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ORIGINAL ARTICLE / ÖZGÜN ARAŞTIRMA MAKALESİ

An Analysis of External Referrals from an Emergency Room

Bir Acil Servisten Yapılan Dış Sevklerin Analizi

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ABSTRACT

Aim: This study aimed to determine the characteristics and outcomes of patients who were referred from a university hospital emergency room (ER) to other facilities.

Material and Methods: This study investigates the characteristics and outcomes of adult patients who were admitted to Hospital Emergency Room (HER) from January 1, 2011 to December 31, 2012 and were referred to another facility for a variety of reasons.

Results: Of the 164,810 patients who visited HER in these two years, 429 (0.26%) who met the inclusion criteria were included in the study. The most common reason for referrals was the lack of available intensive care unit beds (51%). The most common medical problem was respiratory system disease (49%). The patients' mean length of stay in HER before referral was 39 hours (1-360 hours). Most of the referrals were done by ambulance (n=368, 86%). No cardiopulmonary arrests occurred during the transfers, and no cardiopulmonary resuscitation (CPR) was performed. Of the patients, 26% died in the facilities to which they were referred. Only 2.6% of these deaths occurred in the first 24 hours after the transfer.

Conclusion: This study found that the rate of referrals from the level-3 emergency room was low, that the most common medical reason for referrals was respiratory diseases, and that the most common reason for referrals was the lack of available intensive care beds. Most of the deaths of patients in the facilities to which they were referred occurred more than 24 hours after their transfers.

Keywords: Emergency rooms, external referrals, inter-hospital transfers

ÖZ

Amaç: Bu çalışmanın amacı, bir üniversite hastanesi acil servisinden (AS) diğer sağlık kurumlarına sevk edilen hastaların özelliklerini ve sonuçlarını belirlemektir.

Gereç ve Yöntemler: Bu çalışma, 1 Ocak 2011 – 31 Aralık 2012 tarihleri arasında Acil Servise (AS) başvuran ve çeşitli nedenlerle başka bir kuruma sevk edilen erişkin hastaların özelliklerini ve sonuçlarını incelemiştir.

Bulgular: İki yıllık dönemde AS'ye başvuran 164.810 hastadan, dahil edilme kriterlerini karşılayan 429 (%0,26) hasta çalışmaya alındı. Sevklerin en sık nedeni yoğun bakım yatağı bulunmaması (%51) idi. En yaygın tıbbi sorun solunum sistemi hastalıklarıydı (%49). Hastaların sevk edilmeden önce acil serviste kalış süresi ortalama 39 saat (1–360 saat) olarak bulundu. Sevklerin çoğu ambulans ile yapıldı (n=368, %86). Nakiller sırasında kardiyopulmoner arrest gelişmedi ve kardiyopulmoner resüsitasyon (KPR) uygulanmadı. Hastaların %26'sı sevk edildikleri kurumlarda hayatını kaybetti. Bu ölümlerin yalnızca %2,6'sı transferden sonraki ilk 24 saatte gerçekleşti.

Sonuç: Bu çalışma, üçüncü basamak bir acil servisten yapılan sevk oranının düşük olduğunu, sevklerin en yaygın tıbbi nedeninin solunum sistemi hastalıkları, en yaygın idari nedeninin ise yoğun bakım yatağı yetersizliği olduğunu göstermiştir. Sevk edilen hastaların ölümlerinin büyük çoğunluğu, transferden 24 saatten daha uzun bir süre sonra meydana gelmiştir.

Anahtar Kelimeler: Acil servis, dış sevk, hastaneler arası transfer

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Introduction

Inter-hospital transfers or external referrals refer to the transfer of patients from one health facility to another. They are carried out within the framework of special procedures to maintain medical care and rehabilitation of any patient (1). Inter-hospital patient transfers from an emergency room (ER) to another hospital are a routine part of emergency room medical services (2). The American College of Emergency Physicians (ACEP) states that the main goal of patient transfers should be the optimal health and well-being of patients (3). Patients are usually referred from emergency departments to another hospital due to a lack of hospital resources such as available ward or ICU beds, appropriate specialists, operating rooms or intervention units and necessary clinical equipment. Patient-related factors included disease complexity, insurance status, and patient preferences. Treatment protocols between hospitals for trauma, ST-segment elevation, myocardial infarction, acute cerebrovascular accidents, and vascular surgery are also reasons for referrals (2,4-9). Regardless of the reason, referrals cause heavy burdens for pre-hospital teams, emergency department staff and patients, and increase healthcare costs (4,10-15). In Türkiye, similar challenges are observed in ERs at different levels of healthcare facilities.

