DOI: 10.5152/eajem.2018.19480

Manuscript Type: Research Article

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

Running Head: Fasting in Ramadan Affects the Admissions to Emergency

Authors: Afsin Emre Kayipmaz [1], Elif Celikel [2], Cemil Kavalci [1], Sedat Ozbay [3], Abuzer Coskun [3]

Institutions:

[1] Department of Emergency, Baskent University School of Medicine, Ankara, Turkey

[2] Department of Emergency, Ankara Numune Training and Research Hospital, Ankara, Turkey

[3] Department of Emergency, Sivas Numune Hospital, Sivas, Turkey

Address for Correspondence: Afsin Emre Kayipmaz

E-mail: aekayipmaz@baskent.edu.tr

Cite this article as: Kayipmaz AE, Celikel E, Kavalci C, Ozbay S, Coskun A. The Duration of Fasting in Ramadan Affects the Admissions to Emergency Department. Eurasian J Emerg Med 2018; DOI: 10.5152/eajem.2018.19480

Submitted: 09.09.2017

Accepted: 29.01.2018

Abstract

Aim: One of the ways that Muslims worship in Ramadan is fasting. The fasting people may prefer to receive health services in the period between iftar and pre-dawn meal due to the concern that their fasting may be broken with the medical interventions to be administered. For this reason, the work-load of emergency departments which serve for continuous 24 hours may increase in Ramadan. 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. We aimed to compare the characteristics of visits to adult emergency department between those in the year of 2016 which included the longest fasting time, and those in the year of 2000 which included the shortest.

Materials and Methods: We included patient visits made in the Ramadan months of 2000 and 2016.

Results: There was a statistically significant difference between the total visit numbers to emergency in the Ramadan months of 2000 and 2016 ($p < 0.001$). Also, 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: Our study results can be useful for management of emergency department and risk estimation.

Keywords: Crisis management, emergencies, fasting, ramadan.

This article has been accepted for publication and undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the Version of Record. Please cite this article as Kayipmaz AE, Celikel E, Kavalci C, Ozbay S, Coskun A. The Duration of Fasting in Ramadan Affects the Admissions to Emergency Department. Eurasian J Emerg Med 2018; DOI: 10.5152/eajem.2018.19480©Copyright 2018 by Available online at http://www.eajem.com

Introduction

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

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

The fasting people may prefer to receive health services in the period between iftar and pre-dawn meal due to the concern that their fasting may be broken with the medical interventions to be administered. Many health institutions do not provide health care services in the outpatient clinics at these hours. When the acute diseases, which were proven to increase in Ramadan by the conducted studies, are also taken into consideration, the work-load of emergency departments which serve for continuous 24 hours increases even more (4-5).

Balhara et al. suggested that the patterns of pediatric and adult patient admission to emergency departments changed significantly in Ramadan in the study which was carried out in Abu Dhabi. The authors showed that emergency admissions decreased significantly in the hours before iftar while they peaked in the first hours following iftar (6). In the study by Halasa in Jordan, it was shown that the complaints of admission did not change whereas the times of admission changed during Ramadan compared to the other months (7). Butt et al. 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 (8). 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 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.

Starting from this point of view, we aimed to describe emergency department demand during the fasting and non-fasting periods of Ramadan. We also aimed to compare differences in the characteristics of the patients and main complaints in shortest and longest fasting periods.

Materials and Methods

We conducted this retrospective observational study in XX Hospital. Ankara is the capital city of Turkey and it is located in the Central Anatolia Region of Turkey. In Ankara, the fasting period takes approximately 11 hours in December and 17 and a half hour in June. In 2000 the Ramadan month was December and in 2016 it was June. Therefore, we selected those two years to compare the longest and shortest fasting periods. The period between pre-dawn and iftar was expressed as fasting hours.

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

Statistical analysis

We tested whether the age information of the patients showed a normal distribution or not with Kolmogorov-Smirnov test. We did the comparisons of the absolute numbers of emergency visits in the months of Ramadan, by the Chi-Square test. We presented the data of gender as proportions, and the ages of the patients as mean ± standard deviation (SD). We used the Chi-Square test also to compare the absolute number of emergency complaints in terms of years. Statistical significance was set at p values <0.05. We analyzed the collected data with "SPSS 17.0 for Windows" package program.

We obtained the approval of XXX Medical and Health Sciences Research Committee (Project No: KA17 / 192).

