Comparative Analysis of Using 112 Emergency Ambulance Services in Turkey and the Province of Konya

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ABSTRACT

Aim: *The purpose of this study is to evaluate and compare the use of 112 emergency ambulance services in Konya and Turkey within the years 2007, 2008, and 2009.*

Method: *A retrospective descriptive study has been referred. The study variables are the number of ambulances, the reason for the emergency call, number of cases, preliminary diagnoses of the ambulance crew, and the results of crew intervention.*

Result: *In the case of analysing the reasons of ambulance calls carried out in these three years; it is observed that calls for medical purposes have the share at the rate of 70% approximately. The second highest reason for calls is the traffic accidents. Considering both Turkey and Konya datum; although the trauma has had the highest rate among the pre-diagnosis reasons, it is on decline. In 2009, each of every four calls was resulted in transferring the patients from one hospital to the other.*

Conclusion: *When the results about the usage of ambulances are analysed; it is observed that the province of Konya has the results that are close to or above the country average in terms of each evaluated criteria. The qualification of services provided by ambulance crew has significance in order to be able to evaluate the quality of 112 services.*

Key words: *Ambulance, emergency, ambulance, service*

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Konya (Türkiye) İlinin 112 Acil Tıp Hizmetinin Değerlendirilmesi

Amaç: *Bu çalışmada 2007, 2008 ve 2009 yıllarına ait Türkiye geneli ve Konya ili, 112 acil ambulans hizmetleri kullanımının karşılaştırmalı analizinin yapılması amaçlanmıştır.*
Metod: *Geriye dönük bulguları tanımlayıcı türde bir çalışma yapılmıştır. Çalışmanın değişkenleri ambulans sayısı, acil çağrının nedeni, vaka sayısı, ambulans ekibinin ön tanıları ve ekip müdahalesinin sonuçlanması durumudur.*
Bulgular: *Üç yıllık ambulans çağrı nedenleri incelendiğinde, tıbbi amaçlı çağrıların yaklaşık %70'lik bir paya sahip olduğu görülmektedir. İkinci en yüksek orana sahip çağrı nedeni ise trafik kazalarıdır. Türkiye ve Konya verileri incelendiğinde ön tanı nedenleri arasında incinme en yüksek orana sahip olmasına rağmen düşüş göstermektedir. 2009 yılındaki her dört çağrıdan bir tanesi bir hastaneden diğerine nakil olarak sonuçlanmıştır.*
Sonuç: *Ambulans kullanımıyla ilgili sonuçlar incelendiğinde, değerlendirmeye alınan her kıstas için Konya ili ya ülke ortalamasına yakın, ya da ortalamanın üzerinde sonuçlara sahiptir. 112 hizmetlerinin kalitesinin değerlendirilmesinde ambulans ekibi tarafından sunulan hizmetlerin niteliği önem arz etmektedir.*
Anahtar kelimeler: *Ambulans, acil tıp, servis*

INTRODUCTION

The emergency ambulance service is a major public health service assisting the citizens to enable the individuals' vital functions during patient transfer and supplying the emergency service in the shortest time possible in cases of incidents threatening the individuals' vitality or requiring urgent healthcare. The use of ambulance services and service utilization rate varies according to the individual's age, the type of accident experienced or importance of disease, process of access to the healthcare system and the individual's economic situation and healthcare insurance. People using ambulance services are generally patients with acute disease or severely injured ones and these patients are hospitalized for a long time in the emergency services (1).

The progression in providing of ambulance services in Turkey started during the late 1980s. In 1986, ambulance services were started in Ankara, İstanbul, and İzmir in the form of patient transfer under the name of "Hızır Emergency Service", which was represented in 1994 under the name of "112 Emergency Aid and Rescue". From this date forward, a crew consisting of a practitioner, a nurse and a driver have begun working for the first time in ambulances (2).

Emergency Medical Services (EMS) system comprises of a comprehensive staff member network, equipment and resources established with the aim of delivering aid and emergency medical care to the community. These services also come to mean to ensure that emergency medical service provider is supplied rapidly, effectively and with assurance of high quality (3).

