JMSR
Journal of Medical and Surgical Research

Research Article

ISSN: 2351-8200

JMSR 2015, Vol. II; № 1: 111- 114

EFFECTS OF RAMADAN ON FORENSIC CASES PRESENTING TO EMERGENCY SERVICE

F. SARI DOĞAN.[1], Ö. GÜNEYSEL[2], V. ÖZAYDIN [1], M. KONAR[1]

[1] Emergency Medicine Clinic, Goztepe Training and Research Hospital, Istanbul, TURKEY.
[2] Emergency Medicine Clinic, Dr Lutfi Kirdar Kartal Education and Research Hospital, Istanbul, TURKEY

ABSTRACT

The term "forensic case" is defined as disruption of physical and/or mental health of an individual due to external factors. Forensic cases are most frequently encountered in emergency services. Ramadan, the ninth month of Islamic calendar, is a month of fasting throughout which Muslims from all around the world worship by observing fasting. There are many studies focusing on the effects of fasting on health. The purpose of this study is to examine the effects of Ramadan on forensic cases presenting to emergency service.

Keywords: Forensic case, Ramadan, fasting, emergency service

Corresponding author:
Fatma Sarı Doğan
Address: Goztepe Training and Research Hospital, Emergency Medicine Clinic, Istanbul, TURKEY.
E-Mail: fatmasdogan@gmail.com, Phone number: +90 5443359565.

Copyright© 2012- 2015 Fatma Sarı Doğan. This is an open access article published under Creative Commons Attribution-NonCommercial-NoDerivs **4.0 International Public License (CC BY-NC-ND)**. This license allows others to download the articles and share them with others as long as they credit you, but they can't change them in any way or use them commercially.

INTRODUCTION

Forensic cases are most frequently encountered in hospital emergency services where physically and emotionally detrimental effects of unnatural factors on humans are evaluated. Each and every incident that is caused by external factors and leads to disruption of physical and mental health of individuals or even death is considered as a forensic case [1]. In studies focusing on this subject matter, diversity, seasonal distribution and admission times of forensic cases have been investigated [2].
Ramadan, a month of fasting for Muslims, begins 11 days earlier each year of Gregorian calendar compared to the previous one, since it is based on Islamic lunar calendar. Muslims observing fasting during this month do not eat anything from dawn to sunset, and believe in the necessity of abstaining from bad thoughts and behaviors throughout the said period. The fasting period may extend up to 18 hours depending on the timing of Ramadan within the year and the geographical region where the fasting individual lives [1). There are many studies investigating the effects of fasting on health in literature. In such studies, generally, the effects of hunger, thirst and potential dehydration during fasting period on body metabolic parameters have been examined [3, 4]. There are only several studies regarding the effects of Ramadan on emergency services in literature, and no publication on forensic cases presenting to emergency services during Ramadan is available.
The purpose of this study is to analyze if there is any difference between forensic cases presenting to the emergency service within Ramadan period and those within non-Ramadan period.

MATERIALS AND METHODS

Our study has been carried out in an emergency service with daily admissions corresponding to 750-850 patients. The study was approved by the Ethics Committee of Göztepe Training and Research Hospital, Medeniyet University (2013/0032).
The forensic cases presenting to the emergency service within Ramadan 2013 and the patients presenting to the emergency service within a non-Ramadan period were compared and statistically evaluated through a scan of forensic case records, protocol book and hospital record system with regard to time of presentation, demographical features (age, sex), and reasons for presentation.

JMSR
Journal of Medical and Surgical Research
Original Article
ISSN: 2351-8200
JMSR 2015, Vol. II; N° 1: 111- 114

The reasons for presentation to the emergency service were classified into four categories as traffic accidents (in-vehicle traffic accidents, pedestrian accidents), acts of suicide, acts of violence (assault, stab wounds, shooting) and occupational accidents (blunt trauma, burn, electric shock or falling at workplace).

All forensic cases presenting to the emergency service within Ramadan were included in the study. These cases were compared with the forensic cases presenting to the emergency service within a period of 15 days before or after Ramadan, and it was examined whether or not there are any statistically significant differences between the said groups.

