mehmet OKTAY[1], Necmi BAYKAN[2]

[1]Emergency Department, Nevşehir State Hospital, Nevşehir, Türkiye
[2]Emergency Department, Kayseri City Hospital, Kayseri, Türkiye

Öz

Dünyada yaşlı nüfus oranının her geçen gün arttığı görülmektedir. Bununla birlikte acil servislerde de yaşlı hasta başvurusu oranı artmaktadır. Bu çalışmada acil servise başvuran 90 yaş ve üstündeki hasta grubunu analiz etmek amaçlanmıştır. Bu çalışmada 01.01.2022-31.12.2022 tarihleri arasında ikinci basamak olarak hizmet veren bir sağlık kuruluşunun acil servisine başvuran 90 yaş ve üzerindeki hastaların retrospektif değerlendirmesi yapıldı. Hastalarda yaş, cinsiyet, başvuru zamanı, başvuru şikâyeti, tanı, en sık hasta yatırılan klinikler ve sonlanım şekilleri değerlendirildi. Sonuçlar ortalama±standart sapma (SS) veya frekans (yüzde) şeklinde verilmiş ve $p<0.05$ istatistikî olarak anlamlı kabul edilmiştir. Çalışmada 754 hasta değerlendirildi. Yaş ortalaması 92.4±2.38'di. Kadın hasta oranı (%70.7) daha fazlaydı. En çok başvuru hafta içi mesai saatlerinde ve yaz aylarında yapıldı. En sık başvuru nedenleri nefes darlığı, düşme ve karın ağrısı oldu. En sık pnömoni, ekstremite kırığı ve akut böbrek yetmezliği teşhisi konuldu. Hastalarda en sık görülen ek hastalık hipertansiyondu. Hastaların %72.2'si acil servisten taburcu edildi. En sık hasta yatırılan klinikler göğüs hastalıkları, dahiliye ve ortopedi oldu. Hastanede ortalama yatış süresi 6 (1-91) gün olmuştur. Acil serviste veya yatırıldığı klinikte ölümle sonlanan hasta sayısı 63'tür (%8.3). En sık ölüm nedeni pnömoni ve akut miyokard infarktüsü oldu. Çalışmamızda ileri yaşlı hastalarda en sık pnömoni teşhisi konulduğu görüldü. Acil servise kişinin genel durumunda bozulma ile başvuran geriatrik hasta popülasyonunda pnömoni olabileceği mutlaka düşünülmelidir.

Anahtar Kelimeler: Acil Servis, Geriatri, Hospitalizasyon

Abstract

It is seen that the rate of elderly population in the world is increasing day by day. However, the rate of elderly patient admissions in emergency departments is also increasing. In this study, a group of patients over the age of 90 who admitted to the emergency department was analyzed. In this study, a retrospective evaluation was made of patients aged over 90 who admitted to the emergency department of a secondary care health institution between 01.01.2022 and 31.12.2022. The information about patients' age, gender, time of acceptance, acceptance complaint, diagnosis, clinics where patients were most frequently admitted, and their results were evaluated. Results are presented as mean±standard deviation (SD) or frequency (percentage), and $p<0.05$ was considered statistically significant. 754 patients were evaluated in the study. The mean age was 92.4±2.38. The proportion of female patients was higher (70.7%). Most acceptance were made during weekday working hours and summer months. The most common reasons for accept were shortness of breath, falling and abdominal pain. The most common diagnoses were pneumonia, extremity fracture and acute renal failure. The most common co-morbidity in the patients was hypertension. 72.2% of the patients were discharged from the emergency department. The clinics where patients were most frequently admitted were chest diseases, internal medicine and orthopedics. The average length of hospitalization was 6 (1-91) days. The number of patients who died in the emergency department or in the hospitalized clinic was 63 (8.3%). The most common causes of death were pneumonia and acute myocardial infarction. In our study, pneumonia was diagnosed most frequently in elderly patients. Pneumonia should be considered in the geriatric patient population presenting to the emergency department with deterioration in general condition.

Keywords: Emergency Service, Geriatrics, Hospitalization

Introduction

The ratio of the elderly population and the number of patients is increasing day by day in our country and all over the world. It is predicted that Turkey will be the most populous country in Europe in 2050 in terms of the elderly population (1). As the proportion of the elderly population increases in society, it is necessary to conduct current research and find solutions to the health problems and problems seen in this age group.