The components of EMS are defined as event-based depending on time as they consist of the followings; receiving of a call, call processing time, control allocation time, crew mobilization time, departure time to the scene, arrival time to the Emergency Department (ED) or hospital, and end up with time spent at ED or hospital(2). The EMS case consists of seven distinct periods mentioned above with an extra component named "response time" which consists of three components such as; control allocation time, crew mobilization time and departure time to the scene (4).

Pre hospital care is a relatively recent development, both in the United States and internationally. Changing health requirements in countries which experience economic and social development create a greater demand for EMS systems. EMS development in the U.S. was emerged as a result of the combination of urban growth, economic expansion, medical and technological advancements and public demand. Just as the U.S. experienced, several developing countries are increasingly in the need of an organized EMS system for an organized and unified approach to pre hospital care to be able to respond to the growing urban health concerns(5).

The provision of ambulance services in developed and developing countries and ambulance utilization rates of societies varies depending on local, socio-economic and cultural conditions (2). Globally; emergency ambulance services are identified as services based on the principle of "7 days and 24 hours" under the superintendence of Province or Regional Command Centres (6).

This study aims to evaluate and compare the use of 112 emergency ambulance services in 2007, 2008, and

Table 1. Comparison Konya Emergency Health Services and data connected with Turkey

	2007		2008		2009	
	Turkey	Konya	Turkey	Konya	Turkey	Konya
Population	70.586.256	1.959.082	71.517.100	1.969.868	72.561.312	1.992.675
Ambulance, n	1.703	140	2.029	169	2.427	156
Total case, n	1.119.974	22.526	1.423.568	33.725	1.718.112	69.575

2009 with in Konya and Turkey. A retrospective descriptive study has been referred. The study variables are the number of ambulances, the reason for the emergency call, number of cases, preliminary diagnoses of the ambulance crew, and the results of crew intervention.

MATERIALS AND METHODS

A retrospective descriptive study has been referred by examining the datum related to the three years (2007, 2008, and 2009) in order to make a comparative analysis of 112 emergency health services between Turkey and Konya. The data about Konya was provided from Konya Provincial Directorate of Health, and the data about Turkey was provided from the Ministry of Health. The variables of the research have been specified according to the classification of data available as presented below: 1-Ambulance unit per capita, 2-Total case number, 3-The reasons of emergency call: diseases, traffic accidents, other accidents (home accidents, work accidents), other cases (fire, suicide, injury), 4-The pre-diagnosis reasons (trauma, cardiovascular system diseases etc.), 5-Results of the cases (a timely intervention, transfer to hospital etc.)

RESULTS

PPopulation as a whole, ambulance unit and total case numbers in 2007, 2008, and 2009 for Turkey – Konya are presented on Table 1. Ambulance units in Turkey reached to 2.029 in 2008 with an increasing rate of 19.1% in proportion to 2007. In 2009; this unit reached to 2.427 with an increasing rate of 19.5% in proportion to the preceding year. While there was one ambulance per 41.448 people in 2007, this number decreased to 35.247 people in 2008. According to the numbers of 2009; there was one ambulance per 29.897 people. Regarding the analysis of total case numbers; it reached to 1.423.568 in 2008 with an increasing rate of 27.1% in proportion to 2007. It reached to 1.718.112 in 2009 with an increasing rate of 20.7% in proportion to the preceding years.

The number of ambulances in Konya has been reached to 169 with an increasing rate of 20.7%, and in 2009; it decreased at the rate of 7.7% in proportion to the preceding years. It is deemed that the reason of decreasing is to adapt ELV (End of Life Vehicle) procedure to the ambulances due. While there was one ambulance per 13.993 people in 2007, this number decreased to 11.656 in 2008. According to the data of 2009; there was one ambulance per 12.774 people. Considering the total case numbers; it was around 33.725 in 2008 with an increasing rate of 48.8% in proportion to 2007. An increasing rate of 106.7% in proportion to the preceding years, was clearly seen in 2009.