Results

We analyzed the number of patient visits in the Ramadan months of 2000 and 2016. In 2000, a total of 920 patients visited emergency department. We could not reach data about the time of visit of 3 patients in 2000, when the patient records were kept in the notebooks. Those three patients were not included in the analyses. Fifty-one point six percent of other 917 patients (n=474) were admitted in fasting period while 48.3% (n=443) were admitted in other times. In the Ramadan month of the year 2016 a total of 2165 patients visited our emergency department. Sixty-five point six percent of them (n=1421) were admitted in fasting period, and 34.3% of them (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 age of the patients included in the study were as follows; 41.9±18.5 years in the Ramadan of 2000, 48±20.4 years in the Ramadan of 2016. There was a statistically significant difference between two years in terms of the patients' age (p=0.001).

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

Figure 1 and 2 shows the distribution of the numbers of the five most common admission complaints according to the months. The most common five admission complaints were 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

There is a need for specialized medical specialists in the emergency medicine field for the most appropriate management of complicated and numerous patients admitted to the emergency

departments. But unfortunately, the number of the specialists of emergency medicine is known to be not adequate in many parts of the world. When this is the case, the importance of arranging the working schedule of the personnel according to the hours with less and much 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 the countries where Muslims fast mostly. In our study, we 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. We found that there was a clear increase in the number of visits during Ramadan from 2000 to 2016. In 2016, the number of visits during fasting hours is higher compare to 2000. This reflects the changes on our emergency department structure: In 2000, our emergency department was serving as an "emergency room" with four rooms. In 2016, our emergency department was a fully equipped emergency department with 19 beds. We consider that the difference is associated with the increase in the physical and personnel facilities of our emergency department. In addition, there was an increase of 352% in the emergency department visits between 2002-2013 in Turkey. As a reflection of 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 emergency departments (11). We believe that this condition might cause the significant differences in the age of the admitted patients.

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

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

Different results were obtained from the studies on the emergency admissions in our country and some Muslim countries in Ramadan. For example, Pekdemir et al. detected no statistically significant difference between the admission times of patients in Ramadan and control group ($p = 0.576$). However, the authors showed that the mean number of patients in Ramadan was significantly higher

compared to the control group (p =0. 046) (12). In the study by Butt et al conducted in Saudi Arabia, patient admissions at night shifts (19:00-6:59) were shown to increase with statistical significance in Ramadan when compared to the other months of the year (p < 0.0001) (8). Whereas, in our study, we looked 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. Besides, Turkey, among the countries in which the majority of population is Muslim, is one of the countries with longest fasting period since it is located in the northern hemisphere. For this reason, while evaluating, the geographic locations of the countries should be taken into consideration.

In this study, the most common five admission complaints to emergency were same in two months included in the study. However, there was a significant difference among the groups in terms of the number of admission complaints to emergency. In the study by Tlemissov et al. including geriatric patients, similar to our results in 2016, no significant change was detected in admissions associated with trauma in Ramadan (13). Similar to our study, Topacoglu et al. 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) decreased, there was no statistically significant difference (4). Unlike to our study, Balhara et al. showed that the admissions with abdominal pain increased to 7.37% from 6.49% and that it increased in a statistically significant fashion (6). We suggest that these differences are caused by the personal characteristics of the patients in the regions where hospitals were located.

Study limitations

We do not ask whether the patient who were admitted to our emergency departments is fasting or not due to ethical reasons unless there is medical necessity. Also, our study results did not contain the comparison of non-Ramadan and Ramadan periods. This study was conducted in a single city our country and in a single hospital with the mean annual admissions of 30000 emergency patients. We suggest that multi-centered studies, which will be carried out in the wider geographical area in the future, will exhibit the situation of our country more accurately.

Conclusion

Our study results can be useful for management of emergency department and risk estimation.