	ORCID No
Mustafa ALPASLAN	0000-0003-3170-0125
Mehmet OKTAY	0009-0003-5024-1486
Necmi BAYKAN	0000-0002-6845-9550

Başvuru Tarihi / Received: 04.08.2023
Kabul Tarihi / Accepted : 21.06.2024

Adres / Correspondence : Necmi BAYKAN
Emergency Department, Kayseri City Hospital, Kayseri, Türkiye

e-posta / e-mail : drnecmibaykan@gmail.com

The concept of old age covers the period of time between living things reaching biological adulthood and the end of the reproductive period until death. Old age should be evaluated socially, physically and psychologically. Physiologically, lung vital capacity decreases, kidney functions slow down, decreased gastrointestinal motility, slowdown of central nervous system functions and weakening of the immune system are observed (2). When looked at from a psychological perspective, it is seen that learning, problem solving, psychomotor skills, perception capacity and the capacity of a person to adapt to his environment change with age (3). With this change, the ability of elderly patients to cope with changes in the living environment and stress factors decreases. This situation causes the elderly to face diseases more frequently. A large proportion of the elderly population struggles with many diseases at the same time, and as a result, it is seen that emergency departments are applied more frequently than the normal patient population (4-6). It will be easier for physicians to know the reasons why

geriatric patients are more frequently admitted to the emergency department and the current approaches to be taken during the diagnosis and treatment process (7).

The World Health Organization (WHO) considers the population over the age of 65 as the elderly population (3). We observed that patients over 65 years of age were evaluated in most of the studies in the literature on the subject. We think that life expectancy is increasing in the world and in our country and the average age of geriatric patients applied to the emergency department is increasing day by day. Therefore, in this study, we wanted to set the age limit higher in geriatric patients admitted to the emergency department and to conduct a special study for this age range. We aimed to analyze the demographic data in the group of patients over 90 years of age admitted to the emergency department, to analyze the most common reasons for admission, hospitalization rates and the most common diagnoses and clinics in which inpatients were followed up. We wanted to investigate the effect of the presence of chronic diseases on the outcome of the patients. With the increase in the elderly population in the world day by day, we anticipate that isolated studies in advanced age ranges, as we have determined in our study, will increase. We think that our study will be effective in creating a preliminary idea for the literature in this respect.

Material and Method

In this study, patients aged 90 and over who applied to the emergency department of a secondary healthcare institution between 01.01.2022 and 31.12.2022 were evaluated. The study was conducted by retrospective file review method in electronic environment and is an observational, descriptive study. The data of the patients were collected by the researchers between 25.07.2023-01.09.2023 and statistical analysis was performed and then the article was written. In addition to data such as age, gender, accept time, the patient's complaint of acceptance, diagnosis and if hospitalization was performed, the hospitalization diagnosis and the hospital clinic were determined. In hospitalized patients, additional diseases recorded in the system were also detected and added to the patient data. How many days the patient stayed in the hospital through the system and how he left the hospital as a result were evaluated by evaluating the physician's notes. Data collection was done retrospectively through the hospital electronic data system. The epicrisis of the patients was also taken into consideration in obtaining the data. Patients who did not generate sufficient data were excluded from the study (Figure 1). Approval for the study was received by Hacıbektaş Veli University Non-Interventional Clinical Research Ethics Committee with decision number 2023/05 dated 21/07/2023.

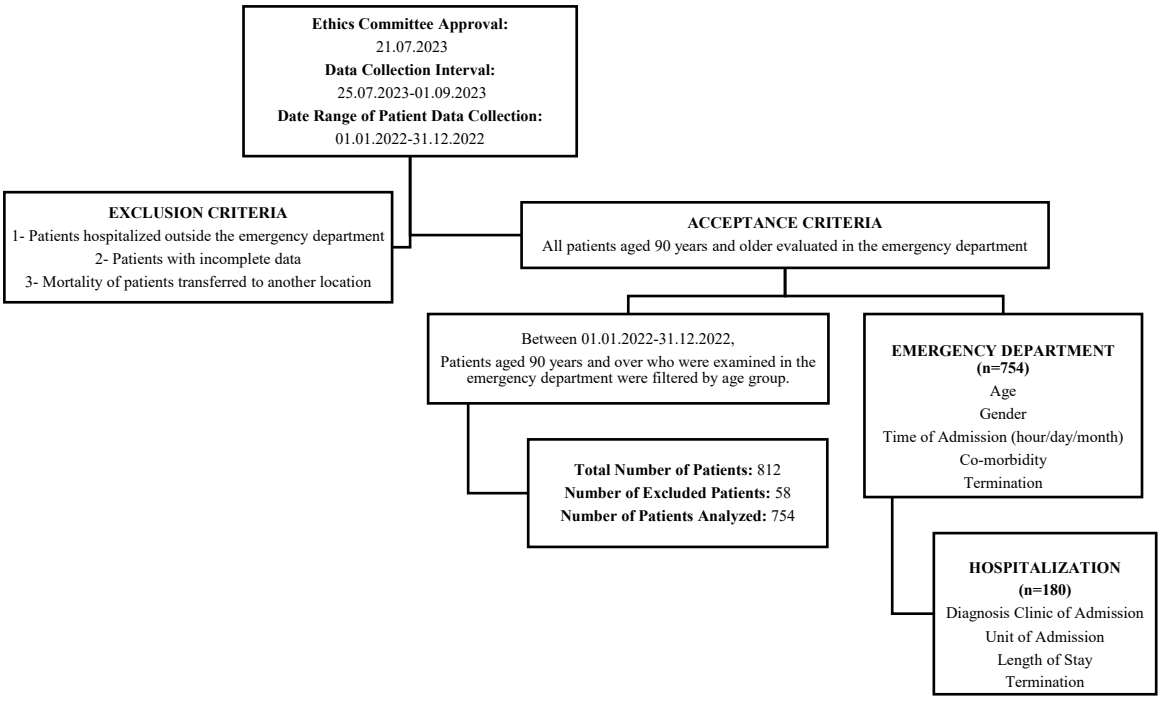

Figure 1. Flow chart showing study times.