In the evaluation of results obtained from the study groups, SPSS (Statistical Package for Social Sciences) for Windows 17.0 was used for statistical analyses. The study data was assessed with descriptive statistical methods (mean, standard deviation, frequency, percentage), as well as with t-test and ANOVA for independent groups in comparison with quantitative data, and with Chi-square in comparison with non-quantitative data.

95% confidence interval was used. Results were considered to be statistically significant if p-value was less than 0.05.

The total study duration was two months (forensic cases presenting to the emergency service within a total period of two months from 15th day before Ramadan to 15th day after Ramadan).

RESULTS

The total number of patients presenting to the emergency service throughout the study period was 821. Of these patients, 399 (48.59%) came to the emergency service during Ramadan and the remaining 422 (51.40%) during the non-Ramadan period.

When all forensic cases presenting to the emergency service were classified into two groups as Ramadan cases and non-Ramadan cases, and compared accordingly, it was observed that the number of men in both groups was higher compared to that of women. There were 125 (31.3%) cases of women and 274 (68.7%) cases of men within all of 399 Ramadan cases, and the number of men presenting to the emergency service was significantly higher. Similarly, there were 120 (28.4%) cases of women and 302 (71.6%) cases of men within all of 422 non-Ramadan cases, and the number of men presenting to the emergency service was significantly higher. Therefore, no statistically significant difference between Ramadan and non-Ramadan groups with regard to sex of patients was available ($p = 0.365$; $p > 0.05$).

The mean ages of patients in Ramadan group and patients in non-Ramadan group were 31.69 ± 16.22 and 31.05 ± 15.53, respectively, with no significant difference there between ($p = 0.25$; $p > 0.05$).

There was a significant difference between groups with respect to reasons for presentation ($p = 0.021$; $p < 0.05$). The prevalence of traffic accidents (52.8%) and occupational accidents (55.4%) in Ramadan was significantly higher compared to that in non-Ramadan period. On the other hand, the prevalence of suicide (46.6%) and act of violence (41.8%) in Ramadan was significantly lower compared to that in non-Ramadan period (Table I).

Table I: Reasons for presentation (general)

	Ramadan (n = 399)	Non-Ramadan (n = 422)	Total (n = 821)	p
Suicides	41 (46.6%)	47 (53.4%)	88 (10.7%)	0.021*
Traffic accidents	188 (52.8%)	168 (47.2%)	356 (43.4%)	
Acts of violence	119 (41.8%)	166 (58.2%)	285 (34.7%)	
Occupational accidents	51 (55.4%)	41 (44.6%)	92 (11.2%)	
Total	399 (51.4%)	422 (48.6%)	821 (100%)	

* Statistically significant since $p < 0.05$.

The prevalence of pedestrian accidents (52.7%), electric shock (80%) and burn (57.1%) in Ramadan was significantly higher compared to that in non-Ramadan period ($p = 0.018$; $p < 0.05$) (Table II).

Table II : Reasons for presentation

	Ramadan (n = 399)	Non-Ramadan (n = 422)	Total (n = 821)	p
Suicides	41 (46.6%)	47 (53.4%)	88 (10.7%)	0.018*
In-vehicle traffic accidents	52 (50%)	52 (50%)	104 (12.7%)	
Pedestrian accidents	136 (54%)	116 (46%)	252 (30.7%)	
Stab wounds	7 (26.9%)	19 (73.1%)	26 (3.2%)	
Falling	29 (52.7%)	26 (47.3%)	55 (6.7%)	
Electric shock	4 (80%)	1 (20%)	5 (0.6%)	

JMSR
Journal of Medical and Surgical Research
Original Article
ISSN: 2351-8200
JMSR 2015, Vol. II; N° 1: 111- 114

Burn	4 (57.1%)	3 (42.9%)	7 (0.9%)	
Shooting	3 (100%)	-	3 (0.4%)	
Assault	106 (41.9%)	147 (58.1%)	253 (30.8%)	
Blunt trauma at workplace	17 (60.7%)	11 (39.3%)	28 (3.4%)	

* Statistically significant since $p < 0.05$.

