The Effect of The Primary Care Services on The Intensity of Emergency Care Admissions to Public Hospitals in Turkey: An Ecological Study

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Abstract

Purpose: Effective primary healthcare services may prevent unnecessary admissions to emergency care which help efficient operation in the emergency care units. The aim of this study is to evaluate the association between primary healthcare services and number of emergency service admission per person in public hospitals in 2013 in Turkey.

Methods: This ecological study analysed data which data of 81 administrative regions. The data were obtained from Public Hospital Associations-2014 and Ministry of Health Annual Statistics 2013 Reports.

Results: The number of emergency service admission has a negative weak correlation with the number of individuals registered for each primary care physician (r=-0.228, p=0.040). There was a negative weak significant correlation for the regions with large population (r=-0.311, p=0.048). When the populations of the cities were divided into two according to their size, no significant relationship was identified between the number of people per family physician and emergency service admission per person in both small and big cities (p>0.05). There was no significant correlation between the number of primary care examinations per person and the number of emergency service admission per person in all cities and small ones (p>0.05).

Conclusion: In contrary to expectations, primary care services in Turkey is far from decreasing emergency service admissions. Reinforcement of primary care and implementation of an efficient referral system should be considered for better use of health care resources.

Keywords: Emergency medicine, Primary healthcare, Ecological study, Emergency department overcrowding.

INTRODUCTION

An emergency service is defined as any health care service provided to evaluate and/or treat any medical condition that a layperson with an average knowledge of medicine and health, believes that immediate unscheduled medical care is required. Ideally emergency care services are offered to life-threatening cases or in cases where life-threatening situations may arise if the care is not provided. However inappropriate emergency service use is quite common in Turkey. In the previous studies, a third to 62% of the emergency service visits were reported as inappropriate (1–3).

Non-emergency visits to emergency care may delay care for seriously ill patients, cause longer waiting times and safety problems, increase patient dissatisfaction, decrease quality of service, reduce staff efficiency and increase cost of in patient care (1–4). In addition, inappropriate admission to emergency care may lead to poor health outcomes in patients. In a study an increase

in mortality rates and hospital stay time was detected in patients who admitted to the emergency department during busy times compared to regular times of the emergency department (5).

Primary healthcare services may help the efficient operation of special units like emergency departments by preventing unnecessary visits when structured and used correctly. In a study conducted among pre-school children, available and continuous primary healthcare services for pneumonia were associated with a decrease in emergency department visits and hospital stay (6). In a study carried out in Greece, it has been reported that about half of the patients admitted directly to the university hospital emergency department with ear, nose and throat symptoms could have been managed by primary healthcare physicians without specialist physician support (7). It has also been shown that primary healthcare services have effects in explaining the differences in hospital visits between regions in France (8). On the

Ada and Unal. Primary Care Services and Emergency Care

J Basic Clin Health Sci 2018; 2:82-87

other hand, no effect of primary health care service on decreasing visit rates or hospital stay times of high-risk groups of patients has been detected (9–11).

The aim of this study is to determine the effect of primary healthcare services on the intensity of emergency service visits in public hospitals in Turkey.

METHODS

This ecological study analyzed data on number of emergency service visits and primary health care indicators from 81 provinces of Turkey. All the data included in the analysis were from the year 2013. Data were extracted from the reports of Public Hospital Unions 2014 (PHU) and Ministry of Health Health Statistics Yearbook 2013 (MHHS) (12,13). The number of emergency service visits, the number of hospital beds per ten thousand people, the number of specialist physicians working at the hospitals per ten thousand people and the proportion of elderly population were calculated from the PHU report and the number of examinations carried out at the primary care per capita and the number of people per family physician were calculated from the MHHS report. Both reports provide many indicators of health and service. However, the number of medical visits per capita and the density of hospital beds and physicians, which are among the available data at the provincial level, are among the indicators used when comparing the health status of countries (14). In addition, the proportion of elderly population has also been included in the analysis because of the fact that the elderly patients visit the emergency services more frequently (2–4).

