Emergency Department During Long Public Holidays

Uzun Resmi Tatil Dönemlerinde Acil Servis

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SUMMARY

Objectives

The purpose of this study is to determine the impact of the expected increase in the volume of patient visits in the emergency department during holiday periods on physicians' tendencies regarding test and consultation requests as well as on the length of time patients stay in the emergency department.

Methods

The study groups included all of the patients who visited the emergency department during the nine-day public holiday (Eid al-Adha, a religious festival of sacrifice) celebrations and a nine-day non-holiday "normal" period. The patients' demographic information, reasons for their visits, comorbid diseases, whether or not they had undergone laboratory and screening tests, consultations, length of stay, and the way their visits ended were compared statistically.

Results

Of the 6353 patients enrolled in the study, 3523 (55.5%) were seen in the emergency department during the holiday period, while 2830 (45.5%) were seen during the non-holiday period (p<0.001). During the holiday period, there was a 1.9% decrease in laboratory test requests (p=0.108), a 7.7% increase in radiology examination requests (p<0.001), and a 1.2% increase in consultation requests (p=0.063). The patients' length of stay during the holiday period was 55.9±75.3 minutes and was 56.3±71.9 minutes during the non-holiday period (p=0.819). The length of time for the patients who underwent tests or consultations was 88.6±92.8 minutes during the holiday period and 92.6±87.5 minutes during the non-holiday period (p=0.224).

Conclusions

As expected, the number of patient visits to the emergency department increased during the holiday period, but this increase did not lead to a similar increase in test and consultation requests by the physicians, except for radiology examination requests. In addition, the length of time that patients stayed in the emergency department was not affected by the increase in the volume of patient visits during the holiday period.

Key words: Consultation; emergency; holiday; length of stay; test.

ÖZET

Amaç

Çalışmamızda uzun tatillerde acil servis başvurularında artış beklentisinin, hekimlerin inceleme ya da konsültasyon isteme yönelimine ve acil serviste hastaların kalış süresine etkisi olup olmadığını ortaya çıkarmayı amaçladık.

Gereç ve Yöntem

Çalışmamızda tatil dönemi olarak dokuz günlük Kurban Bayramı tatili kabul edilirken, karşılaştırma grubu ise dokuz günlük tatil dışı bir dönemde acil servise başvuran tüm hastalardan oluşturuldu. Her iki dönemde acil servise başvuran hastalar demografik bilgileri, başvuru nedenleri, komorbid hastalıkları, laboratuvar ve görüntüleme incelemesi yapılıp yapılmadığı, konsültasyon istemleri, acil serviste kalış süreleri ve sonuçlanma şekilleri bakımından karşılaştırıldı.

Bulgular

Tatil döneminde 3523 (%55.5), tatil dışı dönemde 2830 (%45.5) olmak üzere toplam 6353 acil servis başvurusu kaydedildi (p<0.001). Tatil dışı döneme göre tatil döneminde laboratuvar inceleme istemlerinde %1.9 oranında azalma (p=0.108), radyolojik inceleme kullanımında %7.7 oranında artış (p<0.001), konsültasyon istemlerinde %1.2 oranında artış (p=0.063) saptadık. Acil serviste ortalama kalış süreleri tatil döneminde 55.9±75.3 dakika, tatil dışı dönemde 56.3±71.9 dakika olarak bulundu (p=0.819). İnceleme veya konsültasyon yapılan hastaların ortalama kalış süresini tatil döneminde (88.6±92.8 dakika) tatil dışı döneme (92.6±87.5 dakika) göre daha kısa saptadık (p=0.224).

Sonuç

Uzun süreli tatillerde acil servislerde beklendiği gibi hasta yoğunluğu artmaktadır. Bu yoğunluk, hekimlerin laboratuvar incelemesi ve konsültasyon istemlerinde artışa yol açmazken, radyolojik inceleme istemlerinde artış gözlenmiştir. Ayrıca acil serviste ortalama kalış süresi başvuru sayısındaki artıştan etkilenmemektedir.

Anahtar sözcükler: *Konsültasyon; acil; tatil; kalış süresi; inceleme.*

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Introduction

Hospitals are among the vital institutions that face interruption of services during weekends and public holidays. It has been reported that the volume of patients at emergency departments, which are always open, increases during weekends and public holidays due to the interruption of services in other departments.[1,2] Several studies have stated that the disruption at emergency departments during afterhours or holidays is due to the lack of personnel and experienced medical staff as well as limited access to laboratory and radiology services.[3-8]

Religious festivals in Turkey are usually celebrated as long public holidays by including both the previous and following weekends. Several reports have shown that there is an increase in the volume of non-emergency patient visits to emergency departments during times where regular clinical services are not offered or limited.[9-11] Regulations passed by the Turkish Ministry of Health regarding "Health services during public holidays" point out the expected increase in workload and volume of patients at emergency departments during public holidays, and recommends precautionary measures be taken in order to avoid serious disruption in health services.[12] However, to our knowledge, there has been no study in the literature reporting whether this increase during the holidays affects physicians' tendencies to request tests or consultations or the length of stay for patients at emergency departments.