Considering the reasons of ambulance calls in these three years; it is observed that the calls for medical purposes have the ration approximately at the rate of 70%. Calls for medical purposes reached to the highest level with the rate of 72% in 2009. Traffic accidents were the second highest reason for calls. Although calls arising from traffic accidents show increase by years, in total, the incidence of the traffic accidents decreases. The reason of this is the raise in the number of total calls. Comparing Turkey and Konya in terms of call reasons; a percentage correlation is observed on calls for medical purposes. In Konya; calls resulting from traffic accidents occur above the average of Turkey. However, in comparison to the other years; it is observed that there is a recession on calls resulting from traffic accidents in Konya (Table 2).

Considering the datum of both Turkey and Konya; although trauma has the highest rate among the pre-diagnosis reasons, it is on decline recently. The cardiovascular system diseases are on the second rank among the pre-diagnosis reasons. While the other averages in Turkey are constant, percentage reduction is observed on cardiovascular system diseases in the province of

Table 2. Comparison with Turkey and Konya according to call reasons

Call reasons	2007				2008				2009			
	Turkey		Konya		Turkey		Konya		Turkey		Konya	
	n	%	n	%	n	%	n	%	n	%	n	%
Medical	843.431	67.96	31.825	6.43	1.100.663	70.59	39.577	70.6	1.345.109	72	50.195	72.15
Traffic accidents	178.384	14.37	8.020	16.74	183.933	11.80	7.150	12.8	206.213	11	8.466	12.17
Other accidents*	74.283	5.99	3.538	7.39	88.019	5.66	4.800	8.6	91.441	4	5.298	7.61
Other cases**	144.904	11.68	757	9.44	186.413	11.95	1.090	8	95.054	13	1.913	8.07
Total	1.241.002	100	44.140	100	1.559.199	100	52.617	100	1.737.817	100	65.872	100

*Other accidents: work accidents, home accidents, *other cases: suicide, laceration, fire, protocol

Table 3. Comparison with Turkey and Konya according to pre-diagnosis reasons

Pre- diagnosis	2007				2008				2009			
	Turkey		Konya		Turkey		Konya		Turkey		Konya	
	n	%	n	%	n	%	n	%	n	%	n	%
Trauma	285.536	25.49	11.193	25.77	21.442	22.03	11.955	23.07	355.866	20.7	13.824	21.48
Cardiovascular sys. diseases	211.320	18.87	7.637	17.58	262.711	18.45	8.932	17.23	313.946	18.3	10.076	15.66
Other*	271.869	24.27	9.689	22.3	409.720	15.1	12.122	23.38	524.053	30.1	16.014	24.9
Psychiatric diseases	82.684	7.38	4.975	11.45	110.374	7.75	6.828	13.17	136.969	8	8.462	13.15
Neurological diseases	130.272	11.63	4.717	10.86	152.238	10.70	5.539	10.69	169.536	10	7.096	11.03
Respiratory system diseases	83.863	7.49	2.720	6.26	108.794	7.64	3.466	6.69	143.576	8.4	5.157	8.1
Gis diseases	54.435	4.86	2.504	5.76	66.042	4.64	2.989	5.77	74.166	4.3	3.723	5.79
Total	1.119.979	100	43435	100	1.131.321	100	52.617	100	1.718.112	100	65.872	100

*Other: poisoning,urinary system disease,metabolic and endocrine disease,gynecologic and obstetric disease, ınfection disease, newborn disease