In the analysis, descriptive findings were presented as the median, the lowest value and the highest value. Pearson correlation and Spearman rank correlation analysis were performed when assessing the associations between the number of emergency unit visits and primary health care services. Analyses were repeated for the provinces with populations more and less than 500 thousand. The main reason for stratification was the provinces with the populations less than 500 thousand had high proportion

of emigrant and socioeconomically low or middle income populations and the capacity of primary or secondary care might also be below the national average (15).

Figure 1 shows the number of emergency service visits per capita and Figure 2 shows the number of examinations at the primary care per capita in maps at the provincial level. In both maps, provinces are divided into 5 groups according to their values. Accordingly, in both maps, the province group with the highest value is indicated with the darkest color and the province group with the lowest value is indicated with the lightest color.

SPSS 15.0 statistical package software was used for statistical analyses and ARCGIS 10.2 software was used to create maps.
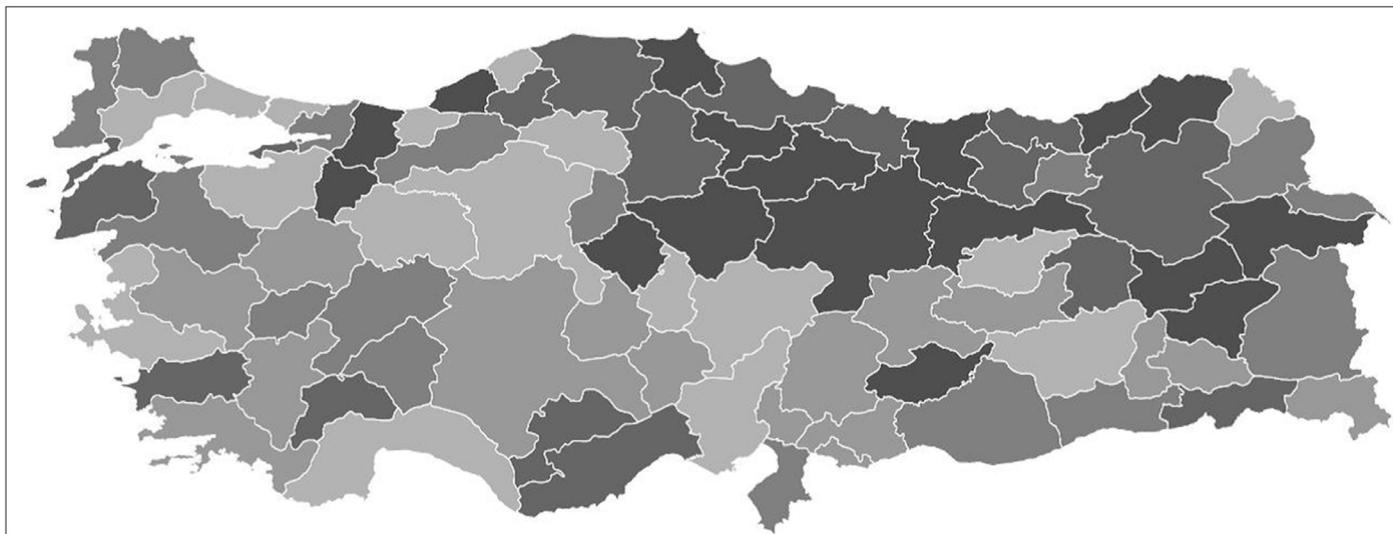
RESULTS

Emergency service and primary examination numbers and the descriptive findings of health capacity are presented in Table 1. In 2013, the median of emergency service visits per capita was 1.19 and the number of primary care examinations per capita was 2.91. While there is a 3 times difference between the provinces with the highest and lowest emergency visits per capita, there is a 7 times difference between the provinces with the highest and lowest primary care examinations per capita. The difference is lower for the number of people per family physicians, another important indicator. In addition, when the lowest and the highest cities are examined for each variable given in the table, it can be seen that the eastern cities are disadvantaged.