Package analyzes data for Social Sciences for Windows 21.0 (SPSS 21.0) program was used. As statistical analysis, descriptive statistics (frequency, percentage distribution) and chi-square test were used to compare categorical variables between two groups. Results are presented as mean±SD, or frequency (percentage), and $p<0.05$ was considered statistically significant.

Results

Within the scope of the study, 754 patients were examined. The average age of the patients was 92.4±2.38. When evaluated by gender, 70.7% of the patients were women. Patients were evaluated according to the time of admission and it was observed that 76% of admissions were made on weekdays. Acceptance intervals were divided into three according to time intervals. The most common time of admission was between 08.00-16.00 (55%), followed by 16.00-24.00 (35.8%) and the least common time of admission was between 24.00-08.00 (9.2%). When admissions were analyzed by months, it was observed that admissions were higher in summer months (Figure 2). The most common reasons for admission are given in Table 1 and the most common reasons for admission were shortness of breath and cough. The complaints of admission according to gender were compared and a significant difference was observed between the two variables (Chi square: 34.732 p=0.019). Across the table, the only admission complaint that was more common in men was urinary tract symptoms. Significant differences were observed in admission complaints according to seasons (Chi-square: 94.390, p=0.038) (Table 2). Among the patients, there were a total of 209 cases that were not discharged from the emergency department but were decided to be hospitalized, referred, refused treatment, or ended in death. The diagnoses made in these cases are given in table 3. According to this result, the three most frequently diagnosed diseases were pneumonia, extremity fracture and acute renal failure. It was observed that there was no significant difference between patient gender and diagnoses (Chi-square: 16.747, p=0.669). Comorbidities were examined in the admitted patients and are shown in Figure 3. According to this result, the most common comorbidities were hypertension (HT) (65.3%), previous surgery, coronary artery disease (CAD), chronic obstructive pulmonary disease (COPD), diabetes mellitus (DM), chronic renal failure (CRF) and cerebrovascular disease (CVD). (Figure 3).

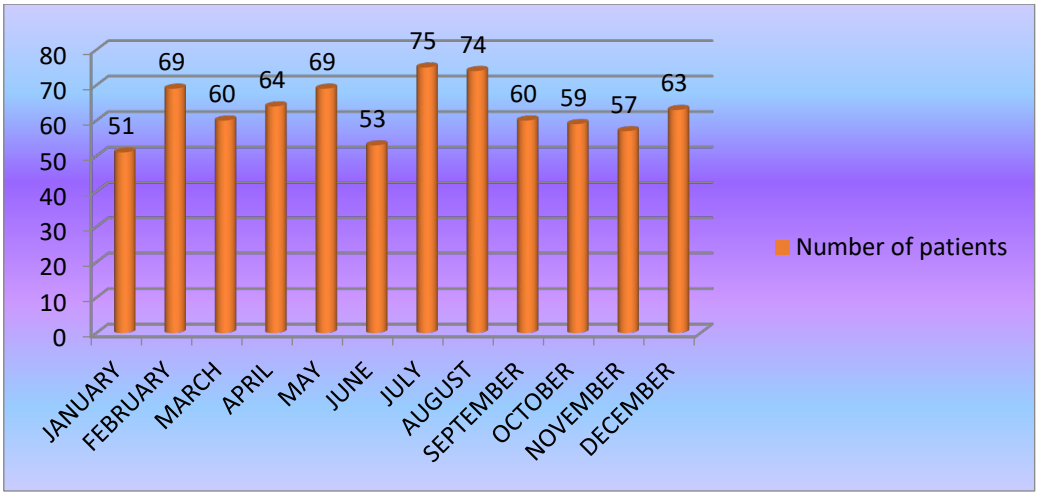

Figure 2. Distribution of patient applications by months.