Health services in Türkiye can be classified as preventive, curative, and rehabilitative. Health service providers are rated as level-1, level-2, and level-3 healthcare facilities by the Ministry of Health (16). Patients have the right to visit any level health facility to diagnose or treat their health problems. The demand for health services, especially in ERs, in Türkiye has been increasing recently, which has increased the number of patients who are evaluated in ERs and deemed to require hospitalization (17). The capacity of inpatient treatment units and emergency departments are often insufficient to meet increasing needs. This may lead to prolonged stays for ER patients before referral to comfortable medical care and treatment services and crowding in ERs. It may also lead to patient dissatisfaction, and additional workloads and reduced working capacity for ER staff. As a result, patient referrals deemed to require inpatient treatment after ER visits are becoming an important issue. The procedures and principles for referrals from ERs to other health facilities are outlined in the Official Gazette dated October 16, 2009/27378 with the Communiqué on the Procedures and Principles of Emergency Rooms in Inpatient Health Facilities (18). They were updated by the Communiqué Amending the Communiqué on the Procedures and Principles of Emergency Rooms in Inpatient Health Facilities in May 13, 2023 (19). There are data for rates of external referrals from level-1 health care facilities in Türkiye in 2017. However, no statistical data on level-2 and level-3 health facilities and on referrals from their ERs are available (17).

To the best of our knowledge, although there are studies on ER visits in Türkiye, no studies focusing on patient referrals from EDs have been conducted (20,21). This study examines the characteristics and outcomes of adult patients referred from a level-3 hospital ER.

Material and Methods

Study Design

This retrospective cross-sectional study was conducted at Dokuz Eylül University Hospital in İzmir, Türkiye. During the study period, there were 34 level-2 healthcare facilities (27 private hospitals, 7 public hospitals) and 7 level-3 healthcare facilities (4 training and research hospitals and 3 university hospitals) providing services to adult patients in the central province of İzmir (22). This study was conducted at the ER of a level-3 university hospital with 1,183 beds and approximately 85,000 annual visits. After the study was approved by the local ethics committee, it was conducted with the data of patients referred from the ER from January 1, 2011 to December 12, 2012. Ethical approval was obtained from Dokuz Eylül University Non-Invasive Clinical Research Ethics Committee (Date: 28/02/2013, Reference no: 2013/07-07).

Participants

Patients older than 18 who visited the ED and were referred to another health facility were included in the study. Patients with incomplete medical records, untraceable referral records, or who failed to visit the referred facility were excluded.

Interventions

The patients were assigned to three age groups: 18-39, 40-64 and 65 or older. Their complaints and diagnoses were classified using the International Classification of Diseases-10 (ICD-10) as: respiratory system diseases (RSDs), cardiovascular diseases (CVDs), mental diseases, digestive system diseases, traumas, cerebrovascular accidents (CVAs), and genitourinary system diseases (23).

Data Collection

The data were collected from the medical records of Dokuz Eylül University Hospital Information Management System (HBYS). The data for patients who visited ED and were referred to other health facilities were obtained, and their files were examined retrospectively. The data of patients who were transferred by ambulance were verified using ambulance case forms. Patient information from other inpatient facilities was obtained in the form of discharge epicrisis, with permission from the Ministry of Health, the Turkish Public Hospitals Secretariat of İzmir, and the relevant facility administrators. The sociodemographic and clinical data were recorded on forms. The clinical data were saved in two groups: Dokuz Eylül University Hospital data and data from other facilities.

Data Analysis

The data were analyzed using SPSS for Windows 15.0 software (SPSS Inc., Chicago, IL, USA), simple descriptive statistics and frequency analysis. The normality of continuous variables, particularly age, was assessed using the Shapiro-Wilk test. A p-value of less than 0.05 was considered statistically significant.

Results

During the study period, 164,810 patients visited ED. Of these, 539 (0.32%) were referred to another facility for

various reasons. Of the 539 patients, 429 were included in the study (Figure 1). Distribution of the age, characterized by a mean of 62.53 (±20.703 SD), a median of 68, and ranging from 18 to 101 years. The Shapiro-Wilk test for normality revealed that the distribution of patients' ages was not normal (W = 0.939, p < 0.001). The sociodemographic data of the referred patients are shown in Table 1.

