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ORIGINAL ARTICLE

Interhospital Patient Transfers from the Emergency Department: A Retrospective, Observational Study

Acil Servisten Yapılan Hastaneler Arası Hasta Sevkleri: Retrospektif, Gözlemsel Bir Araştırma

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ABSTRACT

Aims: All patients requiring emergency intervention are given their first medical attention in the emergency department, regardless of the facilities, equipment, and occupancy of the hospital. When the hospital facilities are not sufficient, interhospital patient transfers may be done under some regulations and legislations. This study aimed to analyze interhospital patient transfers from emergency departments to other hospitals.
Materials and methods: This retrospective, observational, descriptive study examined interhospital patient transfers from Arnavutköy State Hospital Emergency Department to other hospitals for the last four years (2018–2022). While all referrals made by the emergency service through the İstanbul 112 Provincial Ambulance Service Transport Unit were eligible for the study, patients under the age of 18, those whose referral was due to COVID-19 infection, and those whose data could not be accessed were excluded. In addition to demographic data, interhospital patient transfers were evaluated according to time, department, diagnosis, distance between hospitals, and the characteristics of the referral institution.
Results: The study included 4.280 transfers. Transfers were done most frequently in 2018 (1,310; 30.6%). Transfers were often handled outside of weekday daytime (2.919; 68.2%) and were most frequently done for cardiac events (2.592; 60.6%). The average transfer distance between hospitals was calculated as 24.29 km (standard deviation [SD]: 6.55 km), while the mean time between the first registration and the transfer was 344.8 minutes (SD: 275.3 minutes). In the analysis of transfers by year, a higher rate of transfers were to public institutions in each successive year (2018: 40.8%; 2019: 52.4%; 2020: 77.8%; 2021: 78.3%).
Conclusion: The most common reason for transfer was cardiac events. Increasing the cardiology facilities and equipment of the hospital could reduce the number of interhospital patient transfers.

Keywords: interhospital patient transfer, patient transfer, emergency department patient transfer

ÖZ

Amaç: Acil servisler; hastanelerin imkan, donanım ve yatak doluluğundan bağımsız olarak her acil hastanın ilk değerlendirme ve acil müdahalesinin yapıldığı bölümdür. Hastane olanaklarının yeterli olmadığı durumlarda ise hastaların hangi koşullarda sevk edileceği yönetmeliklerle belirlenmiştir. Bu çalışma acil servisten diğer hastanelere yapılan sevklerin analizini amaçlamıştır.
Gereç ve Yöntem: Bu retrospektif, gözlemsel, tanımlayıcı çalışmada Arnavutköy Devlet Hastanesi Acil Servisi'nden 4 yıl boyunca (2018-2022) diğer sağlık kuruluşlarına yapılan sevkler incelendi. Çalışmaya acil servisten İstanbul 112 İl Ambulans Servisi Nakil Birimi aracılığıyla yapılan tüm sevkler dahil edilirken; 18 yaş altında olan, sevk nedeni Covid-19 enfeksiyonu olan ve verilerine ulaşılamayan hastalar dışlandı. Demografik verilerin yanı sıra sevkler zamana, branşlara, tanılara, hastaneler arası mesafeye ve sevk edilen kurumun özelliklerine göre değerlendirildi.
Bulgular: 4280 sevk çalışmada yer aldı. En sık sevkin 2018 yılında (1310, %30,6) yapıldığı izlendi. Sıklıkla mesai dışı saatlerde yapılan sevklerin (2919; %68,2) en sık kardiyak nedenler ile (2592; %60,6) ile yapıldığı görüldü. Hastaneler arası sevk mesafesi ortalama 24,29 km (standart sapma [SS] 6,55 km) olarak belirlenirken; ilk kayıt ile sevkin gerçekleşme arasında geçen süre ortalama 344,8 dakika (SS 275,3 dakika) olarak tespit edildi. Sevk olan hastaların yıllara göre analizinde, her geçen yıl daha yüksek oranda sevkin kamu kurumlarına yapıldığı izlendi (2018, %40,8; 2019, %52,4; 2020, %77,8; 2021, %78,3).
Sonuç: En sık sevk nedeni kardiyak olaylar olarak tespit edilmiştir. Kardiyoloji kliniklerinin imkan ve donanımlarının arttırılması, sevk sayısında azalmayı sağlayabilir.