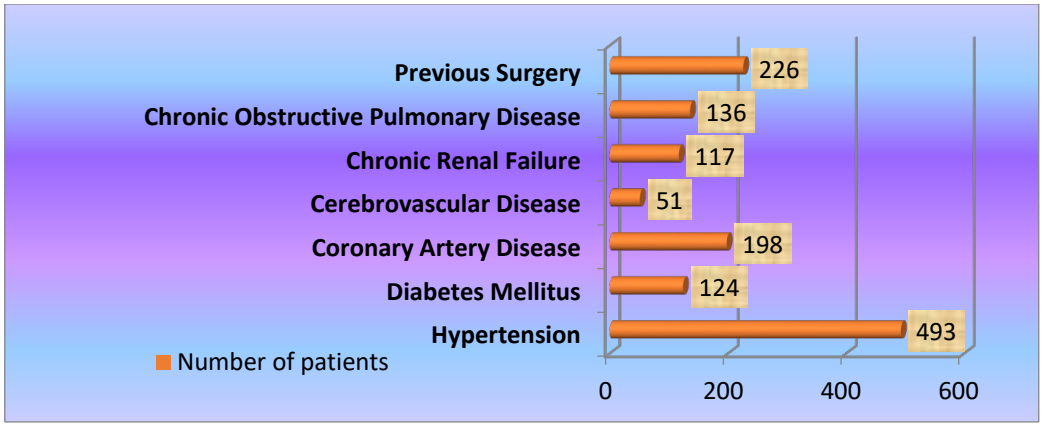

Figure 3. Distribution of additional diseases seen in patients

Table 1. Complaints of the patients admitted to the emergency department and their distribution according to gender*.

Admission Complaint	Number of Patients	Ratio (%)	Female	Male	p value
Shortness of Breath and Cough	143	18.9	106[a]	37[a]	
Fall	91	12.1	59[a]	32[a]	
Stomachache	73	9.7	49[a]	24[a]	
Weakness and Resentment	59	7.8	43[a]	16[a]	
Nausea, Vomiting, Diarrhea	59	7.8	44[a]	15[a]	
High Blood Pressure	51	6.8	39[a]	12a	
Soft Tissue Trauma	46	6.1	35[a]	11[a]	
Nutritional Disorder	35	4.6	25[a]	10[a]	
Chest Pain	44	5.8	28[a]	16[a]	
Muscle and Joint Pain	44	5.8	35[a]	9[a]	p=0.019
Urinary Tract Symptoms	40	5.3	16[a]	24[b]	
Upper Respiratory Tract Infection	19	2.5	14[a]	5[a]	
Dizziness	12	1.6	10[a]	2[a]	
Allergy	12	1.6	7[a]	5[a]	
Headache	11	1.5	11[a]	0[b]	
Neurological Symptoms**	6	0.8	5[a]	1[a]	
Epistaxis	3	0.4	3[a]	0[a]	
Eye Pain, Stinging, Burning	3	0.4	2[a]	1[a]	
Hypoglycemia / Hyperglycemia	3	0.4	2[a]	1[a]	
TOTAL	**754**	**100**	**533**	**221**	

*The same letters in the table indicate similarity between groups, while different letters indicate difference. **Extremity weakness, speech disorder, convulsion, etc.

545 (72.3%) of the patients were discharged from the emergency department. Of the other patients, 180 were hospitalized. The clinics that admitted the most patients were chest diseases, internal medicine and orthopedics. The discharge status of the patients from the emergency department and the clinic where they were hospitalized, and the distribution of patient admissions by clinic are given in detail in Table 4. The mean length of hospitalization of the hospitalized patient group was 6 (1-91) days. The majority of hospitalized patients (55%) stayed in the hospital between 1-7 days (Table 4). No significant relationship was found between hospitalization times according to patient diagnosis (Chi-square: 110.838, p=0.127). The relationship between the type of discharge from the emergency department and the presence of chronic disease is given in Table 5. In the study, the total mortality rate in the emergency department and inpatients was 8.3%. The most common causes of death were pneumonia and acute myocardial infarction.

Table 2. Comparison of complaints according to seasons*.

Variables	Season				p
	Winter (*n*=183)	Spring (*n*=193)	Summer (*n*=202)	Autumn (*n*=176)	
Admission Complaint					
Shortness of Breath and Cough	31 (16.9)[a]	44 (22.8)[a]	39 (19.3)[a]	29 (16.5)[a]	
Fall	17 (9.3)[a]	25 (13.0)[a]	29 (14.4)[a]	20 (11.4)[a]	
Stomachache	19 (10.4)[a]	13 (6.7)[a]	26 (12.9)[a]	15 (8.5)[a]	
Weakness and Resentment	12 (6.6)[a]	20 (10.4)[a]	21 (10.4)[a]	6 (3.4)[a]	
Nausea. Vomiting. Diarrhea	16 (8.7)[a]	17 (8.8)[a]	12 (5.9)[a]	14 (8.0)[a]	
High Blood Pressure	13 (7.1)[a]	14 (7.3)[a]	14 (6.9)[a]	10 (5.7)[a]	
Soft Tissue Trauma	10 (5.5)[a]	6 (3.1)[a]	15 (7.4)[a]	15 (8.5)[a]	
Nutritional Disorder	7 (3.8)[a.b]	5 (2.6)[b]	7 (3.5)[a.b]	16 (9.1)[a]	
Chest Pain	8 (4.4)[a]	9 (4.7)[a]	13 (6.4)[a]	14 (8.0)[a]	p=0.038
Muscle and Joint Pain	15 (8.2)[a]	12 (6.2)[a]	8 (4.0)[a]	9 (5.1)[a]	
Urinary Tract Symptoms	11 (6.0)[a]	13 (6.7)[a]	6 (3.0)[a]	10 (5.7)[a]	
Upper Respiratory Tract Infection	9 (4.9)[a]	3 (1.6)[a]	3 (1.5)[a]	4 (2.3)[a]	
Dizziness	5 (2.7)[a]	1 (0.5)[a]	1 (0.5)[a]	5 (2.8)[a]	
Allergy	4 (2.3)[a]	1 (0.5)[a]	3 (1.5)[a]	4 (2.3)[a]	
Headache	3 (1.6)[a]	4 (2.1)[a]	1 (0.5)[a]	3 (1.7)[a]	
Neurological Symptoms**	3 (1.6)[a]	2 (1.0)[a]	1 (0.5)[a]	0 (0.0)[a]	
Epistaxis	0 (0.0)[a]	1 (0.5)[a]	2 (1.0)[a]	0 (0.0)[a]	
Eye Pain. Stinging. Burning	0 (0.0)[a]	1 (0.5)[a]	0 (0.0)[a]	2 (1.1)[a]	
Hypoglycemia / Hyperglycemia	0 (0.0)[a]	2 (1.0)[a]	1 (0.5)[a]	0 (0.0)[a]	

