ANALYSIS OF PATIENTS ADMITTED TO A UNIVERSITY HOSPITAL EMERGENCY ROOM WITH 112

BIR ÜNİVERSİTE HASTANESİ ACİL SERVİSİNE 112 İLE BAŞVURAN HASTALARIN ANALİZİ

Ahmet Tunç DENİZ[1], Ali DUMAN[2], Pınar ÖZDEMİR DENİZ[3], Kenan Ahmet TÜRKDOĞAN[4], Ayhan AKÖZ[2]

[1] Aydın State Hospital, Aydın, Turkey
[2] Department of Emergency Medicine, Aydın Adnan Menderes University Faculty of Medicine, Aydın, Turkey
[3] Department of Public Health, Aydın Adnan Menderes University Faculty of Medicine, Aydın, Turkey
[4] Bağcılar Training and Research Hospital, University of Health Sciences, Department of Emergency Medicine, İstanbul, Turkey

Öz

Amaç

Türkiye acil hastalıkların, doğal afetlerin, kaza ve yaralanmaların sık yaşandığı bir ülkedir. Bu tez çalışmasında 112 Acil Servis Hizmetleri ile getirilen hastalar incelenerek; hasta başvurularının demografik özelliklerinin değerlendirilmesi ve acil servislerde ileriye yönelik planlama yaparken 112 ambulanslarının (112) Acil Servis yoğunluğu üzerine etkilerinin değerlendirilmesi amaçlanmıştır.

Gereç ve Yöntem

Bu çalışma prospektif kesitsel bir araştırma olup; araştırmanın evrenini XX Üniversitesi Uygulama ve Araştırma Hastanesi Acil Servisine 112 ile getirilen kişiler oluşturmaktadır. Hasta bilgilerine 112 formundan ve hastane sisteminden ulaşılmıştır. Araştırmanın örneklemini verileri eksiksiz olan ve araştırmaya katılmayı kabul eden 1066 hasta oluşturmuştur. Araştırmanın verileri tarafımızca hazırlanan veri toplama formu ve 112 veri formu kullanılarak toplanmıştır. Veriler, SPSS istatistik programında değerlendirilmiştir. Tanımlayıcı istatistiksel analizler frekans, yüzde, normal dağılan değerler ortalama ± standart sapma, normal dağılma-yanlar ise ortanca (minimum-maksimum) kullanılarak belirtilmiştir. Normal dağılım Kolmogorov Smirnov testi ile değerlendirilmiştir. Analitik istatistiksel analizlerde Ki-kare testi, Student T testi ve Spearman Korelasyon Analizi kullanılmıştır. Tip 1 hata düzeyi 0,05 olarak alınmıştır.

Bulgular

Çalışmaya dâhil edilen 1066 hastanın % 52,3'ü erkektir. Yaş ortancası 52,0 (1,0 -112,0). Hastalar en sık 09.01-16.00 saatleri arasında (%44,3), en çok cumartesi günü (%15,4) getirilmiştir. 112 ekipleri tarafından tüm hastaların %0,4'ü entübe edilmiş, %87,5'inin damar yolu açılmıştır. 112 ön tanılarına göre acil servisimize en sık travma hastaları (%31,4), ikinci sırada kardiyovasküler sistem acilleri (% 15,9) getirilmiştir.112 ön tanıları ile acil servis kesin tanıları arasında güçlü, pozitif yönde, anlamlı korelasyon saptanmıştır (r=0.621, p<0.001). 112 ile acil servisimize getirilen hastaların %67,9'ı ilk değerlendirmede taburcu edilmiştir.

Sonuç

112 ekiplerince getirilen hastaların çoğu taburculukla sonuçlanmıştır. Bu durum 112'nin gereksiz kulla-

nıldığını düşündürmektedir. Bu sorunun çözümü için toplum bilinçlendirilmelidir. 112 ile getirilen hastalarda en sık tanının travmadır; hastane öncesi travma konusunda 112 personelinin bilgisini ve tecrübesini arttırmaya yönelik çalışmalar planlanabilir. Acil servislerde personel kadroları oluşturulurken 112 en sık başvurunun olduğu saatler göz önünde bulundurularak uygun planlamalar yapılabilir. En sık servis ve yoğun bakım yatışı yapılan bölümlerin yatak kapasiteleri gözden geçirilmelidir.