There was no statistically significant difference in the number of patients presenting to the emergency service between two groups with regard to the time of presentation ($p = 0.087$; $p > 0.05$).
On the other hand, when the time of presentation was reviewed with respect to reasons for presentation, a significant difference between groups for patients presenting to the emergency service within 12:00-16:00 was detected ($p = 0.035$; $p < 0.05$). Accordingly, the prevalence of traffic accidents and occupational accidents within 12:00-16:00 in Ramadan was significantly higher compared to that in non-Ramadan period, but the prevalence of acts of violence and suicides within 12:00-16:00 in Ramadan was significantly lower compared to that in non-Ramadan period (TableIII).

Table III: Comparison of groups for time of presentation

Hour	Group	Traffic Accidents	Acts of Violence	Occupational Accidents	Suicides	p
00:00-04:00	NR	15 (40.5%)	23 (53.5%)	1 (25%)	7 (43.8%)	0.540
	R	22 (59.5%)	20 (46.5%)	3 (75%)	9 (56.3%)	
04:00-08.00	NR	6 (54.5%)	16 (66.7%)	2 (50%)	12 (70.6%)	0.762
	R	5 (45.5%)	8 (33.3%)	2 (50%)	5 (29.4%)	
08:00-12:00	NR	22 (47.8%)	17 (47.2%)	13 (46.4%)	4 (57.1%)	0.965
	R	24 (52.2%)	19 (52.8%)	15 (53.6%)	3 (42.9%)	
12:00-16:00	NR	41 (41%)	35 (64.8%)	14 (42.4%)	9 (52.9%)	0.035*
	R	59 (59%)	19 (35.2%)	19 (57.6%)	8 (47.1%)	
16:00-20:00	NR	47 (48%)	36 (62.1%)	6 (37.5%)	8 (53.3%)	0.226
	R	51 (52%)	22 (37.9%)	10 (62.5%)	7 (46.7%)	
20:00-00:00	NR	37 (57.8%)	39 (61.9%)	5 (62.5%)	7 (43.8%)	0.616
	R	27 (42.2%)	24 (38.1%)	3 (37.5%)	9 (56.3%)	

R: Ramadan; NR = Non-Ramadan
* Statistically significant since $p < 0.05$.

DISCUSSION

Each and every incident that is caused by external factors and leads to disruption of physical and mental health of individuals or even death is considered as a forensic case. Many types of cases presenting to the emergency services, such as suicide attempts, poisonings, traffic accidents, assaults, torture and mistreatment claims, murders, injuries (due to firearms, explosive materials and/or any other tools), falling, occupational accidents, electric shocks, suicides and accidental deaths, bear the characteristics of forensic cases [1].

There are several studies focusing on the relationship of Ramadan with various diseases [3, 5, 6]. The effects of diet and behavior variations during Ramadan on presentations to the emergency services have been investigated in a few studies [4, 7]. Topaçoğlu et al. have found no significant difference between Ramadan and non-Ramadan period with respect to the number of presentations, whereas Pekdemir et al. have reported a higher number of presentations in Ramadan compared to that in non-Ramadan period [4, 7]. In a study carried out in the UK, a significantly higher number of Muslims presenting to the emergency services during Ramadan has also been reported ($p = 0.0024$) in addition to a higher, but insignificant, number of presentations due to accidents among Muslims compared to other populations ($p = 0.056$) [8]. In our study, the numbers of presentations during Ramadan and non-Ramadan period were just slightly different, but the number of presentations due to traffic accidents and occupational accidents in Ramadan was significantly higher compared to that in non-Ramadan, a finding that we think is associated with a potentially increased attention deficit or fatigue.

Demirci et al. have studied the forensic death cases in Ramadan, and reported a significantly less number of death cases due to murder and suicide in Ramadan compared to that in non-Ramadan period [9]. In our study, we have found a significantly less number of suicides and acts of violence in Ramadan compared to that in non-Ramadan period. Ramadan fasting does not only mean limitations on consumption of foods and drinks, but also, as an established belief among Muslims, obliges

ISSN: 2351-8200 JMSR 2015, Vol. II; N° 1: 111- 114

believers to abstain from bad thoughts and behaviors. We think that the said characteristic of Ramadan may be the underlying cause of lower prevalence of acts of violence in Ramadan. In fact, the results obtained from the present study support this view.