The data are expressed as n (%). *The same letters in the table indicate similarity between groups. while different letters indicate difference. **Extremity weakness. speech disorder. convulsion. etc.

Table 3. Distribution of patients who were not discharged from the emergency department according to diagnosis and gender.

Diagnosis	Number of Patients	Ratio (%)	Female	Male	p value
Pneumonia	42	5.3	28	14	
Extremity Fracture	30	3.7	20	10	
Acute Renal Failure	28	3.4	20	8	
Electrolyte Disturbance	20	2.4	12	8	
Cerebrovascular Disease	13	1.6	10	3	
Sepsis	11	1.3	8	3	
Acute Coronary Syndrome	11	1.3	8	3	
Gastrointestinal Bleeding	11	1.3	8	3	
Hepatobiliary Disease	9	1.2	8	1	
COPD* Exacerbation	7	0.9	4	3	
Pulmonary Embolism	7	0.9	7	0	p=0.717
Ileus	5	0.7	3	2	
Urogenital Pathologies	4	0.5	2	2	
Urinary Tract Infection	3	0.4	1	2	
Pleural Effusion / Empyema	2	0.3	2	0	
Heart Failure	1	0.1	1	0	
Epilepsy	1	0.1	1	0	
Shingles Infection	1	0.1	0	1	
Mesentery Ischemia	1	0.1	1	0	
Follow-up After Surgery	1	0.1	0	1	
Diabetic Ketoacidosis	1	0.1	1	0	
TOTAL	**209**	**100**	**145**	**64**	

*Chronic Obstructive Pulmonary Disease

Discussion

The incidence of chronic diseases increases with the elderly population. This situation also affects the number of elderly patients admitted to the emergency department and hospitalization rates with exacerbation of the existing disease or acute diseases that will occur.

In the literature, there are generally studies on cases over the age of 65. In this study, we analyzed patients aged 90 and over, which is an older age group. It was observed that 208614 patients applied to the emergency department annually in the center and date range where our study was conducted, and 754 of these patients were 90 years old and over. Varıslı et al. In their study analyzing patients over the age of 65, they stated that the rate of patients over the age of 85 was 21.3% (8). In the study conducted by Bedel et al. on patients over 65 years of age, 10.8% of the admission rate was in patients over 85 years of age. (9). Celik et al. In another study conducted by et al. on geriatric patients, it was observed that the oldest patient was 90 years old, and the rate of patients over the age of 85 was stated as 10.1% (10). In a study conducted abroad, admission of patients over 80 years of age was found to be higher than the studies conducted in our country (11). Depending on the centers where the studies are conducted and the average age of the patients admitted may vary. We think that living conditions and sociodemographic factors may also be effective in this regard. In our study, since the age group over 90 years was evaluated in isolation, age group-specific ratios could not be made as in other studies evaluating patients over 65 years of age.

In our study, we found that 70.7% of the patients were female. Kekec et al. reported that 50.5% of the cases were female in their study (2). Varıslı et al. reported 56% female (8), Bedel et al. 52.9% male (9), Celik et al. 52% female (10), Oktem et al. 54.7% female (12). Similarly, gender comparison was made according to age in some of the studies and it was observed that the female sex ratio was more prominent in patients older than 85 years (8,9,13). In our study, only those over the age of 90 were examined and the female gender ratio resulted similar to the literature. From these results, it can be concluded that men's lifespan is shorter than women or they are admitted to hospital less frequently.

When we analyzed the admission times of the patients, we found that the most common time of admission was during working hours (55%), on weekdays (76%) and the most common month of admission was July (9.9%). In a study, it was observed that geriatric patients were mostly admitted to the emergency department between 18.00-23.59 hours (35.7%) and in the summer months (25.6%) (13). In a study by Oktem et al. similar to our study, it was observed that emergency department admissions in geriatric patients were during working hours (08.00-16.00) and in summer months (12).