Anahtar Kelimeler: Acil servisler, Acil sağlık hizmetleri, ambulans, hastane öncesi acil bakım

Abstract

Objective
In Turkey, emergency diseases, natural disasters, accidents and injuries are frequently experienced. In this study, we aimed to examine the patients brought to emergency department (ED) by 112 ambulances (112) and to evaluate effect of demographic features of the presenting patients on the ED intensity of 112 when future planning of is made for EDs.

Materıal And Methods
This study is a prospective cross-sectional study. Study population consisted of the persons brought to the ED of the XX University Hospital by 112. Patients'data were obtained from 112 form and hospital system. Sample of the study consisted of 1066 patients with complete data and who accepted to participate to the study. Data of the study were collected with a data collection form. Data were evaluated using SPSS statistical software. Descriptive statistics are expressed as frequency, percentage, values which distribute normally are shown as mean ± standard deviation, values which don't distribute normally are shown as median (min.–max.) The normality of variables was tested using the Kolmogorov-Smirnov test. Analytic statistical analysis was performed using Chi-square test, Student's t test, and Spearman correlation analysis. p< 0.05 values were considered statistically significant.

Results
1066 patients included in the study, 52.3% were male. Median age was 52.0 (1.0–112.0) years. 44.3% of all patients were brought within working hours (09:01–16:00). The patients were most commonly brought on Saturday (15.4%). Of all patients, 0.4% were intubated and intravenous access was opened in 87.5% patients by 112 teams. According to the preliminary diagnosis of 112, the most frequent patient group which brought by 112 was trauma (31.4%) and second was cardiovascular system emergencies (15.9%). There was a statistically significant, strong positive correlation between preliminary diagnoses by 112, and definitive diagnoses decided after evaluation in the ED (r=0.621, p<0.001). After the first evaluation 67.9% of the patients who were brought to the ED by 112 were discharged.

Conclusıon
The majority of the patients who brought by the 112 were discharged. This suggests that 112 is unnecessarily used. This problem can be solved by making the society aware of this issue. If it is considered that, the most common diagnosis is trauma in patients who brought by 112, planning to increase the knowledge and experience of 112 team on prehospital trauma can be a good idea. While staffing the emergency services, appropriate planning can be made by considering the hours when 112 is most frequently applied. The bed capacities of the departments where the most frequent service and intensive care hospitalizations are made should be observed.

Keywords: Emergency services, Emergency health services, ambulance, prehospital emergency care

Introductıon

In Turkey, emergency diseases, natural disasters, accidents and injuries are frequently experienced and the number of patients per 112 ambulance station is increasing over years. Therefore, development and organization of the emergency healthcare services is a crucial issue.

The first stage in access to emergency health service in Turkey is calling the center. In general, 3-digit telephone lines are used to report an emergency all over the world. In Turkey, "112" is used as the number of emergency health aid in Turkey. The calls coming to the city ambulance command and control center are evaluated for whether the call in question require emergency health service, and a 112 team is dispatched to the scene as soon as possible, if deemed necessary. After arriving to the scene, 112 team perform the emergency health response. During this intervention, if the intervening team consider there is a need for advanced medical intervention and decides to transfer the patient with the ambulance, the team communicates with the command center and request

routing about the ED which is most appropriate for patient's condition (1).

If medical intervention is necessary, this continues also during the transfer. If 112 team needs information support in order to carry out the medical intervention, contacts the appropriate institution or organization via the command control center or directly. The patients is transferred to the ED following the necessary information after intervention and stabilization (when needed) are provided (1).

According to 2015 data, the mean number of persons per a 112 ambulance is 18584, and the mean number of cases is 1017, annually. Looking to the distribution of population per ambulance, Aegean Region is over Turkey average and ranks five with 19201 patients per ambulance (2).

