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The Impact of Flexible Working Hours in Family Medicine Practice on Emergency Department Admissions

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ABSTRACT

Objectives: The aim of the study was to evaluate the frequency of emergency department admissions (EDA) and related factors in the last year among patients admitted to family health centers (FHC) with and without flexible working hours (FWH).

Methods: This study was conducted in 6 regions in Turkey, 50 FHCs were selected for each study region by random sampling and the first nine patients who applied to the FHC were included in the study. Patients who applied to emergency department health services at least once for any health problem in the last year were considered to have EDA.

Results: A total of 2605 patients were included in the study, and EDA was found in 1024 (39.3%) of the patients. EDA was detected in 246 (41.5%) patients with FHCs with FWH and 778 (36.7%) patients with FHCs without FWH (p=0.232). In addition, there was no significant difference between patients with and without FWH in the distance of the FHC from home, the frequency of making an appointment to see the FP, the ease of making an appointment, the waiting time after making the appointment, and the limitation of the working hours of the FHC (p>0.05).

Conclusion: It has been determined that the presence of FWH did not cause a difference in terms of EDA, and further studies are needed on the reasons for this.

Keywords: Emergency health services, family practice, health services accessibility, health services administration, health services misuses

INTRODUCTION

Emergency healthcare services are hospital organizations that provide 24-hour treatment for acute conditions requiring urgent medical intervention.[1] Unnecessary emergency department admissions (EDAs) are a concerning issue in emergency healthcare services worldwide.[2-4] Although the frequency of unnecessary EDA varies depending on the criteria used for de-

fining it, it is generally observed to be between 24-40%.[4,5] In a systematic review, it was found that 37% of EDAs were not emergencies.[3] EDA leads to overcrowding, making it challenging to access emergency health services during real emergencies.[4,6] A significant fraction of unnecessary EDAs are conditions that can be treated in primary care.[4] Despite the lack of contrary evidence on the impact of primary healthcare services on EDA, some studies have found that difficulties in accessing primary healthcare services contribute significantly to EDA.[2,7,8]

Primary healthcare services are the initial point of contact with the healthcare system and provide continuous, comprehensive, and coordinated care to the community regardless of age, gender, and disease.[9] In Turkey, the "Family Medicine Practice" was gradually introduced in 2005 to strengthen primary healthcare services.[10] In addition, family health centers (FHCs) have been grouped based on various parameters since 2010 to improve the quality of primary healthcare.[11] One of these parameters, flexible working hours (FWH), entails providing primary healthcare services for a minimum of 14 hours per week during out-of-hours periods in FHCs implementing this practice. Consequently, FHCs meeting the required criteria receive higher current expense payments compared to other FHCs.

This study aims to assess the frequency and causes of EDA in patients admitted to FHCs with and without FWH in the last year.

METHOD

This study is derived from the "Evaluation of Primary Healthcare Services in Europe: QUALICOPC Project" data on Turkey. The QAULICOPC study aims to evaluate quality, cost, and equity factors in primary healthcare services across 31 European countries, and the research protocol was published in 2012.[12] FHCs in a total of 6 regions in Turkey were included in the study, and data were collected from two provinces in the fifth region as the targeted sample could not be reached in the first province. In the sample selection, a balanced selection was made between provinces with short and long-term family medicine practice, considering the date of the province's transition to the family medicine system. The lists of Family Physicians (FPs) working in the selected provinces were obtained from the Public Health Directorate to which they were affiliated, and 50 FHCs were randomly sampled for each study region. Only one FP from each FHC was included in the study, and thus, only one of the FPs with the same working conditions was included from FHCs with multiple FPs. In addition, the first nine patients who presented to each FHC on the day of data collection were included in the study (Fig. 1).

