The Duration of Fasting in Ramadan Affects the Admissions to the Emergency Department

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Abstract

Aim: One of the ways that Muslims worship in Ramadan is by fasting. People who are fasting may prefer to receive health services in the period between iftar and pre-dawn meal owing to the concern that their fasting may be interrupted with the medical interventions to be administered. For this reason, the workload of emergency departments that serve for continuous 24 h may increase in Ramadan. We have not encountered any study analyzing the comparison of emergency visits in the seasons when the period between iftar and pre-dawn is the shortest and longest. We aimed to compare the characteristics of visits to the adult emergency department between those in the year 2016 that included the longest fasting time and those in the year 2000 that included the shortest fasting time.

Materials and Methods: Patient visits made in the Ramadan months in the years 2000 and 2016 were included in the study.

Results: There was a statistically significant difference between the total number of visits to the emergency department in the Ramadan months of 2000 and 2016 ($p<0.001$). Moreover, there was a statistically significant difference in terms of the numbers of complaints between the Ramadan months of 2000 and 2016 ($p<0.001$).

Conclusion: The results of our study can be useful for the management of emergency department and risk estimation.

Keywords: Crisis management, emergencies, fasting, Ramadan

Introduction

Ramadan is the ninth month of the Islamic calendar and is enshrined by Muslims. Fasting is one of the ways that Muslims worship in this month. Fasting, in the apparent sense, is achieved by abstaining from food, drinks, and sexual intercourse between the times of pre-dawn and iftar, which is the evening meal during Ramadan (1).

The location of the Republic of Turkey between the northern latitudes of 36°-42° and the eastern meridians of 26°-45° causes the sunshine duration to be approximately three times more in the summer than in the winter (2). As a consequence of this, when Ramadan occurs between the months of June and August that include the longest days of summer, the fasting period lasts for approximately 18 h (3). This period is significantly shorter in winter. For instance, it is slightly longer than 11 h in December.

People who are fasting may prefer to receive health services in the period between iftar and pre-dawn meal owing to the concern that their fasting may be interrupted with the medical interventions to be administered. Many health institutions do not provide health care services in the outpatient clinics at these hours. When acute diseases, which were proven in previous studies to increase in Ramadan, are also considered, the workload of emergency departments that serve for continuous 24 h increases even more (4, 5).

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Balhara et al. (6) suggested that the patterns of pediatric and adult patient admissions to the emergency departments change significantly in Ramadan in the study that was performed in Abu Dhabi. The authors showed that emergency admissions decrease significantly in the hours before iftar while they peak in the first hours following iftar. In the study by Halasa (7) in Jordan, it was shown that the complaints of admission did not change, whereas the times of admission changed during Ramadan compared with the other months. Butt et al. (8) emphasized the necessity of improving the quality of emergency patient care at special times, such as holidays and Ramadan, and to make some arrangements for the effective management of patient circulation. Indeed, establishing the emergency admission patterns of the patients is of great importance in terms of programming emergency medical services.

During the month of Ramadan, with the arrangements made in the personnel of the emergency department, medical equipment, and physical environment within the period between iftar and pre-dawn, the quality of health services may be improved. All these studies in the literature revealed the characteristics of admissions in Ramadan in various Muslim countries. Nevertheless, when we reviewed the literature, we have not encountered any study analyzing by comparing the emergency visits in the seasons when the period between iftar and pre-dawn is the shortest and longest.

From this point of view, the aim of the present study was to describe the emergency department demand during the fasting and non-fasting periods of Ramadan. We also aimed to compare the differences in the characteristics of the patients and the main complaints in the shortest and longest fasting periods.

Materials and Methods

This retrospective observational study was conducted in Baskent University Ankara Hospital. Ankara is the capital city of Turkey and is located in the Central Anatolia Region. In Ankara, the fasting period lasts approximately 11 h in December and 17 h and 30 min in June. The Ramadan months were December in 2000 and June in 2016. Therefore, those two years were used to compare the longest and shortest fasting periods. The period between pre-dawn and iftar was expressed as fasting hours.

Data of all patients who were admitted to our adult emergency department in Ramadan in the years 2000 and 2016 regarding of age, gender, time of emergency visit, and emergency complaints were collected from the hospital information management system and archive of patient files.

Statistical analysis

The Kolmogorov-Smirnov test was used to determine whether the age information of the patients showed a normal or non-normal distribution. The chi-square test was used for comparisons of the absolute numbers of emergency visits in the months of Ramadan. Data were presented as proportions for gender and as mean±standard deviation for the ages of the patients. The chi-square test was also used for comparison of the absolute number of emergency complaints in terms of years. A p-value<0.05 was considered as statistically significant. Data were analyzed using the Statistical Package for Social Sciences 17.0 for Windows package program (SPSS Inc.; Chicago, IL, USA).