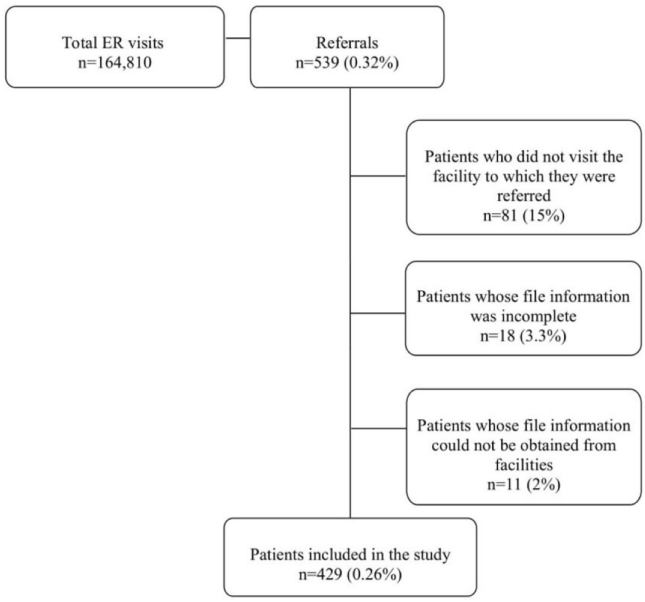

Figure 1. Study flow chart.

	n	%
Age group		
18-39	75	(17.5)
40-64	121	(28.2)
≥ 65	233	(54.3)
Gender		
Male	265	(61.8)
Female	164	(38.2)
Social security		
Social Security Institution (SSI)	395	(92.1)
Green card (free)	16	(3.7)
Private	3	(0.7)
None	15	(3.5)

Table 1. Demographic characteristics of patients referred from the emergency department to external facilities.

In the patients' ER clinical data, the most common complaint was respiratory system diseases (n=194, 45.2%), followed by trauma diagnoses (n=44, 10.3%). Of the patients, 136 (31.7%) needed noninvasive mechanical ventilation/invasive mechanical ventilation (NIMV/IMV). Of the patients, 68.1% (n=292) were referred within 24 hours after their arrival, and 33 (7.7%) were referred after staying in ER for ≥5 days. The patients' mean length of stay in ER before referral was 39 hours (between 1-360 hours). While the most common reason for patient referrals was the lack of available ICU beds (51%), 54.3% of patients referred due to lack of available ICU beds were referred to private hospitals. The rate of ambulance use for referrals was 85.7%. No cardiopulmonary arrests occurred, and no cardiopulmonary resuscitation (CPR) was performed during ambulance transfers (n=429). The most referrals were made to other level-3 training and research hospitals (n=164, 38.2%). The most common medical causes of referrals were respiratory system diseases, cardiovascular system diseases, and mental and neurological diseases (49.2%, 10.5% and 9.6%, respectively) (Table 2).

	n	%
Length of stay in ER before referral		
< 24 hours	292	(68.1)
25-48 hours	43	(10.0)
49-72 hours	32	(7.5)
73-96 hours	15	(3.5)
97-120 hours	14	(3.3)
> 120 hours	33	(7.7)
NIMV/IMV needs before referral		
Yes	136	(31.7)
No	293	(68.3)
Reasons for referral		
No available beds in the ICU	219	(51.0)
No available beds in the unit/clinic	154	(35.9)
Referral to the on-call facility for microsurgery	16	(3.7)
Patients' and/or their relatives' request	9	(2.1)
Patients' social security coverage	3	(0.7)
Other (need for ERCP, hospital where the patient is monitored, etc.)	28	(6.5)
Means of transfer		
Public ambulance (112)	368	(85.7)
Private car (not an ambulance)	59	(13.7)
Private ambulance	2	(0.4)
External facilities		
Level-3 hospitals (45%)		
Training and research hospitals	164	(38.2)
University hospitals	29	(6.8)
Level-2 hospitals (55%)		
Private hospitals	123	(28.7)
Public hospitals	113	(26.3)
Patients' medical diagnoses		
Respiratory system diseases	211	(49.2)
Cardiovascular system diseases	45	(10.5)
Mental and neurological diseases	41	(9.6)
Trauma	39	(9.1)
Digestive system diseases	28	(6.5)
Cerebrovascular accidents	23	(5.4)

Table 2. ER clinical features of patients referred from the emergency department to external facilities.
NIMV; Noninvasive mechanical ventilation, IMV: Invasive mechanical ventilation