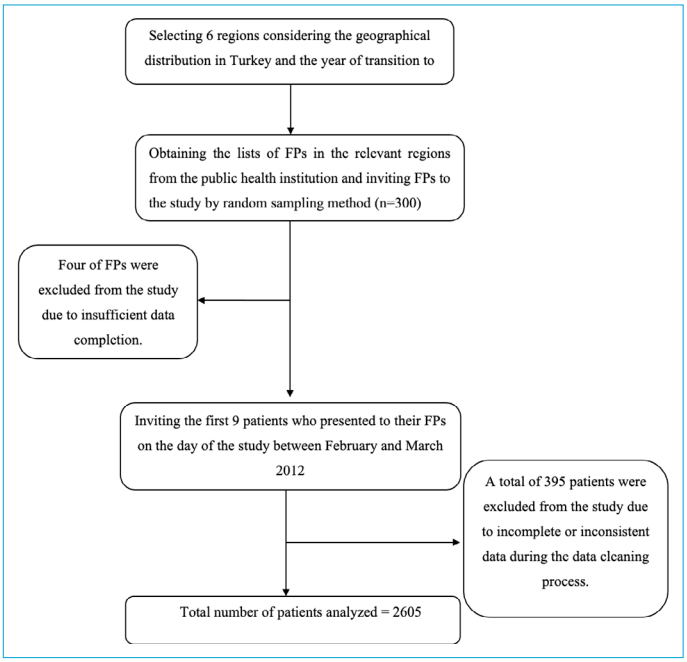

Figure 1. Research protocol.
**Izmir in the first region, Adana in the second, Kayseri in the third, Ankara in the fourth, Rize and Trabzon in the fifth, Istanbul in the sixth.*

During the data collection period of the study, it was determined that there were 272 FHCs in Izmir (first region), 148 in Adana (second region), 65 in Kayseri (third region), 315 in Ankara (fourth region), 21 in Rize and 74 in Trabzon (fifth region), and 890 in Istanbul (sixth region).[13] Informed consent was obtained from the selected FPs and patients to participate in the study, and in the absence of consent, a new FP and patient were randomly selected from the same FHC. The questionnaire forms used in the research were translated from English to Turkish and then back to English, and any discrepancies in meaning were discussed and agreed upon by the researchers.

In the questionnaire form, more than one option could be marked in the questions evaluating the reasons for EDAs and the reasons for not going to FP in the last year. Patients who applied to emergency department health services for any health problem at least once in the last year were considered as having an EDA, while those who did not apply to the emergency department were considered as having no EDA.

Patients under 18 years of age and those who were unable to cooperate in answering the questions were excluded from the study.

Descriptive statistics such as frequency, percentage, mean, standard deviation, median, median, and interquartile range were calculated using SPSS 15.0 program. In addition, the Student t-test was used for the comparison of con-

tinuous variables with normal distribution, and the Mann-Whitney U test was used for the comparison of continuous variables with abnormal distribution. Categorical variables were analyzed with a Chi-square test, and $p<0.05$ values were considered significant in all analyses.

RESULTS

A total of 2605 patients were included in the study, with 448 (17.2%) from the first region, 450 (17.3%) from the second region, 450 (17.3%) from the third region, 387 (14.9%) from the fourth region, 449 (17.3%) from the fifth region, and 421 (16.2%) from the sixth region. Among the FHCs included in the study, 593 (22.8%) had implemented FWH, while 2012 (77.2%) FHCs did not have FWH.

EDA was found in 1024 (39.3%) of the patients included in the study. The sociodemographic characteristics of the patients by the presence of EDA and the information on the FHC that they visited are summarized in Table 1.

It was found that 246 (41.5%) of the patients of FHCs with FWH and 778 (36.7%) of the patients of FHCs without FWH presented to emergency health services ($p=0.232$). The sociodemographic characteristics of the patients by the presence of EDA in FHCs with and without FWH and information on their health service utilization are summarized in Table 2.

In the FHCs with FWH, the frequency of patients who did not visit the FP despite the necessity in the last year was found to be 23 (9.4%) among those with EDA and 18 (5.2%) among those without EDA ($p=0.070$). On the other hand, in FHCs without FWH, the frequency of patients who had not visited the FP despite the necessity in the last year was 69 (8.9%) among those with EDA and 50 (4.1%) without EDA ($p<0.001$). Furthermore, in FHCs with FWH, the frequency of patients who consulted a specialist physician in the hospital for a health problem in the last year was 214 (87.0%) in patients with EDA and 239 (68.9%) in patients without EDA. ($p<0.001$). In FHCs without FWH, the frequency of patients who consulted a specialist physician in the hospital for a health problem in the last 1 year was 660 (84.8%) in patients with EDA and 778 (63.1%) in patients without EDA ($p<0.001$).

Regarding the reasons for EDA in patients with EDA, it was found that 207 (20.5%) had a problem that the FP was unable to treat, 262 (25.9%) did not have an FP they could reach, 27 (2.7%) had economic reasons, 210 (20.5%) thought that they would wait for a shorter time in the emergency department, 57 (5.6%) believed that better and higher quality service was provided in the emergency department, and 51 (5.0%) thought that it was easier to access health services in the emergency department. The reasons why patients with EDA prefer EDA in FHCs with and without FWH are summarized in Figure 2.