In this study, we observed that patients were most commonly admitted to the emergency department because of shortness of breath, cough, falls and abdominal pain. In a similar study, the most common reasons for admission were cardiac symptoms, fatigue and general condition disorder (2). In another study, the most common complaints were abdominal pain, chest pain and shortness of breath (9). In another study, 49.8% of patients had respiratory, 30.6% cardiac and 29.5% pathologic abdominal

findings (8). In some studies, it was reported that the most common reasons for admission to the emergency department were cardiac and respiratory (13-17). Dundar et al. analyzed patients admitted with abdominal pain over the age of 65 years and reported that the rate of patients admitted with abdominal pain in this age group was 12.4% (13). In the study by Oktem et al. the most common reasons for admission were musculoskeletal disorders, gastrointestinal system disorders and traumas (12). In a study conducted by Aslaner in 2019, the first and second reasons for admission of geriatric patients within 72 hours were examined. According to the results, the reasons for first and second admission were generally the same and the most common reasons for admission were musculoskeletal pain, shortness of breath, hypertension and abdominal pain (18). As in our study, we can say that the reasons for admission in elderly patients are generally due to respiratory and cardiac reasons. We think that the differences seen in the studies are related to the region where the studies were conducted, the scope of the study and the centers where the study was conducted.

In trauma cases, patients over the age of 65 require more treatment than younger patients, and this rate rises to 50% in people over the age of 80 (19). In a study conducted in Erzurum, the most common cause of trauma was falls (82%) (20). Schwab et al. and Osler et al. in their studies on geriatric trauma patients, it was stated that the most common cause of trauma was falls (21,22). In our study, admissions due to falls ranked second among tens of internal complaints with a rate of 12.1%. This shows that traumas have an important place in the elderly population. We think that the weakening of muscle strength and reflexes with aging increases injuries due to falls and trauma. Therefore, we anticipate that injuries will decrease with the necessary precautions against trauma in the elderly age group.

Table 4. Analysis of patients' outcome and hospitalizations.

	Number of Patient (n)	**Ratio (%)**
Termination from the Emergency Department		
Discharged	545	72.2
Service	117	15.5
Intensive Care	63	8.3
Transfer to Another Center	2	0.3
Treatment Refusal	20	2.7
Excitus	7	1
TOTAL	**754**	**100**
Hospitalized Patients		
Clinic		
Chest Diseases	40	22.2
Internal Medicine	33	20.5
Orthopedics	26	14.4
Nephrology	21	11.6
Cardiology	16	8.8
Infection	16	8.8
Neurology	11	6.1
General Surgery	9	5
Anesthesia and Reanimation	3	1.6
Urology	2	1.1
Brain Surgery	2	1.1
Obstetrics and Gynecology	1	0.05
Length of Stay		
1-7 days	100	55.5
8-14 days	51	28.3
15-21 days	10	5.5
22-28 days	4	2.2
29-35 days	7	3.8
>36 days	8	4.4
Termination of inpatients		
Discharged	106	58.9
Transfer to Another Center	7	3.8
Treatment Refusal	11	6.2
Excitus	56	31.1
TOTAL	**180**	**100**

Table 5. The relationship between the mode of discharge from the emergency department and the presence of chronic disease*.

Chronic Disease / Final**	Discharge	Service Hospitalization	Intensive Care Hospitalization	Transfer to Another Center	Treatment Refusal	Excitus	p value
HT							
Absent	210(80.5)[a]	30(11.5)[a]	15(5.7)[a]	1(0.4)[a]	2(0.8)[a]	3(1.1)[a]	**0.009**
Present	335(68.0)[b]	87(17.6)[b]	48(9.7)[a]	1(0.2)[a]	5(1.0)[a]	17(3.4)[a]	
DM							
Absent	468(74.3)[a]	90(14.3)[a]	48(7.6)[a]	2(0.3)[a]	4(0.6)[a]	18(2.9)[a]	**0.035**
Present	77(62.1)[b]	27(21.8)[b]	15(12.1)[a]	0(0.0)[a]	3(2.4)[a]	2(1.6)[a]	
CAD							
Absent	420(75.5)[a]	80(14.4)[a]	38(6.8)[a]	2(0.4)[a]	6(1.1)[a]	10(1.8)[a]	**0.004**
Present	125(63.1)[b]	37(18.7)[a]	25(12.6)[b]	0(0.0)[a]	1(0.5)[a]	10(5.1)[b]	
CVD							
Absent	508(72.3)	107(15.2)	59(8.4)	2(0.3)	7(1.0)	20(2.8)	0.678
Present	37(72.5)	10(19.6)	4(7.8)	0(0.0)	0(0.0)	0(0.0)	
CRF							
Absent	474(74.4)[a]	88(13.8)[a]	53(8.3)[a]	2(0.3)[a]	5(0.8)[a]	15(2.4)[a]	**0.036**
Present	71(60.7)[b]	29(24.8)[b]	10(8.5)[a]	0(0.0)[a]	2(1.7)[a]	5(4.3)[a]	
COPD							
Absent	449(72.7)	90(14.6)	56(9.1)	2(0.3)	6(1.0)	15(2.4)	0.361
Present	96(70.6)	27(19.9)	7(5.1)	0(0.0)	1(0.7)	5(3.7)	
SURG							
Absent	373(70.6)	91(17.2)	46(8.7)	1(0.2)	5(0.9)	12(2.3)	0.352
Present	172(76.1)	26(11.5)	17(7.5)	1(0.4)	2(0.9)	8(3.5)	