Therefore, the purpose of this study is to determine the disruptions of health services during a nine day religious public holiday, and how these disruptions affect patients and physicians at emergency services.

Materials and Methods

Kars State Hospital, as a district hospital, provides health care to around 550,000 people, including referrals it receives from neighboring cities. The hospital is home to a secondary emergency department, which serves to around 600 patients a day and approximately 210,000 patients a year.

After receiving approval from the local ethics committee, this study was conducted to compare emergency departments during a holiday period and a non-holiday period. All emergency department visits during both periods were included in our study. Consent was obtained from all patients enrolled in the study. Those who did not consent were excluded from the study. The first study group is composed of all patients who visited the emergency department during a nine-day public holiday (Eid al-Adha, a religious festival of sacrifice) between October 12th and October 20th, 2013. Because there is often a temporary increase in the volume of patients visiting the emergency department after the holiday period, the control group is composed of all patients who visited the emergency department during a nine-day non-holiday "regular" period between September 28th and October 6th of the same year. All patients visiting the emergency department between midnight Friday and midnight of the Sunday on the next weekend were prospectively incorporated into the study.

The patients' demographic information, reasons for their visits, the way they were transported to the hospital, comorbid diseases, whether or not laboratory and screening tests were performed, consultations, length of stay, and how their visits ended were recorded. Both traumatic and non-traumatic cases and reasons for visiting the emergency department were categorized. The data obtained from the both the study and the control groups were compared statistically.

Statistical analyses were performed using "Statistical Package for Social Sciences (SPSS) for Windows version 21.0" software (SPSS Inc., IL. USA). Quantitative data and the number of observations are expressed as percentages (%), and the qualitative data are expressed as mean±standard deviation (SD) or median (minimum-maximum). The T test and the chi-square test were used for comparing the data gathered from both groups. A p value <0.05 was considered significant.

Results

Of the 6353 emergency department visits included in the study, 3523 (55.5%) were during the holiday period and 2830 (45.5%) were during the non-holiday period, which indicated a 10% increase in the volume of emergency department visits during the holiday period. The difference in visits between the groups was statistically significant (p<0.001).

Of the patients visiting during the holiday period, 2051 (58.2%) were male, as were 1550 (54.8%) who visited during the non-holiday period (p=0.007). The mean age of patients who visited during the holiday period was 39.6±19.4 years (range, 1-110 years), and was 39.6±19.9 (range, 1-93 years) for the non-holiday period (p=0.965). During business hours (08:00-16:00), 1828 (51.9%) patients visited the emergency department during the holiday period compared to 1368 (48.3%) patients during the non-holiday period. There was a significant difference in terms of the rate of visits during both periods (p=0.004). The frequency of patients' comorbid diseases during both periods are listed in Table 1.

There were 660 (18.7%) patients admitted due to trauma during the holiday period and 484 (17.1%) during the non-holiday period (p=0.105). The reasons for traumatic and non-traumatic cases visiting the emergency department during both periods are listed in Tables 2 and 3, respectively.

The frequencies of physicians' laboratory and radiology re-

Table 1. The frequency of patients' comorbid diseases

	Holiday period		Non-holiday period	
	n	%	n	%
Hypertension	505	14.3	375	13.3
Chronic obstructive pulmonary disease	203	5.8	117	4.1
Malignancy	78	2.2	81	2.9
Diabetes mellitus	70	2.0	39	1.4
Coronary artery disease	61	1.7	48	1.7
Heart failure	17	0.5	9	0.3

Table 2. The reasons traumatic cases visited the emergency department

	Holiday period		Non-holiday period	
	n	%	n	%
Slip and fall	335	9.5	203	7.2
Sharp object injuries	79	2.2	27	1.0
Car accidents	40	1.1	32	1.1
Assault	37	1.1	42	1.5
Fall from height	21	0.6	10	0.4
Burns	12	0.3	11	0.4
Workplace accidents	9	0.3	7	0.2
Animal related injuries	8	0.2	2	0.1
Others	119	3.4	150	5.3

Table 3. The reasons non-traumatic cases visited the emergency department

	Holiday period		Non-holiday period	
	n	%	n	%
Upper respiratory infection	698	19.8	567	20.0
Abdominal pain	279	7.9	171	6.0
Headache	228	6.5	183	6.5
Chest pain	156	4.4	121	4.3
Hypertensive crisis	133	3.8	154	5.4
Diarrhea	115	3.3	64	2.3
Asthma-COPD attack	99	2.8	84	3.0
Psychiatric disorders	37	1.1	18	0.6
Poisoning	11	0.3	5	0.2
Gastrointestinal bleeding	0	0.0	1	0.2
Others	1107	31.4	978	34.6

quests during both periods are listed in Table 4. The frequencies of physicians' consultation requests during the holiday and non-holiday periods are listed in Table 5.