DISCUSSION

The aim of this study was to evaluate the impact of FWH on EDA in primary healthcare services in Turkey. In this study, no significant difference was found in the frequency of EDA between patients affiliated with FHCs with and without FWH. However, among patients registered in FHCs with FWH, the reasons "not having an FP to reach" and "having a health problem that the FP was unable to treat" were found to be high among patients with EDA. On the other hand, no difference was observed between patients registered in both FWH and non-FWH FHCs in terms of the time to reach the FHC, ease of making an appointment, waiting time to see the FP after making the appointment and waiting time after arriving at the FHC. Nevertheless, there was no difference between patients with and without EDA enrolled in FHCs with and without FWH in terms of the working hours limitation of the FHC and the difficulty of seeing the FP outside of working hours.

One of the significant reasons for the high frequency of EDA is the ease of access to healthcare services provided in the emergency department compared to other healthcare services.[3] Facilitating access to primary healthcare services outside of working hours to reduce emergency department utilization is a strategy implemented in some countries.[4] A systematic review reported that while easier access to after-hours primary care services increased the utilization of primary care services, its effect on emergency department utilization remained highly controversial.[4] Some studies found that one of the most important reasons for EDA was the inability to receive health services from FHC outside working hours.[1,14] In previous studies, it was indicated that by providing healthcare services after working hours, FPs could decrease the EDA of their patients.[4,7] However, some studies reported that ensuring accessibility of primary healthcare services had no effect on EDA.[6,7] In another study, out-of-hours service provision during the week in FHCs led to a decrease in EDA; however, no similar result was observed in weekend out-of-hours service provision.[15] In several studies conducted in the UK, it was observed that the extension of primary healthcare services outside working hours led to a decrease in emergency department utilization, but this decrease was detected primarily for semi-emergencies and did not lead to a decrease in unnecessary EDA.[16,17] In Ireland, a study found no effect of primary healthcare services on EDA, whereas another study reported a decrease in unnecessary EDA.[18,19] In our study, no significant difference was found in terms of EDA in patients admitted to FHCs with and without FWH. This

Table 1. The sociodemographic characteristics of the patients by the presence of EDA and the information on the FHC that they visited

	EDA		p
	No (n=1581)	Yes (n=1024)	
Age (year)	40.0 [24.0]	36.0 [23.0]	<0.001*
Gender			
Female	940 (59.5%)	655 (64.0%)	0.021†
Male	641 (40.5%)	369 (36.0%)	
Education			
Elementary School	818 (51.8%)	589 (57.6%)	0.004†
High school and above	760 (48.2%)	433 (42.4%)	
Level of income			
Below average	456 (28.9%)	383 (37.5%)	<0.001†
Average and above	1124 (71.1%)	638 (62.5%)	
How many times you visit FP in the last 6 months?			
≤ Twice	834 (52.8%)	442 (43.2%)	<0.001†
≥ 3 times	745 (47.2%)	581 (56.8%)	
Time to arrive FHC from home			
Under 20 minutes	1409 (89.1%)	890 (86.9%)	0.088†
20 minutes or more	172 (10.9%)	134 (13.1%)	
Making an appointment for today's consultation	70 (4.4%)	55 (5.4%)	0.270†
Defining making an appointment as easy‡	53 (80.3%)	34 (66.7%)	0.094†
Waiting time after making the appointment‡			
Today	40 (62.5%)	32 (64.0%)	0.869†
Yesterday or earlier	24 (37.5%)	18 (36.0%)	
Waiting time to see a doctor at FHC			
30 minutes or less	1491 (94.3%)	968 (94.5%)	0.808†
Over 30 minutes	90 (5.7%)	56 (5.5%)	
Limitations of your FHC's working hours	315 (20.0%)	215 (21.1%)	0.501†
Hard to contact FP on weekends, evenings and after hours	587 (37.2%)	356 (34.8%)	0.203†
Having a FP	1545 (97.8%)	1006 (98.4%)	0.243†
Specialty education of the FP			
Specialist	182 (11.5%)	88 (8.6%)	0.017†
Medical Practitioner	1399 (88.5%)	936 (91.4%)	

EDA: Emergency Department Admission; FHC: Family Health Centers; FP: Family Physician

Data are presented as median [interquartile range] and n (%) as appropriate.