In this study, we aimed to examine the patients brought to ED by 112 ambulances, and to evaluate effect of demographic features of the presenting patients on the ED intensity of 112 ambulances when future planning of is made for EDs

Materıal And Methods

This study was designed as a prospective cross-sectional study, and study population consisted of the persons brought to the ED of the XXUniversity, Application and Research Hospital by 112 ambulance between 01/09/2016 and 31/01/2017. The study ethics committee approval was obtained from XXUniversity Non-Interventional Clinical Research Ethics Committee. After explaining, "Informed volunteer consent form" will be signed by patients who is above 18 years old. Under the age of 18,the form will be signed by their first degree relatives. Patients' data were obtained from 112 ambulance form and hospital system. Sample of the study consisted of 1066 persons with complete data and who accepted to participate to the study. Data of the study were collected with a data collection form which we created, and 112 ambulance form. Data collection form included 12 sections. Using the data collection form, patients' wristband barcode, vital signs (blood pressure, arterial, pulse, fever, oxygen saturation), time of arrival with 112, day of arrival with 112, Glasgow Coma Scale (GCS) calculated in the 112, interventions in the 112 (Intravenous (IV) access, airway intubation), preliminary diagnosis of the 112 team, definitive diagnosis of the hospital, clinical progression (emergency department care outcome, hospital general outcome), and hospitalization in the ward or intensive care unit (ICU) were recorded from the hospital data system. Data were recorded on the

data collection forms by the author, and then were evaluated using SPSS statistical software. No any intervention was made to the method and duration of the treatment.

Statistical Analysis

Data were recorded on the data collection forms by the author, and then were evaluated using SPSS statistical software. Descriptive statistics are expressed as frequency, percentage, values which distribute normally are shown as mean ± standard deviation, values which don't distribute normally are shown as median (min.–max.). The normality of variables was tested using the Kolmogorov-Smirnov test. Analytic statistical analysis was performed using Chi-square test, Student's t test, and Spearman correlation analysis. $p < 0.05$ values were considered statistically significant.

Results

Of total 1066 patients included in the study; more than half over were male (52.3%) and 49 years old (53.8%) (Table 1). Median age was 52.0 (1.0–112.0) years. Distribution of demographics, vital signs and GCS are shown in Table 1.

Of 1066 patients, four of them (0.4%) were intubated and 933 of them (87.5%) were opened IV access by 112 teams. GCS were <8 in 1.2% of the patients brought to the ED by 112. (Table 1)

The patients were most commonly brought on Saturday (15.4%), and least on Monday (12.8%). Of all patients, 44.3% were brought within working hours (09:01–16:00), and 18.9% out of working hours (00:00–09:00) (Table 1). No statistically significant difference was found between presentation within and out of working hours by gender ($p>0.05$).

Distribution of the cases by 112 preliminary and emergency service definitive diagnosis is given in chart 1. There was a statistically significant, strong positive correlation between preliminary diagnoses by 112 and definitive diagnoses decided after evaluation in the ED ($r=0.621$, $p<0.001$).

The most common diagnosis of presentation to the ED was trauma by 31.4% (n=335) in all patients. The second and third diagnosis are respectively cardiovascular system emergencies (15.9% ,n=169) and gastrointestinal emergencies (12.3%,n=131).

The distribution of final situation of patients after being evaluated in the ED is given in Chart 2. Of 67.9%

Table 1   Distribution of demographics, vital signs, GCS and patients

Demographics	Frequencies (n)	Percentages (%)
Gender (n =1066)		
Female	508	47,7
Male	558	52,3
Age Groups (n =1066)		
≤15	107	10,0
15-48	386	36,2
49-64	215	20,2
≥65	358	33,6
Vital Signs		
Blood pressure (systolic) (n =1066)		
Hypotensive (<100 mmHg)	220	20.6
Normotensive (100-140 mmHg)	650	61.0
Hypertensive (>140 mmHg)	196	18.4
Pulse (n =1066)		
Bradycardia (<60/dk)	25	2.3
Normal (60-100/dk)	826	77.5
Tachycardia (>100/dk	215	20.2
Pulseoximetry (n =1066)		
< %90	104	9.8
%90-%95	104	9.8
%95-%98	658	61.7
>%98	200	18.8
GCS (n =1064)		
<8	13	1.2
9-12	60	5.6
13-14	21	2.0
15	970	91.2
Distribution of patients		
By days (n =1066)		
Monday	136	12.8
Tuesday	161	15.1
Wednesday	153	14.4
Thursday	159	14.9
Friday	137	12.9
Saturday	164	15.4
Sunday	156	14.6
By time of arrival (n=1066)		
00:00-09:00	202	18.9
09:01-16:00	472	44.3
16.01-23.59	392	36.8
According to 112 interventions (n =1066)		
Intubated	4	0.4
IV access opened	933	87.5
Vital signs examined	1066	100
Pulse oximetry examined	1066	100
Normotensive (100-140 mmHg)	650	61.0
Hypertensive (>140 mmHg)	196	18.4