Baskent University Medical and Health Sciences Research Committee approved the study (project no. KA17/192).

Results

The number of patient visits in the Ramadan months of the years 2000 and 2016 was analyzed. In 2000, a total of 920 patients visited the emergency department. Data about the time of visit of three patients in 2000 could not be reached when the patient records

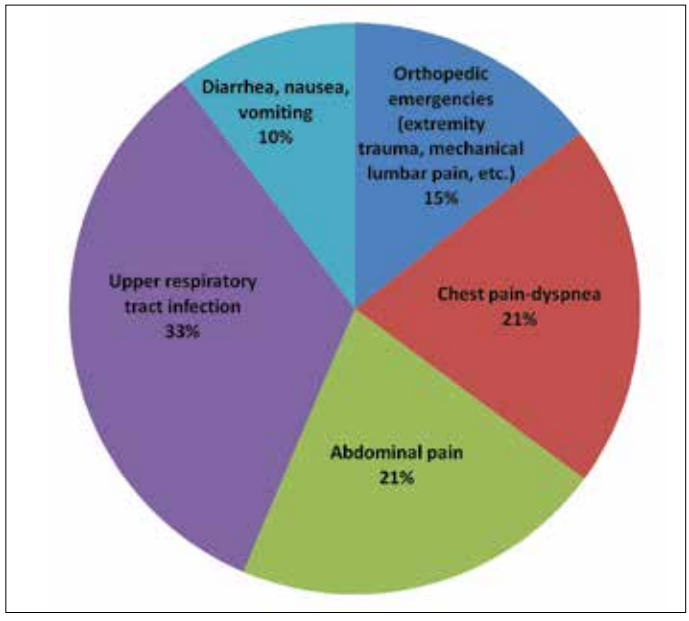

Figure 1. Distribution of the five most common emergency complaints in the Ramadan month of the year 2000

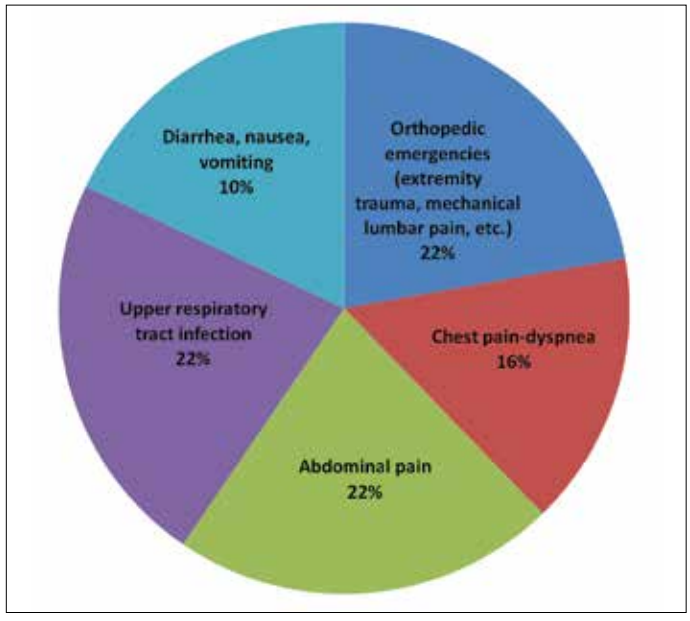

Figure 2. Distribution of the five most common emergency complaints in the Ramadan month of the year 2016

Table 1. The number of emergency visits during the fasting hours of Ramadan and other hours according to years

Year	Fasting hours n (%)	Other hours n (%)	Total	p
2000 Ramadan	474 (51.6)	443 (48.3)	917	<0.001
2016 Ramadan	1421 (65.6)	744 (34.3)	2165	
Total	1895	1187	3082	
*Chi-square test.				

were kept in notebooks. These three patients were excluded from the analyses. Of the 917 patients, 51.6% (n=474) were admitted in the fasting period, whereas 48.3% (n=443) were admitted in other times. In the Ramadan month in 2016, a total of 2165 patients visited our emergency department. Among them, 65.6% (n=1421) were admitted in the fasting period, and 34.3% (n=744) were admitted in other times. There was a statistically significant difference between the groups in terms of the number of visits (Table 1).

The mean ages of the patients were 41.9±18.5 years in the Ramadan of 2000 and 48±20.4 years in the Ramadan of 2016.There was a statistically significant difference between the two years in terms of the patients' age (p=0.001).