*Mann-Whitney U test, †Chi-square test

‡Only patients who made an appointment were evaluated.

result may be related to the insufficient efficiency of FWH in Turkey.[20] In a study conducted in Turkey, it was found that not many patients visited the FHC during FWH, according to the statements of the FPs, and FHW had no effect on EDA.[20] In another study conducted in Turkey, 59% of EDA patients presented during working hours, and 41% had admission during non-working hours.[21] Therefore, the effect of FWH on EDA in our country may not have been detected.

In studies, it has been found that young individuals have EDA more frequently.[3,8] Evaluation of EDA by gender revealed that females had a higher rate of EDA in one study, while another study found no significant difference between genders in terms of EDA.[6,8] In a systematic review, EDA was observed more frequently in females in some studies and males in other studies, and no difference was found between genders in terms of EDA in some other

Table 2. The sociodemographic characteristics of the patients by the presence of EDA in FHCs with and without FWH and information on their health service utilization

	EDA in FHCs with FWH		p	EDA in FHCs without FWH		p
	No (n=347)	Yes (n=246)		No (n=1234)	Yes (n=778)	
Age (year)	44.1±15.6	42.1±14.8	0.124*	41.4±14.6	39.3±14.3	0.001*
Gender						
Female	215 (62.0)	163 (66.3)	0.299†	725 (58.8)	492 (63.2)	0.049†
Male	132 (38.0)	83 (33.7)		509 (41.2)	286 (36.8)	
Education						
Elementary School	182 (52.5)	144 (58.5)	0.228†	636 (51.7)	445 (57.4)	0.045†
High School	111 (32.0)	74 (30.1)		391 (31.8)	218 (28.1)	
University	54 (15.5)	28 (11.4)		204 (16.5)	113 (14.5)	
Level of income						
Below average	86 (24.9)	82 (33.5)	0.026†	370 (30.0)	301 (38.8)	<0.001†
Average and above	260 (75.1)	163 (66.5)		864 (70.0)	475 (61.2)	
How many times you visit FP in the last 6 months?						
≤ Twice	171 (49.4)	93 (37.8)	0.005†	663 (53.8)	349 (44.9)	<0.001†
≥ 3 times	175 (50.6)	153 (62.2)		570 (46.2)	428 (55.1)	
Time to arrive FHC from home						
Under 20 minutes	294 (84.7)	201 (81.7)	0.329†	1115 (90.4)	689 (88.6)	0.197†
20 minutes or more	53 (15.3)	45 (18.3)		119 (9.6)	89 (11.4)	
Making an appointment for today's consultation	22 (6.3)	15 (6.1)	0.904†	48 (3.9)	40 (5.1)	0.181†
Defining making an appointment as easy‡	16 (80.0)	10 (71.4)	0.562†	37 (80.4)	24 (64.9)	0.110†
Waiting time after making the appointment‡						
Today	13 (68.4)	12 (85.7)	0.252†	27 (60.0)	20 (55.6)	0.687†
Yesterday or earlier	6 (31.6)	2 (14.3)		18 (40.0)	16 (44.4)	
Waiting time to see a doctor at FHC						
30 minutes or less	325 (93.7)	238 (96.7)	0.091†	1166 (94.5)	730 (93.8)	0.537†
Over 30 minutes	22 (6.3)	8 (3.3)		68 (5.5)	48 (2.4)	
Limitations of your FHC's working hours	68 (19.7)	47 (19.2)	0.874†	247 (20.1)	168 (21.7)	0.385†
Hard to contact FP on weekends, evenings and after hours	132 (38.0)	98 (39.8)	0.658†	455 (37.0)	258 (33.2)	0.081†

EDA: Emergency Department Admission; FHC: Family Health Centers; FWH: Flexible Working Hours.

Data are presented as mean±standard deviation and n (%) as appropriate.

*Student t-test, †Chi-square test.

‡Only patients who made an appointment were evaluated.

studies.[3] Regarding educational level, no difference was found in unnecessary EDA in some studies.[6,8] Moreover, some studies observed that unnecessary EDA was more frequent in those with low income, while in other studies, no difference was found between those with necessary and unnecessary EDA based on income level.[3,6,8] In this study, a higher prevalence of EDA was observed in younger, female, and low-income individuals. In addition, no significant difference was found between patients with and without EDA in terms of age and gender in FHCs with FWH, while patients with EDA in non-FWH FHCs were younger and female. Besides, the prevalence of EDA in patients with lower income levels was higher in patients who applied to both FWH and non-FWH FHCs.