patients were discharged. The most common diagnosis of the discharged patients was trauma emergency (32.5%) followed by cardiovascular emergency (14.7%), gastrointestinal emergency (11.7%), and neurologic emergency (9.5%).

A total of 209 patients were hospitalized in wards after being evaluated in the ED. During follow ups of the patients hospitalized in the wards, 92.3% were discharged, 7.2% died, and one patient was referred. The median duration of hospitalization in these patients was 5 (min 1–max 53) days.

There was a statistically significant, moderate positive correlation between age and hospitalization status (r=0.309, p<0.001). There was also a statistically significant, moderate positive correlation between age and duration of hospitalization status (r=0.327, p<0.001)

The first three common diagnoses of the patients admitted to the (ICU) included cardiovascular system emergency (30.6%), pulmonary emergency (24.0%), and gastrointestinal system emergency (12.4%). Of 118 patients admitted to the ICU, 73.7% were discharged, and 26.3% were died. Median duration of hospitalization was 9 (1–51) days, and mean duration of hospitalization was 11.9±10.6 days in these patients.

A total of 50 patients died in the ED or during the subsequent follow ups. The most important diagnosis of died patients was pulmonary emergency (26.0%) followed by neurologic emergency (18.0%), cardiovascular emergency (14.0%), and oncologic emergency (14.0%).
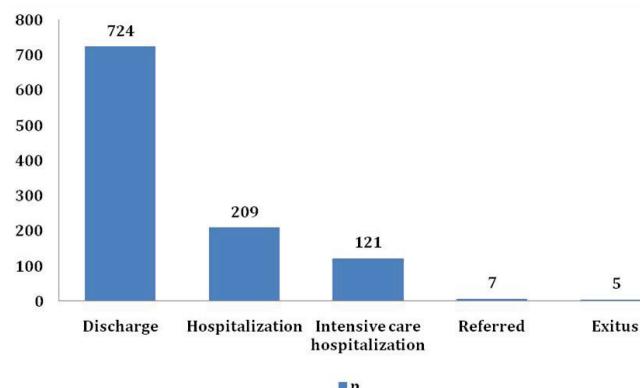
Chart 2
The distribution of final situation of the patients brought by 112 emergency

Discussion

This study is important in terms of providing important information about both emergency service and pre-hospital care. Although there are similar studies in the literature, the prospective design and the inclusion of the preliminary diagnosis by 112 and definitive diagnosis and their correlations increases the value of our study. And also the study is important for understanding patient profile of ED of XX University.

When studies that have been conducted in different center were reviewed, male gender was seen to be dominant among the patients brought to ED with 112 (3-6). Balaban et al. reported that female gender was more common among the patients who individually presented to ED, male gender was more common among the patients brought to ED with an ambulance (6). In our study, the patients brought to the ED were male, consistently with the literature.

It is seen that, presentations of the patients >65 years old accounted for 15% of all presentations, and this rate is estimated to raise up to 25% by 2020 (7) In our study, this rate was 33.6%, higher than the other studies. The causes of this difference might be only the patients who brought to the ED by 112 were evaluated, as well as regional characteristics.