Anahtar Kelimeler: hastaneler arası hasta sevkleri, hasta sevkleri, acil servisten yapılan hasta sevkleri

Introduction

Emergency medicine physicians are responsible for the first response to and stabilization of all kinds of medical conditions that require emergency intervention, regardless of the patient capacity and facilities of the emergency department they are in. While some patients reach definitive treatment with the interventions in emergency departments, others have more complex health issues that require the inclusion of other departments after that intervention. Following the first evaluation and intervention, the patient may need to be transferred to another health facility in cases in which the equipment, hospital occupancy, or diagnostic and therapeutic conditions required by the medical condition of the patient are not met in the present health facility (1). However, in cases in which the necessary facilities are available, it is essential that the remaining treatment of the patient be given in the institution to which he or she first presents.

Interhospital transfer of a patient is a serious and complex process that requires written and verbal communication between the emergency services command and control center, the referring hospital and the hospital that will accept the transfer. Although preventing problems that may occur during and after transfer involves precise coordination and preparation, patient transport may still increase mortality (2). Therefore, reducing the number of transfers can prevent problems from the very beginning. To reduce the number of transfers, it is essential to determine the current reasons for transfers, but, in Türkiye, not enough studies have been conducted on transfers from emergency services to other health institutions (3). This study aimed to analyze transfers from an emergency department to other health institutions.

Materials and Methods

Study design and patient selection

This study was designed as a retrospective, observational, descriptive study. Patients admitted to Arnavutköy State Hospital Emergency Department and transferred to another hospital over a period of four years (1 January 2018–31 December 2021) were included in the study. Prior to the study, approval was obtained from the Istanbul Medipol University Non-invasive Clinical Research Ethics Committee (ethics committee no.: E-10840098-772.02-3324; decision no.: 506). The research was carried out in accordance with the Declaration of Helsinki.

Selection criteria

All patients admitted to Arnavutköy State Hospital Emergency Department between January 1, 2018 and December 31, 2021 and transferred from the emergency department via the İstanbul 112 Provincial Ambulance Service Transport Unit were included in the study. Patients under the age of 18, patients whose transfers were due to COVID-19, and patients with missing transfer data were excluded.

Data collection

Transfer information was collected using the Hospital Information Management System (HIMS). Demographic data, the date and time the patient was registered to the emergency department, the diagnosis leading to the transfer, the date and time of the transfer, the department to which the patient was transferred, and the name of the receiving hospital were recorded. The dispatches were categorized according to calendar year, and the time stamp of the dispatch was divided into daytime hours and non-daytime hours. Except for public holidays, weekdays between 8:00 a.m. and 5:00 p.m. were considered as weekday daytime. It was determined whether the institution to which the patient was referred was a public or private institution by consulting the Istanbul Provincial Health Directorate and institutional websites. The transfer diagnosis of the patients was evaluated through the HIMS Annex-3 form and discharge report and was categorized as infectious, gastrointestinal, cardiac, metabolic, neurological, pulmonary, trauma, or other. In transfers involving more than one department, the decision was made according to the most serious pathology causing the transfer. The distance between hospitals was calculated as the shortest road distance using Google Maps (California, USA).

Statistical analysis

Statistical Package for Social Sciences (SPSS; Chicago, USA) for Windows, version 27, was used for the analysis of the statistical data. The Shapiro-Wilk test and a histogram were used to check the distribution of variables. Mean and SD were used for descriptive data that followed a normal distribution, while median and interquartile range (IQR) were used for data not following a normal distribution. Numbers and percentages were used for categorical data. Student's t-test was used to compare normal distributed independent groups, and Mann-Whitney U-tests were used to compare independent groups that did not show normal distribution. Categorical variables were compared with the chi-square test. Bonferroni correction was added in the evaluation between groups for categorical variables with more than two independent groups. Evaluation between more than two independent groups was performed using one-way ANOVA and the Kruskal-Wallis test. A significance level of $p<.05$ alpha was accepted.