In Figure 1, it is seen that the cities where the number of emergency service visits are high are clustered in Eastern Anatolia, Central and Eastern Black Sea regions. In Figure 2, it is seen that the number of primary care examinations per capita increases from the east of the country to the west.
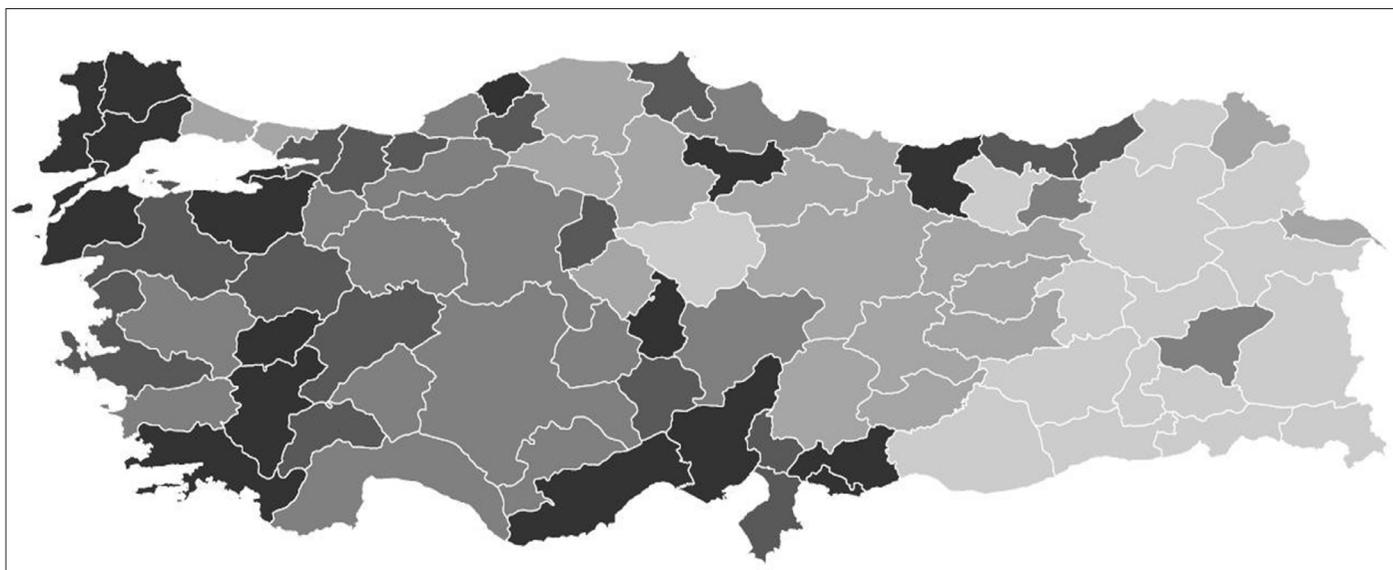
Table 2 presents the association between emergency service visit and characteristics of primary care, population and hospitals in

Table 1. Indicators of the numbers of emergency service and primary care examinations and health system capacity, Turkey, 2013

	Median	Lowest	Highest	The proportion between lowest and highest	Lowest	Highest
Number of emergency service visits per capita	1.19	0.71	2.05	2.88	Düzce, İstanbul, Eskişehir, Ankara, Tunceli	Rize, Artvin, Bitlis, Amasya, Muş
Number of primary care examinations per capita	2.91	0.65	4.59	7.06	Hakkari, Şırnak, Siirt, Ağrı, Muş	Kilis, Adana, Bartın, Uşak, Denizli
The number of people per family physicians	3504	2908	4266	1.46	Bayburt, Kırşehir, Karaman, Erzincan, Çorum	Hakkari, Yalova, Mardin, Çankırı, İstanbul
Number of hospital beds per 10,000 people	18.75	9.10	33.83	3.71	Düzce, Mardin, Hatay, Şanlıurfa, İstanbul	Bolu, Rize, Trabzon, Isparta, Elazığ
Number of specialist physicians working at hospitals per 10000 people	4.30	2.67	7.54	2.82	Mardin, Van, Şanlıurfa, Iğdır, Şırnak	Ankara, Rize, Bayburt, İzmir, Sinop
Proportion of elderly population to total population	9.53	2.82	16.70	5.92	Hakkari, Şırnak, Van, Şanlıurfa, Ağrı	Sinop, Kastamonu, Çankırı, Giresun, Artvin