GCS were calculated as <8 by 112 teams in 1.2% of the patients brought to the ED. However, no any intervention was made for airway safety before hospital arrival in any patient. Likewise, in the study by Soysal
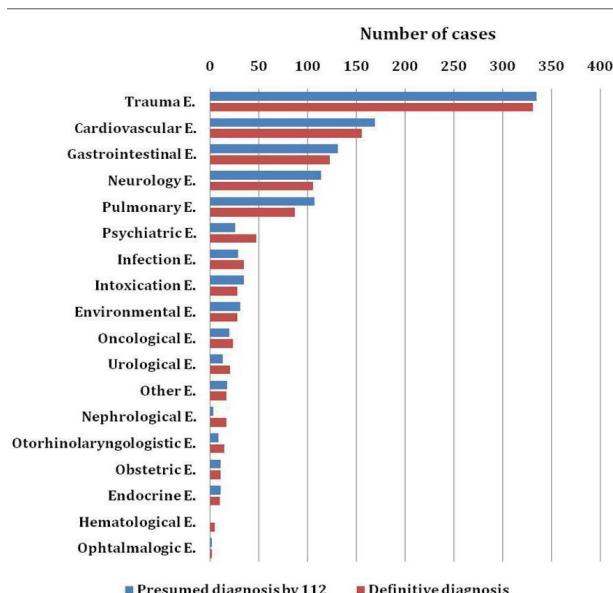
Chart 1
Distribution of the cases by preliminary (112) and definitive diagnosis

et al. no any airway intervention was made in patients with a GCS < 8, and the only indication of airway intervention is not apnea in the literature, as also specified in that study. It is important to provide airway safety in patients with a GCS < 8 (15).

Looking to the distribution of presentations by days, the most common presentation was made on Saturday. Similar studies have reported more presentation at weekends (3,8,12-13). As specified in the literature, presentation to EDs increases at weekends since outpatient clinics are closed.

Presentations were higher in out of working hours like similar studies reported more common presentation especially between 16:00 and 00:00 (4,13). It was stated in a study that the increased presentations to ED after 16:00 might be resulted from women who wait for their working male partners to return home (13). In our study, no statistically significant difference was found between the presentation within and out of working hours by gender. Causes of presentation may vary depending on local differences such as socioeconomic development.

When literature was reviewed, IV access opening rate differs between 42.0%–98.0% (12-15). In our study, IV access was provided in 87.5% of the patients by 112 team. When compared to other studies performed in other regions in our country, it was observed that 112 teams had high access rate of IV access. The incidence of IV Access procedure differs in the literature. This may vary depending on patients' admission complaint, patient characteristics, case management way of the 112 team, and incidence of presentations. It was observed that patients without IV access, were most commonly the discharged patients. This result indicated that 112 emergency ambulance workers did not open IV access in elective patients.

According to the data by "Ministry of Health" trauma emergencies (25.7%) and cardiovascular system emergencies (19.5%) take place in the first two ranks among the preliminary diagnosis of emergencies nationwide (16). Studies conducted at different times, in different regions, and different lines of hospitals have reported the most common admission diagnosis in patients brought to EDs with 112 as trauma emergencies (3,4,12,17). Similarly to the literature, the most common cause was trauma emergency in our study. It can be thought that the second and third diagnoses may vary according to the socioeconomic and geographic status of the regions.

In the study, 67.9% of the patients were discharged upon the first assessment. In the literature, about 70.0% of the patients presenting to EDs have been discharged following the first assessment (4,12,13,17,18). This suggests unnecessary use of 112 ambulances. In order to raise awareness of the society, awareness trainings should be carried out and health literacy of people should be increased.

The rate of hospitalization in ICU differs in a wide range in the literature (0.27%-14.0%) (5,13,18) In our study, the rate of hospitalization in the ICU was 11.10%. Cause of this difference may be

Conclusıon

Majority of the patients brought to the ED with 112 were discharged. This situation suggests unnecessary use of emergency aid ambulances by patients. In order to raise social awareness, trainings should be made and health literacy of society should be increased. The most common diagnosis is trauma in patients brought to EDs by 112, studies can be planned to increase knowledge and experience of 112 team about trauma management before hospital. Appropriate planning can be made considering the most common hours of presentations from 112, when personnel staff are created in emergency departments. Bed capacities of the departments with the most common ward and intensive care hospitalization should be reviewed.