We could not record whether or not the examined cases are observing fasting, because of the retrospective nature of the study. However, we do not consider this lack of data as a real imperfection for the study, since environmental factors might have also taken part in a forensic case presenting to a hospital. A patient presenting to the emergency service may be a patient who has taken drugs, involved in a traffic accident, or had a crash with his car, as well as has been hit by a car, experienced a physical assault, or injured by gunshot. In other words, in a forensic case, the individual responsible for the incident may not be the same person as the individual affected by the incident. Therefore, fasting or non-fasting of one of the individuals involved in an incident might have also affected the other individual.

No unusual phenomenon that would have affect emergency service presentations, such as natural disasters, wars or extreme climatic events, has occurred during our study period. In literature, there are some studies reporting an increased number of emergency service presentations within certain time intervals in Ramadan compared to that in non-Ramadan period. For example, Suwaidi et al. have reported a higher number of emergency service presentations from 5:00 AM to 6:00 AM and from 11:00 PM to 12: 00 PM in Ramadan, or Pekdemir et al. have pointed out the interval 4:00-8:00 PM as the time one with the highest number of presentations [7, 10]. In our study, there was no statistically significant difference in the number of patients presenting to the emergency service between two groups with regard to the time of presentation. However, when the time of presentation was reviewed with respect to reasons for presentation, a significantly higher prevalence of traffic accidents and occupational accidents and a significantly lower prevalence of suicides and acts of violence in Ramadan were detected for the time interval of 12:00-16:00.

CONCLUSION

As a result of our study, we have observed an increased prevalence of traffic accidents and occupational accidents and a decreased prevalence of suicides and acts of violence in Ramadan. Accordingly, staff recruitment in emergency services may be arranged as per to peak hours. Besides, we think that traffic accidents and occupational accidents can be avoided by carrying out public awareness programs.

REFERENCES

1-Türkmen N, Akgöz S, Çoltu A, Ergin N. Uludağ Üniversitesi Tıp Fakülteai Acil Servisine Başvuran Adli Olguların Değerlendirilmesi. Uludağ Üniversitesi Tıp Fakültesi Dergisi 31(1) 25-29, 2005.

2-Türkçüer İ, Gözlükaya A, Serinken M, Özen M, Aydın B. Adli Olguların Acile Başvuru Zamanları. Akademik Acil Tıp Dergisi 2010;2: 89-92.

3-Günaydın G, Doğan N.Ö, Çevik Y, Korkmaz H, Savrun A, Çıkrıkçı G. Ramazan Ayında Renal Kolikle Başvuran Hastaların Değerlendirilmesi. JAEM 2013;12: 24-6.

4-Topaçoğlu H, Karcıoğlu Ö, Yürüktümen A, Kıran S, Cimrin A. et al.Impact of Ramadan on demographics and frequencies of diseaserelated visits in the emergency department. International Journal of Clinical Practice 2005; 59:900-5.

5-Benaji B, Mounib N, Roky R, Aadil N, Houti I.E. Diabetes and Ramadan: Review of the literature. Diabetes Research and Clinical Practice. 2006; 73: 117-125.

6-Ural E, Kozdag G, Kilic T, Ural D, Şahin T. The effect of Ramadan fasting on ambulatory blood pressure in hypertensive patients using combination drug therapy. Journal of Human Hypertension. 2008; 22: 208-10.

7-Pekdemir M, Ersel M, Yılmaz S, Uygun M. No significant alteration in admissions to emergency departments during ramadan. The Journal of Emergency Medicine.2010; 38(2): 253-56.

8-Langford E. J, Ishaque M. A, Fothergill J, Touquet R. The effect of Ramadan on accident and emergency attendances. Journal of the Royal Society of Medicine. 1994; 87: 517-8.

9-Demirci S, Doğan KH, Koç S. Evaulation of forensic deaths during the month of Ramadan in Konya, Turkey, between 2000 and 2009. Am. J. Forensic. Med Pathol. 2013; 34(3): 267-70.

10-Al Suwaidi J, Bener A, Gehani AA, et al. Does the circadian pattern for acute cardiac events presentation vary with fasting? J Postgrad Med. 2006;52: 30 –3.