Results

This study examined 6.584 transfers from Arnavutköy State Hospital Emergency Department via İstanbul 112 Provincial Ambulance Service Patient Transfer Service in the period of January 1, 2018–December 31, 2021. During the study period, 952.788 patients admitted to the emergency department of the hospital of interest. Patients under 18 years of age (n=128), patients with Covid diagnosis (n=225) and patients with missing transfer data (n=1,951) were excluded. Of the remaining 4,280 patients in the study, 2.756 (64.1%) were male (Table 1). The mean age of the patients was 56.4 years (SD: 17.62). It was observed that women had a significantly higher mean age than men (60.29±18.57 vs. 54.32±16.7, respectively; $p<.001$). Transfers occurred most frequently in 2018 (1.310; 30.6%), and the fewest transfers occurred in 2020 (874; 20.4%). Non-working hours transfers (2.919; 68.2%) were more than transfers during working hours (1.361; 31.8%). Transfers were less frequent to private institutions (1.727; 40.4%) than to public institutions (2.553; 59.6%). Patients were referred to other institutions most frequently for cardiac treatment (2.592; 60.6%), followed by transfers to neurology (483; 11.3%) and intensive care departments (346; 8.1%). The mean distance between hospitals was determined as 24.29 km (SD: 6.55 km), and the mean time spent by patients in the emergency department before transfer was calculated as 344.8 minutes (SD: 275.3 minutes). Of the 4.280 total transfers, 22.2% (n=952) were done in under 120 minutes.

Table 1. Demographic characteristics of transferred patients

		n=4,280
		n (%)
Gender	Male	2.756 (64.4%)
	Female	1.524 (35.6%)
Age		56.4 ±17.62
Calendar year	2018	1.310 (30.6%)
	2019	1.175 (27.5%)
	2020	874 (20.4%)
	2021	921 (21.5%)
Time period	Weekday daytime	1.361 (31.8%)
	Other	2.919 (68.2%)
Time range	00:00–08:00	804 (18.8%)
	08:00–16:00	1.664 (38.9%)
	16:00–24:00	1.812 (42.3%)
Institution	State	2.553 (59.6%)
	Private	1.727 (40.4%)
Diagnosis	Infectious	59 (1.4%)
	Gastrointestinal	88 (2.1%)
	Cardiac	2.592 (60.6%)
	Metabolic	98 (2.3%)
	Neurological	539 (12.6%)
	Pulmonary	150 (3.5%)
	Trauma	487 (11.4%)
	Other	267 (6.2%)
Referral department	Neurosurgery	45 (1.2%)
	Infectious diseases and clinical microbiology	12 (0.3%)
	Psychiatry	55 (1.3%)
	Gastroenterology	55 (1.3%)
	General surgery	42 (1.0%)
	Intensive care	346 (8.1%)
	Thoracic surgery	246 (5.7%)
	Pulmonology	79 (1.8%)
	Ophthalmology	7 (0.2%)
	Hematology	4 (0.1%)
	Gynecology and obstetrics	64 (1.5%)
	Cardiovascular surgery	39 (0.9%)
	Cardiology	2.549 (59.6%)
	Otolaryngology	14 (0.3%)
	Nephrology	76 (1.8%)
	Neurology	483 (11.3%)
	Orthopedics and traumatology	88 (2.1%)
	Plastic and reconstructive surgery	59 (1.4%)
	Hyperbaric medicine	4 (0.1%)
	Urology	12 (0.3%)
Distance (km)		24.29±6.55
Time between registration and dispatch (minutes)		344.8±275.30

Categorical variables expressed are expressed as number (percentage), continuous variables as mean ± standard deviation

There was no significant difference in gender ratio by year (Table 2) (p=.07). According to transfer department, the rate of transfers to cardiology decreased by years (62.6% in 2018, 61.3% in 2019, 61.4% in 2020, 53.3% in 2021). It was observed that the rate of transfers to government institutions increased each year (2018–2019 p<.001; 2019–2020 p<.01; 2020–2021 p=.009). Whether the transfers were made during or out of weekday daytime hours did vary significantly according to year (p=.113). In the one-way ANOVA test, a statistically significant difference was found in the ages of the referred patients between years (f=4.611; p=.003). In the post hoc analysis to identify the different groups, the mean ages of 2020 (54.99±17.5) and 2021 (55.39±17.9) were lower than those of 2018 (58.16±17.1) (p<.001 and p=.001, respectively). A significant difference was observed in the distance between hospitals according to year (p<.001). While no significant difference in transfer distance was observed between 2018 and 2019 (with p= 0.592 Bonferroni correction), the year 2019 (median 27.9; IQR 21.9–30.7) differed significantly from 2020 (median 22.2; IQR 18.7–28.4); it was determined that less distance was covered in 2020 than in 2021 (median 21.7; IQR 14.5–24.5). There was no significant difference between years in terms of time spent in the emergency department before transfer (p=.240, Kruskal-Wallis).