Of the 920 patients who visited the emergency department in the Ramadan of 2000, there were 495 (53.8%) female and 425 (46.1%) male patients. Of the 2165 patients in the Ramadan of 2016, there were 1282 (59.2%) female and 883 (40.7%) male patients. There was a statistically significant difference in terms of gender between the emergency visits in the Ramadan of 2000 and 2016 (p=0.001).

Figures 1 and 2 show the distribution of the numbers of the five most common admission complaints according to months. The most common five admission complaints were the same in the two months included in the study. There was a statistically significant difference in terms of the numbers of complaints between the Ramadan months of 2000 and 2016 (p<0.001).

Discussion

Specialized medical staffs are needed in the emergency medicine field for the most appropriate management of complicated and numerous patients admitted to the emergency departments. However, unfortunately, the number of specialists of emergency medicine is known to be inadequate worldwide. When this is the case, the importance of arranging the working schedule of the personnel according to the hours with less and more patient admissions in terms of the quality of patient care is emphasized (8, 9). The month of Ramadan is a special time period in which the characteristics of admissions may change in countries where Muslims fast mostly. Our study investigated whether there was a difference in terms of emergency admissions between 2016 when Ramadan included the longest days of fasting and 2000 when Ramadan included the shortest days of fasting. A clear increase in the number of visits during Ramadan from 2000 to 2016 was found. The number of visits during fasting hours is higher in 2016 than in 2000. This reflects the changes in our emergency department structure. In 2000, our emergency department served as an "emergency room" with four rooms. In 2016, our emergency department was a fully equipped emergency department with 19 beds. We think that the difference is associated with the increase in the physical and personnel facilities of our emergency department. In addition, an increase of 352% in the emergency department visits between 2002 and 2013 in Turkey was seen. Owing to this, the number of patients who visited our emergency department has also increased (10).

In recent years, there has been an increase in the number of visits of geriatric patients to the emergency departments (11). We believe that this condition might cause significant differences in the age of admitted patients.

According to the statistical data of our emergency department, the rate of female patients is higher than that of male patients. This may be the cause of the significant difference between the two groups.

The number of emergency visits was 2165 in the Ramadan month of 2016. The number was below our average patient number. The decrease may originate from this period that occurred at the same time as summer months and holiday.

Different results were obtained from studies on emergency admissions in Turkey and some Muslim countries in Ramadan. For example, Pekdemir et al. (12) detected no statistically significant difference between the admission times of patients in Ramadan and the control group (p=0.576). However, they showed that the mean number of patients in Ramadan is significantly higher than that of the control group (p=0. 046). In the study by Butt et al. (8) conducted in Saudi Arabia, patient admissions at night shifts (19:00-6:59) were shown to be statistically significantly higher in Ramadan than in other months of the year (p<0.0001). In contrast, in our study, we searched for changes in the two Ramadan periods (fasting and non-fasting). We suggest that the differences between the studies are caused by cultural and personal characteristics. In addition, Turkey, among the countries in which the majority of the population is Muslim, is one of the countries with the longest fasting period since it is located in the Northern Hemisphere. For this reason, the geographical locations of the countries should be considered in the evaluation.

In the present study, the most common five admission complaints to the emergency department were the same in the two months included in the study. However, there was a significant difference among the groups in terms of the number of admission complaints to the emergency department. In the study by Tlemissov et al. (13) including geriatric patients, similar to our results in 2016, there was no significant change in admissions associated with trauma in Ramadan. Similar to our study, Topacoglu et al. (4) revealed that although the admission numbers of patients with unstable angina pectoris, acute myocardial infarction, chronic obstructive pulmonary disease, and asthma (in our study, chest pain-dyspnea group) decrease, there is no statistically significant difference. In contrast to our study, Balhara et al. (6) showed that the admissions with abdominal pain increase to 7.37% from 6.49% and that it increases in a statistically significant fashion. We suggest that these differences are caused by the personal

characteristics of the patients in the regions where the hospitals were located.

Study limitations

We were not able to ask whether the patients who were admitted to our emergency departments are fasting or not owing to ethical reasons unless there is a medical necessity. In addition, our study results did not contain the comparison of the non-Ramadan and Ramadan periods. The present study was conducted in a single city in Turkey and in a single hospital with the mean annual admissions of 30.000 emergency patients. We believe that multicentered studies that will be conducted in a wider geographical area in the future will exhibit the situation in Turkey more accurately.

Conclusion

The results of the present study can be useful for the management of emergency department and risk estimation.

Ethics Committee Approval: Ethics committee approval was received for this study from the Ethics Committee of Baskent University Medical and Health Sciences Research Committee (project no. KA17/192).

Informed Consent: Informed consent was not taken from patients due to the retrospective nature of the study.

Peer-review: Externally peer-reviewed.

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