The reasons provided by patients for EDA include the perception that better and higher quality healthcare is provided in the emergency department, ease of access to emergency health services, availability of 24-hour emergency healthcare, and economic reasons.[1,3,6,14] Addition-

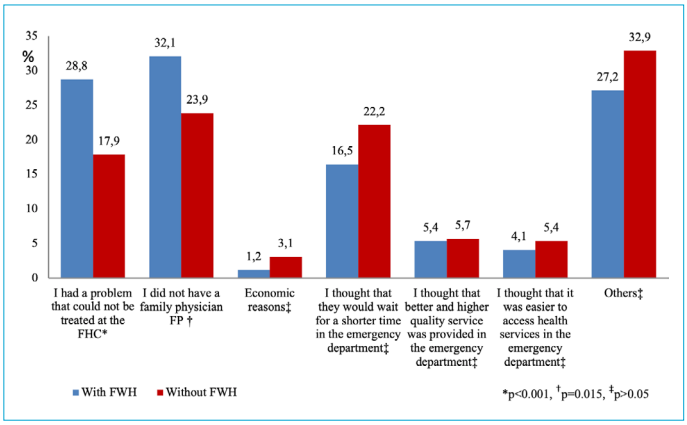

Figure 2. Reasons for preferring admission to the emergency department instead of FP in FHCs with and without flexible working hours.

ally, approximately half of the patients who usually seek medical care with EDA attempt to find an FP first.[6] In a systematic review, it was found that not having a regular FP increased the frequency of unnecessary EDA, although another article reported that a similar relationship was not found.[3] In our study, the most common reasons for EDA were found to be the lack of an FP to reach, having a health problem that the FP was unable to treat, and the perception that the waiting in the emergency department would be shorter. Regarding the reasons for EDA among patients in FHCs with and without FWH, "having a health problem that the FP cannot treat" and "not having an FP to reach" were more common among patients in FHCs with FWH. On the other hand, no difference was found between patients in FHCs with and without FWH regarding EDA due to economic reasons, the thought of waiting for a shorter time in the emergency department, the belief in better health service provision in the emergency department, and ease of access to emergency health services.

In a systematic review, no relationship was found between the number of admissions to primary healthcare services and unnecessary EDA.[3] One study reported that the average number of doctor visits in outpatient settings other than the emergency department was higher for people with unnecessary EDA.[3] In this study, the frequency of contact with FP in the last six months was found to be high in individuals with EDA. Furthermore, the frequency of referral to FPs and a physician in the hospital was significantly higher in patients with EDA in both FWH and non-FWH FHCs.

One of the main reasons patients use the emergency department for medical care is the difficulty in obtaining early appointments for primary healthcare services.[1] In one study, it was suggested that ease of access to non-emergency healthcare services may lead to a decrease in EDA.[8] However, while one study has observed a relationship between unnecessary EDA and difficulty in making appointments for primary healthcare services, in another study, such a relation was not reported in one study.[6,8] Additionally, one study found no relationship between waiting time after the appointment and unnecessary EDA.[8] In this study, the frequency of making an appointment at the FHC, the ease of making an appointment, and the waiting time after making the appointment were not significantly different between patients with and without EDA. Moreover, in patients visiting both FWH and non-FWH FHCs, no significant difference was found in terms of the frequency of making an appointment, ease of making an appointment and waiting time after making an appointment between patients with and without EDA.

This study has some limitations. One of the limitations of this study is that the necessity of EDA was not examined. Another limitation is that there is a memory factor during the evaluation of EDA as the last year was considered. Another limitation of this study is that although the study regions were selected considering geographical distribution and the duration of initiation of the FP system, and the participants were randomly selected from these regions, the results may not be generalized to the whole of Turkey due to the inclusion of participants only from some selected provinces.

CONCLUSION

Unnecessary EDAs are a concerning problem in emergency healthcare services worldwide.[4] One proposed solution to prevent this is to ensure the accessibility of primary healthcare services outside working hours. However, in this study, it was found that FWH had no significant effect on individuals' EDA. Nevertheless, the frequency of individuals with EDA with a health problem that FP was unable to treat, and the frequency of not having FP was found to be high. In light of these results, out-of-hours health service provision in primary healthcare does not lead to a decrease in EDA.

Disclosures

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Conflict of Interest: The authors declare that they have no conflict of interest.

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