Of the patients referred to private institutions, 62.4% were male (n=1.077) as were 65.8% (n=1679) of those referred to state institutions (Table 3); there was a statistically significant difference between the groups (p=.02). It was observed that 37.2% (n=506) of the overtime transfers and 41.8% (n=1.221) of the out-of-hours transfers were made to private institutions, and a significant difference was observed between the groups (p=.004). Cardiac causes were the most common reason for transfers to both state and private institutions (48%, n=1.225 and 79.2%, n=1367, respectively). The mean age of transfers to private institutions was 8.34 years higher (95% CI: 7.34–9.35) than the mean age of transfers to state institutions. There was no significant difference between the distance travelled to public institutions and that to private hospitals (p=.06). There was a statistically significant difference between the time spent in the emergency department by patients referred to private institutions (median: 263; IQR: 0.0–464) and the time spent in the emergency department by patients who went to state institutions (median: 321; IQR: 183.0–504.5) (p<.001).

Table 2. Analysis of transfers by year

Year		2018	2019	2020	2021
Gender	Male	831 (63.4)	738 (62.8)	595 (68.1)	592 (64.3)
	Female	479 (36.6)	437 (37.2)	279 (31.9)	329 (35.7)
Age (years)		58.16 ± 17.1	56.44 ± 18.0	54.99 ± 17.5	55.39 ± 17.9
Diagnosis	Infectious	11 (0.8)	27 (2.3)	10 (1.1)	11 (1.2)
	Gastrointestinal	31 (2.4)	35 (3.0)	12 (1.4)	10 (1.1)
	Cardiac	820 (62.6)	720 (61.3)	537 (61.4)	515 (55.9)
	Metabolic	31 (2.4)	28 (2.4)	19 (2.2)	20 (2.2)
	Neurological	148 (11.3)	138 (11.7)	109 (12.5)	144 (15.6)
	Pulmonary	46 (3.5)	40 (3.4)	24 (2.7)	40 (4.3)
	Trauma	146 (11.1)	120 (10.2)	108 (12.4)	113 (12.3)
	Other	77 (5.9)	67 (5.7)	55 (6.3)	68 (7.4)
Institution	State	535 (40.8)	616 (52.4)	681 (77.8)	721 (78.3)
	Private	775 (59.2)	559 (47.6)	193 (22.2)	200 (21.7)
Transfer department	Neurosurgery	17 (1.3)	8 (0.7)	9 (1.0)	11 (1.2)
	Infectious diseases and clinical microbiology	3 (0.2)	5 (0.4)	2 (0.2)	2 (0.2)
	Psychiatry	11 (0.8)	26 (2.2)	16 (1.8)	3 (0.3)
	Gastroenterology	21 (1.6)	22 (1.9)	8 (0.9)	4 (0.4)
	General surgery	16 (1.2)	16 (1.4)	4 (0.5)	6 (0.7)
	Intensive care	115 (8.8)	86 (7.3)	54 (6.2)	91 (9.9)
	Thoracic surgery	69 (5.3)	59 (5.0)	58 (6.6)	60 (6.5)
	Pulmonology	26 (2.0)	22 (1.9)	13 (1.5)	18 (2.0)
	Ophthalmology	2 (0.2)	4 (0.3)	0 (0.0)	1 (0.1)
	Hematology	1 (0.1)	2 (0.2)	0 (0.0)	1 (0.1)
	Gynecology and obstetrics	6 (0.5)	8 (0.7)	14 (1.6)	36 (3.9)
	Cardiovascular surgery	13 (1.0)	17 (1.4)	2 (0.2)	7 (0.8)
	Cardiology	810 (61.8)	713 (60.7)	535 (61.2)	491 (53.3)
	Otolaryngology	3 (0.2)	4 (0.3)	6 (0.7)	1 (0.1)
	Nephrology	20 (1.5)	24 (2.0)	17 (1.9)	15 (1.6)
	Neurology	129 (9.8)	125 (10.6)	100 (11.4)	129 (14)
	Orthopedics and traumatology	17 (1.3)	14 (1.2)	25 (2.9)	32 (3.5)
	Plastic and reconstructive surgery	20 (1.5)	18 (1.5)	9 (1.0)	12 (1.3)
	Hyperbaric medicine	3 (0.2)	0 (0.0)	1 (0.1)	0 (0.0)
	Urology	8 (0.6)	2 (0.2)	1 (0.1)	1 (0.1)
Time period	Weekday daytime	388 (29.6)	380 (32.3)	276 (31.6)	317 (23.3)
	Other	922 (70.4)	795 (67.7)	598 (68.4)	604 (65.6)
Time range	00:00–08:00	260 (19.8)	211 (18)	173 (19.8)	160 (17.4)
	08:00–16:00	499 (38.1)	461 (39.2)	337 (38.6)	367 (39.8)
	16:00–24:00	551 (42.1)	503 (42.8)	364 (41.6)	394 (42.8)
Distance (km)		26.36 ± 5.0	25.88 ± 5.6	22.9 ± 7.3	20.2 ± 7.0
Time spent in the ED before dispatch (minutes)		354.78 ± 286	339.3 ± 280	326.6 ± 244	355 ± 281