Values are expressed *n* (%). *The same letters in the table indicate similarity between groups. while different letters indicate difference. **HT: Hypertension. DM: Diabetes Mellitus. CAD: Coronary Artery Disease. CVD: Cerebrovascular Disease. CRF: Chronic Renal Failure. COPD: Chronic Obstructive Pulmonary Disease. SURG: Previous Surgery.

In our study, when we looked at the order of diagnosis in patients planned to be hospitalized, it was seen that the most common were pneumonia, extremity fracture, acute renal failure, electrolyte disorder and cerebrovascular disease. Kekec et al. in their study, the most common diagnoses were heart failure, acute coronary syndrome, stroke, oncological and hematological diseases and renal failure (2). Satar et al. in their study, they stated that the most common diagnoses in patients were stroke, oncological emergencies, chronic renal failure, myocardial infarction and heart failure (4). Bedel et al. observed that 20.2% of patients over the age of 65 admitted to the emergency department were due to cardiovascular diseases, 14.3% oncologic diseases, 11.1% respiratory system diseases, 10.1% gastroenterologic diseases, 6.5% trauma and 5.5% neurologic diseases (9).

In our study, the clinics with the most frequent hospitalizations were chest diseases, internal medicine and orthopedics clinics. In a similar study, patients were most frequently admitted to internal medicine, neurology, cardiology, pulmonology and orthopedics clinics (2). Bedel et al. in their study, the most patients were hospitalized in internal medicine and cardiology clinics (9). In the study conducted by Varıslı et al. the most hospitalized patient groups were due to cardiovascular diseases (16.5%) and infection (13.3%). The clinics where consultation is most frequently requested are internal medicine (52.2%) and neurology clinics (21.2%) (8). Similarly, in another study, the clinics with the most frequent hospitalizations were chest diseases, neurology and internal medicine clinics (23). Generally speaking, geriatric patient admissions from emergency departments were similar. In our study, more patients were hospitalized in the chest diseases clinic due to the most frequent diagnosis of pneumonia. In our study, the second most common department for extremity fractures was the orthopedics clinic. According to similar studies, more patients were admitted to the orthopedics clinic and we thought that this was related to the harsh winter months and the high number of falls due to icing in the center where our study was conducted.

According to the literature, additional diseases for which they receive chronic treatment are common in the geriatric patient population (5,24). In one study, it was observed that 87.3% of patients over the age of 65 had at least one chronic disease (23). Varıslı et al. in their study, it was observed that the most common comorbidities in patients were HT (63%), DM, CAD, heart failure (HF), COPD and CKD (8). According to the results of a study conducted in Turkey, the most common chronic disease was HT (30.7%), followed by osteoarthritis, HF, DM and CAD (25). In our study, HT was the most common comorbidity (65.3%), followed by previous surgery, CAD, COPD, DM, CRF and LVH, respectively. When we look at the discharge and hospitalization rates of the geriatric patient population admitted to emergency departments, we see that the majority of patients are treated symptomatically in the emergency department and discharged. In our study, the hospital discharge rate was 72.2% from the emergency department and

58.8% in hospitalized patients. In similar studies, Bedel et al. reported discharge rates from the emergency department. 77.2% (9), Celik et al. 53.7% (10), Oktem et al. they reported it as 79.4% (12). Satar et al. in their study, the hospitalization rate was stated as 59.35% (4). We predict that the diversity seen in these rates is due to the different service levels of the centers where the studies are carried out. In our study, the number of cases that ended in death was 7 in the emergency department and 56 in inpatients, 8.3% of the total admissions. The most common causes of death were pneumonia and acute myocardial infarction. Bedel et al. in their study, the most common cause of death in the emergency department was acute myocardial infarction (9).

Conclusion

As a result, apart from trauma, pneumonia, acute renal failure and deterioration in general condition due to electrolyte disturbance should be considered in the foreground in the elderly patient group. It is predicted that the rate of elderly patients admitted to the emergency department will increase every year and it is necessary to know the elderly patient group well (26). Assuming that the average age of the elderly patients admitted to emergency departments is increasing every year, we analyzed patients aged 90 years and older in this study. In the literature, similar results were generally obtained in the studies on the subject and the majority of the studies were conducted with a patient population over 65 years of age. We think that our study will contribute to the literature in this respect. Similarly, by analyzing current data, we foresee that the establishment of separate departments for the evaluation of elderly patients in each health institution will be more efficient in the diagnosis and treatment process.