References

1) Kishk YT, Youssef AA, Ahmed AA, Gerges MM. Circadian pattern of acute coronary syndrome patients in Ramadan fasting. J Curr Med Res Pract 2017; 2: 63-6.
2) Kocalar AO, Toros H. The evaluation of the implementation of daylight saving and winter time for Turkey. EJOSAT 2014; 1: 59-68.
3) Dogan FS, Guneysel O, Ozaydın V, Konar M. Effects of Ramadan on forensic cases presenting to emergency service. JMSR 2015; 2: 111-4.
4) Topacoglu H, Karcioglu O, Yuruktumen A, Kiran S, Cimrin AH, Ozucelik DN, et al. Impact of Ramadan on demographics and frequencies of disease-related visits in the emergency department. Int J Clin Pract 2005; 59: 900-5.
5) Kavalci C, Durdu T, Yilmaz F, Arslan ED, Turhan T, Yilmaz MS. Effects of the Ramadan fast on trauma. HealthMED 2013; 7: 148-51.
6) Balhara KS, Levin S, Cole G, Scheulen J, Anton XP, Rahiman HA, et al. Emergency department resource utilization during Ramadan: distinct and reproducible patterns over a 4-year period in Abu Dhabi. Eur J Emerg Med 2016 Apr 20. doi: 10.1097/MEJ.0000000000000405. [Epub ahead of print]
7) Halasa W. Effect of Ramadan fasting on emergency walk-in-clinics in Jordan. Br J Gen Pract 2014; 64: 388.
8) Butt T, Khan HU, Ahmed I, Eldali A. Emergency department attendance patterns during Ramadan. Ann Saudi Med 2016; 36: 258-64.
9) Kirsch TD, Holliman CJ, Hirshon JM, Doezema D. The development of international emergency medicine: a role for U.S. emergency physicians and organizations. SAEM International Interest Group. Acad Emerg Med 1997; 4: 996-1001.
10) Bektemur G, Osmanbeyoglu N, Cander B. The emergency services report. Eurasian J Emerg Med 2015; 14: S1-S38.

11) Ozel BA, Ekinci EB, Kayipmaz AE, Kocalar UG, Celikel E, Kavalci C. Analysis of the use of resources and features of presentations and the trends in geriatric patients presenting to the emergency department: 2011-2015. Turk Geriatri Derg 2016; 19: 154-61.

12) Pekdemir M, Ersel M, Yilmaz S, Uygun M. No significant alteration in admissions to emergency departments during Ramadan. J Emerg Med 2010; 38: 253-6.

13) Tlemissov A, Zhunissov B, Buleshov M, Buleshova A, Seidinov S, Sultanbekov K, et al. Does the number of injuries among elderly people in Kazakhstan increase during Ramadan? Public Health 2017; 142: 70-2.

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 value***
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

This article has been accepted for publication and undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the Version of Record. Please cite this article as Kayipmaz AE, Celikel E, Kavalci C, Ozbay S, Coskun A. The Duration of Fasting in Ramadan Affects the Admissions to Emergency Department. Eurasian J Emerg Med 2018; DOI: 10.5152/eajem.2018.19480©Copyright 2018 by Available online at http://www.eajem.com

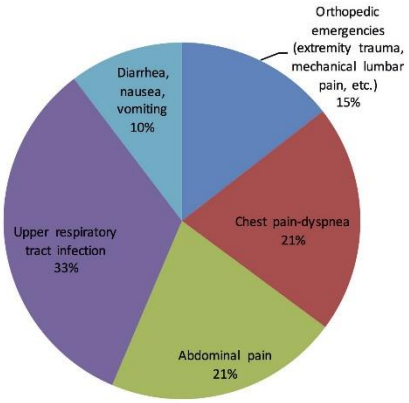

Fig. 1. Distribution of five most common emergency complaints in Ramadan month of the year 2000

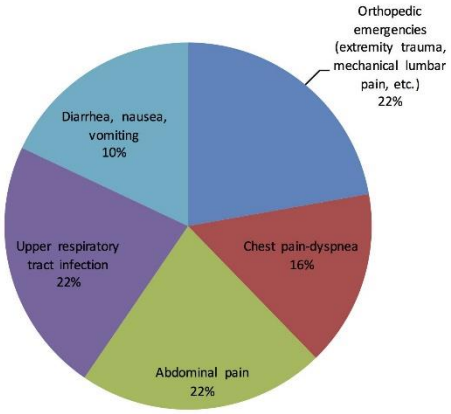

Fig. 2. Distribution of five most common emergency complaints in Ramadan month of the year 2016

This article has been accepted for publication and undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the Version of Record. Please cite this article as Kayipmaz AE, Celikel E, Kavalci C, Ozbay S, Coskun A. The Duration of Fasting in Ramadan Affects the Admissions to Emergency Department. Eurasian J Emerg Med 2018; DOI: 10.5152/eajem.2018.19480©Copyright 2018 by Available online at http://www.eajem.com