Categorical variables expressed are expressed as number (percentage), continuous variables as mean ± standard deviation

Table 3. Analysis of transfers according to institution

		State	Private	p-value
Gender	Male	1.679 (65.8)	1.077 (62.4)	.02
	Female	874 (34.2)	650 (37.6)	
Time period	Daytime	855 (33.5)	506 (29.3)	.004
	Nocturnal	1.698 (66.5)	1.221 (70.7)	
Time range	00:00–08:00	448 (17.5)	356 (20.6)	.01
	08:00–16:00	1.032 (40.4)	632 (36.6)	
	16:00–24:00	1.073 (42.0)	739 (42.8)	
Diagnosis	Infectious	30 (1.2)	29 (1.7)	
	Gastrointestinal	88 (3.4)	0 (0.0)	
	Cardiac	1.225 (48)	1.367 (79.2)	
	Metabolic	72 (2.8)	26 (1.5)	
	Neurological	430 (16.8)	109 (6.3)	
	Pulmonary	62 (2.4)	88 (5.1)	
	Trauma	463 (18.1)	24 (1.4)	
	Other	183 (7.2)	84 (4.9)	
Referral department	Neurosurgery	38 (1.5)	7 (0.4)	
	Infectious diseases and clinical microbiology	12 (0.5)	0 (0.0)	
	Psychiatry	55 (2.2)	1 (0.1)	
	Gastroenterology	55 (2.2)	0 (0.0)	
	General surgery	42 (1.6)	0 (0.0)	
	Intensive care	83 (3.3)	263 (15.2)	
	Thoracic surgery	243 (9.5)	3 (0.2)	
	Pulmonology	75 (2.9)	4 (0.2)	
	Ophthalmology	7 (0.3)	0 (0.0)	
	Hematology	4 (0.2)	0 (0.0)	
	Gynecology and obstetrics	61 (2.4)	3 (0.2)	
	Cardiovascular surgery	35 (1.4)	4 (0.2)	
	Cardiology	1.208 (47.3)	1.341 (77.2)	
	Otolaryngology	14 (0.5)	0 (0.0)	
	Nephrology	66 (2.6)	10 (0.2)	
	Neurology	403 (15.8)	80 (4.6)	
	Orthopedics and traumatology	82 (3.2)	6 (0.6)	
	Plastic and reconstructive surgery	56 (2.2)	3 (0.2)	
	Hyperbaric medicine	2 (0.1)	2 (0.1)	
	Urology	12 (0.5)	0 (0.0)	
Age		53.07 ± 18.5	61.42 ± 14.9	<.001
Dispatch distance (km)		23.59 ± 7.0	25.32 ± 5.7	.06
Time to dispatch (minutes)		321 (183–504.5)	263 (0–464)	<.001

Categorical variables expressed are expressed as number (percentage); continuous variables as mean ± standard deviation or median (IQR 25^{th} – IQR 75^{th})