Limitations: Since the COVID-19 pandemic was on going during the period of our study, the higher number of pneumonia diagnoses may be related to the process. In addition, since the studies in the literature were generally conducted on patients aged 65 years and older, we could only compare our study with these data.

Ethics Committee Approval: Approval was received by Hacıbektas Veli University Non-invasive Clinical Research Ethics Committee, decision number 2023/05 dated 21/07/2023.

Funding: The authors declare no financial support. Authors declare that they comply with research and publication ethics.

References

1. Cilingiroglu N, Demirel S. Old age and elderly discrimination. Turk J Geriatr. 2004;7(4):225-30.
2. Kekec Z, Koc F, Büyük S. Review of elderly patient hospitalizations in the emergency department. J Acad Emerg Med. 2009;8(3):21-4.
3. Beger T, Yavuzer H. Epidemiology of aging and old age. Clin Dev. 2012;25:1-3.
4. Satar S, Sebe A, Avcı A, et al. Elderly patient and emergency service. J Çukurova Univ Fac Med. 2004;29:43-50.
5. Singal BM, Hedges JR, Rousseau EW, et al. Geriatric patient emergency visits. part 1: comparison of visits by geriatric and younger patients. Ann Emerg Med. 1992;21:802-7.
6. Aminzadeh F, Dalziel WB. Older adults in the emergency department: a systematic review of patterns of use, adverse outcomes, and effectiveness of interventions. Ann Emerg Med. 2002;39(3):238-47.
7. Ross MA, Compton S, Richardson D, et al. The use and effectiveness of an emergency department observation unit for elderly patients. Ann Emerg Med. 2003;41(5):668-77.
8. Varıslı B. Clinical, demographic and cost investigation of geriatric age group patients applying to the emergency department. Anatolian J Emerg Med. 2018;1(2):18-24.
9. Bedel C, Tomruk O. Characteristics of geriatric patients presenting to a university emergency department. SDU Fac Med J. 2018;25(4):393-9.
10. Celik P, Celik S, Hastaoglu F. Determination of geriatric patient profile applying to the emergency department. J Geriatr Sci. 2022;5(3):72-80.
11. Lewis LM, Banet GA, Blanda M, et al. Etiology and clinical course of abdominal pain in senior patients: a prospective, multicenter study. J Gerontol A Biol Sci Med Sci. 2005;60(8):1071-6.
12. Oktem B, Uzer F. General characteristics of geriatric patient population applying to emergency department. Kocatepe Med J. 2022;23(3):283-7.
13. Dundar ZD, Ayrancı MK. Evaluation of demographic characteristics and prognosis of geriatric patients presenting to the emergency department with abdominal pain. Selcuk Med J. 2021;37(1):45-51.
14. Unsal A, Cevik AA, Metintas S, et al. Emergency department admissions of elderly patients. Turk J Geriatr. 2003;(6):83-8.
15. Wilber ST, Gerson LW. A research agenda for geriatric emergency medicine. Acad Emerg Med. 2003;(10):251-60.
16. Logoglu A, Ayrık C, Kose A, et al. Investigation of demographic characteristics of non-traumatic geriatric cases presenting to the emergency department. Turkish J Emerg Med. 2013;13(4):171-9.
17. Gurmen ES, Tulay CM. Geriatric patients in the emergency department: respiratory distress and chest pain. Van Tıp Derg. 2019;26(2):232-5.
18. Aslaner MA. Readmission of geriatric patients to the emergency department within 72 hours. Acta Medica Alanya. 2019;3(3):267-71.
19. Tinetti ME. Approach to the elderly patient with falls. In Kelley WN (ed): Textbook of Internal Medicine, ed 3. Phladelphia, Lippincott-Raven, 1997, pp: 2525-2530.
20. Tanrıkulu CS, Tanrıkulu Y. Trauma analysis in geriatric population: a cross-sectional study. New Med J. 2013;30(2):100-4.
21. Schwab CW, Kauder DR. Trauma in the geriatric patient. Arch Surg.1992;127(6):701-6.
22. Osler T, Hales K, Baack B, et al. Trauma in the Elderly. Am J Surg. 1988;156(6):537-43.
23. Yıldız S, Bilgili N. Individual characteristics of elderly patients admission to the emergency department and evaluation of applications. Gazi Health Sci J. 2016;1(1):15-31.
24. McCusker J, Bellavance F, Cardin S, et al. Prediction of hospital utilization among elderly patients during the 6 months after an emergency department visit. Ann Emerg Med. 2000;36:438-45.
25. Arslan Ş, Atalay A, Gökçe Kutsal Y. Drug use in older people. J Am Geriatr Soc. 2002;50(6):1163-8.
26. Mert E. Emergency service utilization of geriatric patients. Turk J Geriatrics. 2006; 9(2): 70-4.