Table 4. Comparison with Turkey and Konya According to Case Results

Case result	2007				2008				2009			
	Turkey		Konya		Turkey		Konya		Turkey		Konya	
	n	%	n	%	n	%	n	%	n	%	n	%
Timely intervention	164.897	13.29	13.204	27.56	192.999	12.38	15.543	27.7	203.181	10.8	19.322	27.77
Transfer to hospital	900.133	72.53	23.205	48.44	1.154.295	74.03	29.368	52.4	1.010.830	54.06	36.762	52.84
Ex Left onsite	23.199	1.87	817	1.71	25.058	1.61	880	1.6	29.324	1.56	1.015	1.46
Ex transfer to morgue	3.934	0.32	82	0.17	5.168	0.33	81	0.1	5.043	26	93	0.13
Mission aborted	34.291	2.76	992	1.92	44.246	2.84	1.131	2	47.178	2.52	1.177	1.69
Transfer by another vehicle	44.662	3.60	1.099	2.30	52.088	3.39	887	1.6	57.354	3.06	1.168	1.68
Untrue call	7.950	0.64	116	0.27	8.378	0.54	172	0.3	8.894	0.47	119	0.17
Transfer from hospital to another	61.906	4.99	8.562	16.5	61.936	4.88	8.030	14.3	455.497	26.23	10.207	14.26
Total	1.226.222	100	48.077	100	15.44.168	100	56.092	100	1.824.961	100	69.863	100

Konya. The remarked point is the fact that calls for pre-diagnostic psychiatric diseases are over the figures in Turkey (Table 3). When datum of Turkey is taken into account, in view of the case results; the calls made in 2007 and 2008 were ended up at the rate of approximately 85% as a timely intervention and transferring patients to a hospital. One of the each four calls was resulted in transferring from a hospital to another in 2009. Analysing the percentages of timely interventions; it is observed that the figures of Konya are over the average of Turkey (Table 4).

DISCUSSION

77-101 of 1000 people benefit from the ambulance services annually in North Europe Countries (7). While the ambulance usage rate is on the rate of 140 ‰ in England, it is enounced as 11-139 ‰ in USA (8, 9). Besides doctors, who serve in primary care health services; Paramedics, who also have authority and allowance on medication and some operations after an education process, work in ambulance services all around the World. However, the staff members mentioned are not enough in terms of quality and quantity especially in developing countries (10).

Regarding the research studied in Norway in terms of pre-diagnosis intervention provided by Emergency Ambulance Team; it is observed that trauma with the rate of 41% and cardiovascular diseases with the rate of 27% were on the top of the list (7). As for in Italy; respiratory insufficiency (16.7%), loss of consciousness (16.6 %), complaint of chest pain (11.8%) are taking place on the top of the list. Besides, in Swiss; cardiovascular diseases with the rate of 12% are taking place on the top (11). As it is seen from all instances; It is very difficult to set a balance between the countries owing to the fact that a classification among the reasons of pre-diagnosis intervention is quite out of the question. When emergency ambulance services are evaluated in terms of case results; it is observed that ambulance services are resulted in transferring to hospital as a whole. For instance; on the research studied in USA; it is stated that 7 out of the each 10 patients are transferred to a hospital (12). However, in our country; an increase is observed in the rate of transferring the patients from one hospital to another.

In recent years; although progressions are appeared in

serving of 112 emergency ambulance services, our country is still behind the developed countries. However, an ongoing increase is observed on ambulance number per capita. So, it is significant in terms of increasing service quality. It can be expressed that awareness on health problems makes the use of ambulances enhanced. Considering the results of the cases; it can be stated that ambulance services are used with the aim of "transfer to hospital" and "timely intervention" in the province of Konya by comparison with Turkey in general. However, the rate of "transfer from one hospital to another" shows a rapid increasing in both Turkey and Konya.

Konya has the sixth largest population in Turkey. It is one of the prominent provinces of Turkey in view of the number of ambulances per capita. Taking the results into consideration about the usage of ambulances; it is observed that Konya has the results that are close to or above the country averages in terms of each assessed criteria. The qualification of services served by ambulance crew has importance in order to be able to evaluate the quality of 112 services. Thus, it is essential to supply personnel training with higher standards, and to follow on the studies about progression, development and for a more qualified training. Air and water transportations also should not be ignored while the 112 emergency ambulance services are improved in our country. It is expected that the developments in this area will play an important role on much qualified ambulance services throughout the country.

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