Patients with respiratory system diseases were mostly referred due to the lack of available ICU beds (n=139, 65.9%). Trauma patients required microsurgery most frequently and were thus referred to another facility because of treatment protocols for hand microsurgery between specified dates in this city (n=16, 41%) (Table 3). Patients diagnosed with respiratory, cardiovascular and cerebrovascular system diseases were all transferred by ambulance; however, all patients with mental and neurological diseases visited the facilities to which they were referred on their own. A chi-square test of independence was performed to examine the relationship between patients' medical diagnoses and their reasons for referral. The test revealed a statistically significant association between these two variables (χ^2(DF) = 588.541, p < 0.001), indicating that the reason for referral varied significantly according to the medical diagnosis. A chi-square test of independence was conducted to assess the relationship between the mode of transportation and patients' medical diagnoses. The test revealed a statistically significant association between these variables (χ^2(DF) = 352.827, p < 0.001), indicating that the method of patient transportation varied significantly according to the patients' medical diagnoses (Table 3).

	Patients' medical diagnoses												
	RSD (n= 211)		CVD (n= 45)		Mental and neurological (n= 41)		Trauma (n= 39)		Digestive system diseases (n= 28)		CVA (n= 23)		***p***
Reason of referral	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	,000
No available beds in the ICU	139	65.9	39	86.7	-	-	5	12.8	3	10.7	13	56.5	
No available beds in the unit/clinic	60	28.4	5	11.1	41	100	8	20.5	21	75	8	34.8	
Patients'/patient relatives' request	4	1.9	-	-	-	-	2	5.1	1	3.6	1	4.3	
Need for microsurgery	-	-	-	-	-	-	16	41	-	-	-	-	
Social security	1	0.5	-	-	-	-	2	5.1	-	-	-	-	
Other	7	3.3	1	2.2	-	-	6	15.3	3	10.7	1	4.3	
Means of transfer													
Public ambulance (112)	209	99.1	45	100			31	79.4	27	96.4	23	100	,000
Private ambulance	2	0.9	-	-	-	-	-	-	-	-	-	-	
Private car (non-ambulance)	-	-	-	-	41	100	8	20.5	1	3.6	-	-	

Table 3. Comparison of the patients' referred from the emergency department to external facilities medical diagnoses and means of transfer*

*The most common referral diagnostic codes were evaluated.

RSD: Respiratory System Diseases, CVD: Cardiovascular Diseases, CVA: Cerebrovascular Accidents

The clinical data of patients from other facilities show that 199 (46.4%) were treated in clinics, 144 (33.6%) in ICUs, 57 (13.3%) in both ICUs and clinics, and 29 (6.8%) in ERs. The mean length of stay in inpatient clinics was 181 hours (range: 24–1,248 hours), while the mean length of stay in ICUs was 215 hours (range: 24–1,800 hours). Figure 2 illustrates the clinics where the patients were treated.

Of the patients, 65.3% (n=280) were discharged from the facility to which they were referred; 26.3% (n=113) died at the facility (Table 4). After referrals, the mortality rate (n=80, 70.7%) of the patients diagnosed with respiratory diseases in ER was the highest. Of 113 patients who died, 3 (2.6%) died in the first 24 hours, 107 (94.6%) died in the first 28 days and 3 (2.6%) died 28 days after referral. Of the patients who died within the first 24 hours, one died of a respiratory system neoplastic disease, and two died of other respiratory system diseases. Most of the patients who died were 65 years or older (n=89, 78.7%), 23 (20.3%) were in the 40-64 age group, and one (0.8%) was in the 18-39 age group.

	n	%
Patient outcomes		
Discharge	280	(65.3)
Death	113	(26.3)
Voluntary departure	26	(6.1)
Referral to another facility	10	(2.3)

Table 4. The outcomes of patients referred from the emergency department to external facilities in other facilities.

Discussion

Patients can both directly visit ERs and be transferred from other facilities through referrals. In Türkiye, there have been a few studies of patients referred to ERs (21,24,25). However, there were no studies on referrals from ERs to external facilities in the literature during the conduction period of this study. This is the first study to determine the rate of patients' referrals from an ER and their outcomes.

Although monitoring external referral data such as the rate and number of patients referred, their diagnoses, wait times for transfer, and the specializations of referring physicians are national hospital quality measurement criteria, they are also among the evaluation criteria for ER standardization for classification in the international arena (26-29).