Discussion

In this single-center, observational, descriptive study, patients were frequently transferred from the emergency department for cardiac causes, mostly to public institutions and mainly out of weekday daytime hours. The mean age of the patients transferred in our study, 56.4 years (SD: 17.62), was higher than that in a previous study on this subject in Türkiye (41 years; SD: 27) (4). Unlike in the study of Ertan et al. (5), in which the patients were predominantly female (54.7%), we found that the gender of transferred patients was predominantly male (64.1%). This difference with a finding in the current literature may be due to the basic characteristics of the diseases that cause interhospital transfer. In the year 2020, which was the first year of the COVID-19 pandemic in our country, the number of emergency service admissions decreased significantly, and we believe that the lowest yearly number of transfers in our study in that year is related to that phenomenon (6,7). This study found that the majority of transfers occurred out of weekday daytime hours; in their study on the consultation processes of patients over the age of 65, Koçak et al. found that only 34.6% of patients were admitted to the emergency department during daytime working hours (8). In a study by Dönmez et al. that examined consultation processes in the emergency department, the authors found that only 38% of patients applied to the emergency department during daytime hours on weekdays (9). However, since some transfers may have happened due to the absence of on-call doctors in some departments, this may have affected the rates. Although transfers to private institutions were observed at a lower rate than those to public institutions in our study (40.4% transfers to private institutions), the rate of transfers to private institutions was still higher than in the study of Gönçer Demiral et al., which calculated the patient transfer rate to private institutions at 2.25% (3).

It was observed that the majority of transfers were made for cardiac causes in our study (60.6%). Existing studies show that the main reason for patient transfer from emergency departments is cardiac causes, but the rate of transfer for cardiac causes in our study is well above those in previous studies, which were found as 23.3%–28.3% (3,4). In addition to the absence of a percutaneous coronary intervention laboratory and a coronary intensive care unit in the hospital where the study was conducted, it may be surmised that recommending coronary angiography and angioplasty as a priority over thrombolytic therapy (if there is sufficient time to transfer as mentioned in the acute coronary syndrome guidelines) may have affected the results. However, as the study of Nicholson et al. (10) shows that transfers for percutaneous coronary intervention prolong reperfusion times, even at short distances, there is a need for new studies on this subject to determine both the fibrinolytic requirements and the situations in which emergency ambulance services bring patients to hospitals that can perform direct coronary intervention.

When the transfers are evaluated by year, it is observed that the rate of transfer to public institutions increased each year. It is also observed that there was a significant decrease in dispatch distances in the years after 2019. We believe that the April 2020 opening of Başakşehir Çam and Sakura City Hospital, which is approximately 13 km from the hospital where the study was conducted, affected this result. It is believed that shortening the transfer distance may have a positive effect on both patient comfort and expenditures for patient transfer; in the literature, however, no relationship has been established between transfer distance and mortality (11).

The average elapsed time between the registration of the patients at the emergency room and their admission to the ambulance for transfer was determined as approximately 5 hours and 45 minutes, and only 22.2% of the transfers could be managed in under 120 minutes (n=952). This period embraced the time spent making a diagnosis in the emergency department, deciding on the transfer, requesting a transfer, acceptance of the transfer, and the arrival of the appropriate transport vehicle at the hospital. This study included every patient being transferred to another hospital, regardless of the final diagnosis. If a subgroup analysis were to be conducted for patients requiring emergency intervention (e.g., ST elevated myocardial infarction, epidural hematoma, acute stroke, multi-trauma with shock), the time period would differ. In a study of acute trauma patients, Utter et al. determined that the actual patient transport constituted approximately 40% of the total time spent on transfers (12).Considering these times, it is vital that, in pre-hospital ambulance services, patients with stable hemodynamics be transported not only to the nearest hospital but also to the most appropriate hospital for their current clinical picture.

Limitations

Our study is a single-center study. The transfer of patients from the emergency department between hospitals includes complex issues, such as bed occupancy, the availability of relevant specialists, and the availability of necessary medical equipment related to both the transfer and the hospital to which the transfer will be made. In order to eliminate regional characteristics, large, multicenter studies are needed. Although the data in our study examines the process until the delivery of the patient to the transfer team, understanding the full nature of a patient's transfer also requires data concerning the transfer process and the process at the clinic to which the patient is transferred. It was not possible to access these data with the current system. In order to make correct decisions for transfer from emergency services, more detailed and accurate data should be accessed through a system in which the HIMS can also include existing data. When we scanned the transfer data, serious deficiencies were detected in the data of approximately 20% of the transferred cases, who were excluded from the study. This proportion is quite high, and we suspect that, because of the missing data, some findings of the study may not reflect the actual situation as it would

appear if all the data were available.

Conclusion

In our study, the most common reason for transfer was related to cardiac diagnoses. Although we observed that transfers to public institutions have rapidly increased over the years, we believe that transfers could be reduced if the necessary equipment were available. Considering that the vast majority of dispatches are done out of weekday daytime hours, it should be noted that keeping such equipment operational 24 hours a day is important in reducing the number of dispatches.

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Conflict of Interest

The authors declare no conflict of interest

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