References

1. "Acil Sağlık Hizmetleri Yönetmeliği." Resmi Gazete Tarihi: 11.05.2000 Resmi Gazete Sayısı: 24046.
2. Sağlık İstatistikleri Yıllığı 2015. Sağlık Bakanlığı, Sağlık Araştırmaları Genel Müdürlüğü, 2015.
3. Kapci, M., Turkdogan, K., Yiğit, M., Akpinar, O., Duman, A., Celik, M., ... & Durmuş, H. (2014). Demographic Data Of 112 Cases Transported To The Emergency Medicine Clinic. Journal Of Experimental And Clinical Medicine, 2014; 31(2),87–90, 2014.
4. Yüksel B., "Ege Üniversitesi TıpFakültesiAcil Servisine 112 Ambulansı ile Yapılan BaşvurularınRetrospektif Değerlendirilmesi", Ege Üniversitesi, İzmir,2013.
5. Ayten S, "Denizli İlinde 112 Komuta Merkezine Yapılan Aramalar Ve Acil Ambulans Hizmetlerinin Kullanımının Değerlendirilmesi",Pamukkale Üniversitesi, Denizli,2015.
6. Balaban B., "Bolu İlinde 112 Komuta Kontrol Merkezi Aracılığı ile Yapılanİl İçi veİl Dışı Hasta Sevklerinin İncelenmesi", Abant İzzet Baysal Üniversitesi, Bolu,2013.
7. ÇınarO. Cömert B.,"Acil serviste geriatrik hastanın değerlendirilmesi.", Geriatrik Geropsikiatrik Aciller 1. Basım Son Kitap, 2009:11-21.
8. Soysal S, Karcıoğlu Ö, Topaçoğlu H. , "Acil Tıp Sistemleri.", Cerrahpaşa TıpFakültesi Dergisi 2003; 34(1), 51-57.
9. Mert E.,"Geriatrik hastaların acil servis kullanımı.", Turkish Journal of Geriatrics. 2006;9(2):70-74.
10. Dede F., "Hacettepe Üniversitesi Erişkin Acil Polikliniğine Ocak 2005-Aralık 2005Tarihleri Arasında Başvuran 65 Yaş ve Üzerindeki Hastaların Epidemiyolojikİncelenmesi", Hacettepe Üniversitesi, Ankara, 2006.

11. Mutlu B, "Acil Servise Başvuran Altmış Beş Yaş Üzeri Hastaların Demografik Özellikleri,", Fırat Üniversitesi, Elazığ, 2012.

12. Önge, T., Satar, S., Kozacı, N., Açıkalın, A., Köseoğlu, Z., Gülen, M., & Karakurt, Ü. "Analysis of Patients Admitted to the Emergency Medicine Department by the 112 Emergency Service," Journal of Academic Emergency Medicine/Akademik Acil Tıp Olgu Sunumları Dergisi, vol. 12, no. 3, pp. 150–154, 2013.

13. Silibolatlaz, A, "112 Ambulansı İle Acil Servise Taşınan Hastaların Aciliyet Durumlarının Değerlendirmesi," Çukurova Üniversitesi, Adana 2017.

14. Armağan E, Akköse Ş, Çebişci H, ve ark. Hastaneler arası sevklerde kurallara uyuluyor mu? Ulus Travma Derg. 2001;7:13-16.

15. Soysal S, Karcıoğlu Ö, Topaçoğlu H. , "Acil Tıp Sistemleri.", Cerrahpaşa TıpFakültesi Dergisi 2003; 34(1), 51-57.

16. T.C. Sağlık Bakanlığı Temel Sağlık Hizmetleri Genel Müdürlüğü., Temel Sağlık Hizmetleri Genel Müdürlüğü Çalışma Yıllığı 2006, 1.baskı. Ankara: Kuban Matbaacılık Yayıncılık, 2007, 2006.

17. Oktay,İ., & Kayışoğlu, N., "Tekirdağ ili 112 acil sağlık hizmetlerinin değerlendirilmesi.", Sted Dergisi, 14, pp. 35–37, 2005.

18. Kılıçaslan, İ., Bozan, H., Oktay, C., & Göksu, E. (2005). "Türkiye'de acil servise başvuran hastaların demografik özellikleri.",- Türkiye Acil Tıp Dergisi, 5(1), 5-13.

19. Çelikten O.S. "Bir Üçüncü Basamak Hastane Acil Servisine Başvuran Hastaların Demografik Özellikleri ve Acil ServisKlinik Hizmetlerinin Değerlendirilmesi" Konya 2016