In U.S. studies, Nacht et al. (2013) found a rate of patient referrals from ERs of 1.8% from 1997 to 2009 (6). Hernandez-Boussard et al. (2017) found a rate of 4% in 2009, and Kindermann et al. (2014) found a rate of 1.5% in 2010 (8,30). Liu et al. found an ER referral rate of 2.08% in Sichuan, China, and Gillman et al. found a rate of 9% in Perth, Australia (1,29). We found the referral rate to be 0.32%, which is notably lower than the rates reported in previous studies. This may be attributed to the fact that the study was conducted in a level-3 emergency department within a university hospital. The tertiary hospitals in Türkiye provide a wider range of services than other hospitals; patients can apply directly to these hospitals, and stricter referral policies are in place during referral processes. Although the low referral rate indicates that patient care is largely provided on-site, this may lead to overcrowding in emergency departments and imbalances in resource use. In particular, the shortage of ICU beds may lead to prolonged patient stays in ERs. Further studies are needed to evaluate the effects of referral policies on patient outcomes in Türkiye compared to other countries.

Most of the referred ER patients were over 65, male and had social security, which is consistent with the literature (6,8,29). Increasing life expectancies and older populations raise the number of older patients who visit ERs because of their greater need for hospitalization (30). However, the increasing frequency of comorbidities with age and the complex health issues requiring specialized care may have led to a rise in the referral of elderly patients from ERs (31). These findings suggest that emergency care providers and ambulance personnel involved in referrals must possess adequate knowledge and skills related to the care and specific needs of elderly patients.

This study's researchers believe that the lack of available beds in clinics and ICUs is now a chronic problem for level-3 health facilities with alarming level effects on service quality. The fact that non-clinical reasons for patient transfers such as lack of available beds are a prominent cause of referrals has already been reported a disturbing situation (2). Regional populations, needs and capacities should be evaluated, and ER visits should be considered in the regulation of the bed capacities of level-3 hospitals with significant numbers of patient visits.

The referred patients' most common diagnosis was respiratory system diseases. Unlike similar studies, in this study, patients with cardiovascular diseases or trauma were not the most commonly referred patients (8,29,32). The lower rate of referrals for cardiovascular diseases and trauma in our study could be related to the widespread availability of tertiary services such as angiography, catheterization and microsurgery in our hospital. this may reduce the need for external referrals as patients can receive specialized care within the same facility.

The patients' average length of stay in ER before referral was almost two days. This study did not aim to examine the timing of hospitalization decisions; however, the fact that patients remained in the emergency department for up to two days before being transferred to other facilities contributes to overcrowding that should not occur in ERs. Prolonged patient stays in ERs are among the most important reasons for crowded ERs (28). In patient referrals, effective use of the Communiqué on the Procedures and Principles of Emergency Rooms in Inpatient Health Facilities and written protocols between the referral parties in the case of specialized situations are important steps toward reducing waiting periods in ERs (18).

No cardiopulmonary resuscitation was required, and no life-threatening events occurred during any of the referrals. This may be attributed to adequate initial treatment in the emergency department, appropriate stabilization before transfer, and the preparedness of ambulance teams in anticipating patient needs. The medical diagnoses of 59 patients who were not transferred by an ambulance were mainly psychiatric diseases. Because the level-1 hospital to which patients were referred was outside the city, and the pre-hospital services affiliated with the Ministry of Health provided a transfer service by ambulance to this hospital from # at a certain time of day. This led to patients being transported in their private cars, accompanied by their caregivers. Emergency physicians should contribute to improving such referral practices by taking on key roles as educators, planners, and decision-makers in institutions and regulatory bodies that address the safety of referrals.

The referred patients with the highest mortality rate were those with respiratory system diseases. The sensitivity of ER physicians and personnel, clinical physicians and other emergency healthcare professionals about referral needs, referrals and effective health services for these patients should be increased.

Limitations

This study was conducted at just one level-3 hospital ER. Therefore, its results cannot be generalized to Türkiye's national referral statistics. The study used a retrospective research design, and, due to the lack of data in patients' files, some patients could not be included. Inaccurate diagnostic encodings in the files also caused limitations. Finally, patients who did not visit the facility to which they were referred from the ER, and those whose data could not be obtained from related facilities also limited this study's characterization of its population.

Conclusion

This study emphasizes the need for improved resource management in level-3 emergency departments in Türkiye. Patient transfers from ERs should maintain healthcare standards and patients' well-being.

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