J Basic Clin Health Sci 2018; 2:82-87

Ada and Unal. Primary Care Services and Emergency Care

Figure 1. Number of emergency service visits per capita, Turkey

Figure 2. Number of primary care examinations per capita, Turkey

Table 2. The association between emergency service visits and primary care, hospital and population characteristics

			Number of Primary Care Examinations Per Capita	Number of People per Family Physicians	The number of hospital beds per 10,000 people	Number of specialist physicians working at hospitals per 10000 people	Proportion of elderly population to total population
All provinces (n=81)	Emergency Service Visits per Capita	r	-0.185	-0.228	0.408	0.038	0.212
		p	0.098	0.040	<0.001	0.737	0.057
Provinces population <500 thousands (n=40)	Emergency Service Visits per Capita	r*	-0.156	-0.166	0.477	0.183	0.184
		p	0.335	0.305	0.002	0.259	0.256
Provinces population ≥500 thousands (n=41)	Emergency Service Visits per Capita	r	-0.311	-0.290	0.380	-0.220	0.257
		p	0.048	0.066	0.014	0.167	0.105

r: Pearson correlation coefficient, *Spearman correlation coefficient

Ada and Unal. Primary Care Services and Emergency Care

J Basic Clin Health Sci 2018; 2:82-87

the provinces. There is a weak significant negative correlation between the number of family physicians and the number of emergency service visits per person (r=-0.228, p=0.040). However, this relationship is not significant in both groups when the cities are stratified by the population size (p> 0.05).

There is no significant relationship between the number of primary examinations per capita and the number of emergency department visits per capita (p> 0.05). However, when the cities are divided into two according to population size, there is a weak significant negative correlation between the number of primary examinations per capita and the number of emergency service visits per capita in small cities (r = -0.311, p = 0.048).

While there is a moderate significant correlation between the number of emergency service visits and the number of hospital beds (r=0.408, p<0.001), no significant relationship was found between the number of specialist physicians working at the hospital and population structure (p>0.05).

DISCUSSION

In this study, the relationship between primary health care service indicators and emergency department visits were examined. The number of emergency service visits per capita had no correlation with the number of people per family physicians, which is a primary healthcare indicator, but the number of primary care examinations per capita had a weak association in the cities with over 500 thousand of population. These findings suggest that the number of emergency service visits in public hospitals in Turkey is not associated with the primary healthcare service indicators. Possible reasons for this lack of association can be discussed under three subheadings including the number of family physicians and their distribution, the perceptions or beliefs on the quality of care at primary care, and health care service planning.

The number of family physicians and their distribution
In this study, the number of primary care examinations per capita increased and the emergency care visits decreased from eastern cities to the western cities. This finding is consistent with the current situation in Turkey regarding family physician distribution. Eastern Provinces of Turkey have lower socioeconomic status compared to the west (15). The number of physicians and other health professionals is also lower in the Eastern regions compared to the West (16). Many family physician posts are not full in the Eatern regions (17). In order to ensure and sustain the fair distribution of physicians within the country some organizational strategies implemented including financial incentives for the civil servants working in the Eastern regions and compulsory service. In Turkey, after graduation from the medical faculty, there is a two years compulsory service for physicians. However due to the limited number and quick turn-over of family physicians in the east of the country, primary care services remains weak and emergency services are used more often for primary care. Therefore, increasing the number of family physicians may be an effective strategy to reduce emergency department intensities.

On the other hand, there are controversial results on the association between number of primary care physician and number emergency department visits. According to a study in the USA, the counties where the numbers of primary care physicians are high are associated with low emergency department visits (18). However, in a study conducted in Canada, it was also reported that frequent admission to emergency services may not be associated with lack of primary health care services (19).

The perceptions or beliefs on quality of care at the primary care
One of the reasons for inappropriate emergency service visits is the belief that quality of patient care in primary care is low. In one study, according to service providers, the most important problem of the primary care is that it is regarded only as a place to have drugs prescribed (20). Similarly, in the study of Tuna, the proportion of patients who came directly to the tertiary care hospitals without visiting any health institution was 36%. In addition, the two most important reasons for this situation were believing that he/she will receive better care in tertiary care and that the quality of the health institutions near him/her is insufficient (21). In another study, the most important reason (49%) for emergency care is that the emergency department is considered reliable (3). In a study conducted in the UK, a significant relationship was found between not being able to receive medical treatment services from the preferred physicians and the emergency service visits, and this association was reported to be stronger in underdeveloped communities (22).

It is difficult to say that the primary care in Turkey is used as a center for diagnosis and treatment in a real sense. One of the most important reasons for this is the belief that provision of quality service in the primary care is not realized. As a matter of fact, in one study, the rate to use the primary care to obtain policlinic services among the people visiting the primary care was 39.8% and in another study, the rate to use the primary care as a health center was 38.7% when sick (23,24). In Ersel's study, only 14.5% of the patients admitted to emergency services considered primary care as the first place to visit for health problems (3). Providing quality and trust in the primary care may therefore be an important way to reduce inappropriate emergency service visits. However, while quantitative measures such as immunization rate are used in the primary care, the quality of the service provided to the patient's examinations are not yet used. Hence, the number of examinations per capita increased in 2011-2013 in Turkey, while the number of examinations in the primary care decreased (13). In addition, the family practice specialty program, which will increase the quality of service in the primary care, constitutes only 5% of the total quota in specialty in medicine program (25).

Health care service planning
According to our findings, as the number of hospital beds increases, the number of emergency service visits per capita also increased significantly. Accordingly, when hospital facilities increase, patients tend to use secondary or tertiary health care facilities instead of using primary health care services. After the start of family practice in primary healthcare system in Turkey, the number of visits to medical institutions increased significantly

J Basic Clin Health Sci 2018; 2:82-87

Ada and Unal. Primary Care Services and Emergency Care

and this increase was higher in hospitals compared to primary care (26). When the pre- application (2002-2005) and during application (2005-2008) periods of 6 cities which began family practice are compared, it can be seen that there was an increase of 38% and 131% in medical visits respectively in primary care and secondary care but the decrease in emergency service visits remained at 3% only (27). Similarly, the higher the hospital bed intensity is in countries, the higher hospital visits are (28).

In Turkey, as in other countries instead of referral chain, contribution fees are used as a means to prevent inappropriate health visits (29). In Turkey, while no examination fee is taken in primary care, a contribution fee is taken per examination in the cases of inappropriate emergency service visits. However, it is far from being a deterrent because the amount of the contribution is very low (₺ 5 for emergency service visit).

Among the reasons for using the primary care in the studies, its being economically feasible is also considered (23,24). Patients complain about the contribution fee of health care services and describe this as a reason that affects the accessibility of health services (30). According to another study, it has been reported that interventions need to target deprived communities to prevent emergency visit rates (28). Therefore, regulations in favor of the primary care contribution fees may be a useful in reducing the inappropriate emergency services use. These contribution fees should not be regarded as a factor that increases health expenditures or obstructs health care admissions, but rather as a means of encouraging the primary care use and enabling effective use of resources.

The most important limitation of the study is that the data sources used in the study covers only public primary and secondary institutions. The data on number of emergency department visits per capita, the hospital beds used and the physician density obtained from PHU report based on only the secondary and tertiary level hospitals of the Ministry of Health. Therefore, private hospitals, public and foundation university hospitals were not covered in this study. On the other hand, the number of examinations for per physician was 3.6 for state hospitals, 0.9 for private hospitals and 0.4 for university hospitals in 2013 (16). It is possible that the distribution of health care admissions may also be affected by those hospitals. Private hospitals and usually university hospitals clustered in big cities and west cities. For the same reason, the number of emergency visits per capita and the number of primary examinations per capita may be lower than calculated in this study. Another limitation of the study is the ecological design that is considered weak in evaluating the causal associations since it uses clustered data rather than individual based data. However, this kind of study designs will be helpful to develop hypothesis for further studies.

CONCLUSION

The use of emergency services is very common in public hospitals in Turkey. It is difficult to say that primary health care indicators play an active role in decreasing emergency service admissions. Strengthening and encouraging the use of primary health care services may be an important initiative to reduce the number of inappropriate emergency service applications.

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