There were 3468 (98.4%) patients discharged from the emergency department during the holiday period and 2762 (97.6%) during the non-holiday period (p=0.028). Based on

Table 4. Physicians' use of laboratory and radiology tests

		Holiday period		Non-holiday period		
		n	%	n	%	p
Laboratory test	Requested	1051	29.8	897	31.7	0.108
	Not requested	2472	70.2	1933	68.3	0.108
Radiology test	Requested	1338	38.0	857	30.3	<0.001
	Not requested	2185	62.0	1973	69.7	<0.001
Laboratory test or radiology test	Requested	1763	50.0	1366	48.3	0.186
	Not requested	1760	50.0	1464	51.7	0.186

Table 5. Physicians' consultation requests

		Holiday period		Non-holiday period		
		n	%	n	%	p
Consultation	Requested	255	7.2	169	6.0	0.063
	Not requested	3268	92.8	2661	94.0	0.063

emergency department data, some of the patients who were not discharged were hospitalized (holiday period: n=31, 0.9%; non-holiday period: n=36, 1.3%; p=0.157), some were referred to another hospital (holiday period: n=10, 0.3%; non-holiday period: n=9; 0.3%, p=0.817), and some were admitted to the intensive care unit (holiday period: n=8, 0.2%; non-holiday period: n=5, 0.2%; p=0.777). While none of the patients in the study died in the emergency department, some of them refused treatment or left the hospital without notice before their examination and treatment were completed (holiday period: n=6, 0.2%; non-holiday period: n=18, 0.6%; p=0.017).

The average length of stay for the patients who visited the emergency department during the holiday period was 55.9±75.3 minutes and was 56.3±71.9 minutes for those visiting during the non-holiday period (p=0.819). The lengths of stay for the patients visiting emergency services during both periods are listed in Table 6.

Discussion

Health services must be provided whenever needed within reasonable wait times. This requires sacrifice by physicians and all other medical staff in order to avoid disruptions in health services during long public holidays. Although official announcements and recommendations are regularly made by the Turkish Ministry of Health before every public holiday indicating the need to take required precautionary measures to manage the expected work overload, disruptions are still common.[12] During holiday periods, the increase in the number of patients visiting the emergency department and the lack of staff and medical equipment cause one to

Table 6. Impact of tests or consultations on the average length of stay inthe emergency department

			Duration/minutes	p
			Mean±SD	
Laboratory test, radiology test or consultation	Requested	Holiday period (n=1769, 56.3%)	88.6±92.8	0.224
		Non-holiday period (n=1370, 43.7%)	92.6±87.5	
	Not requested	Holiday period (n=1748, 54.8%)	22.8±22.7	0.585
		Non-holiday period (n=1442, 45.2%)	22.4±21.5	

question the quality of medical care in emergency departments during these times.[3-11]

The purpose of this study was to examine the impact of increased patient volumes during public holidays on physicians' tendencies regarding the use of laboratory tests, radiology examinations, and consultation requests, and in addition, how all these factors would affect the length of stay for patients in the emergency department. Similar to previous research, we also found a 10% increase in the volume of patient visits to emergency departments during the long public holiday when compared to a regular, non-holiday period, which was statistically significant. Similarly, Zeng et al. reported a 9% increase in patient visits to the emergency department during holidays, while Yıldırım et al. reported a 32% increase during holidays.[2,9] These increases were due to the closure of most private institutions during holidays, the high volume of referrals received from surrounding hospitals, and the increase in non-emergency patients due the limited health services offered by departments during the holiday. In addition, the revival and mobility in society during free times also can cause increases in visits to the emergency department.[9] The current study highlights the limitations in regular clinical services as the main reason for the increased volume of patient visits to the emergency department. We also found that there were several referrals from other hospitals that do not increase staff during the holiday period and that many patients visited our emergency department because there is no other private hospital in the district. Pekdemir et al. reported that 440 patients visited the emergency department during the nine-day public holiday compared to 407 during non-holiday period. They explained that there was not much difference between holiday and non-holiday periods because most people spent their holidays away from the city.[13] People who live in bigger cities often prefer to spend their holidays outside of their cities. However, in our case, most of the people prefer to go to local villages rather than leave the city. This may be one of the reasons that explain the difference between our findings and the results of Pekdemir et al's research.

In our study, there was a decrease in the physicians' tendencies to request laboratory tests. Meanwhile, there was a 7.7% increase in requests for radiology examinations during the holiday period. This may be because laboratory tests take more time than do radiology examinations and consultations. The increase in requests for radiology examinations may also be due to the celebrations of Eid al-Adha, which include the slaughtering of livestock, which may cause an increase in injuries due to falls, sharp objects, and animals. While there was a 10% increase in the volume of patient visits during the holiday period, there was just a 1.2% increase in physicians' consultation requests. This disparity may be because patients visiting the emergency department during the holiday do not require consultation. In addition, even if required, it is often difficult to reach physicians for consultation during the holidays, which might be another reason for the low increase in consultations. Patients who received laboratory tests and consultation stayed in the emergency department three times longer than those who did not. Again, the 1.6% increase in tests consultation requests during the holiday period, which is not statistically significant, considered together with the 10% increase in patient volume can be explained by physicians' tendencies to limit the number of tests and consultations to avoid long wait times during holiday periods.

Pekdemir et al found that the length of stay for patients in emergency services during the holiday period was 60.3±53.1 minutes and 75.2±60.6 minutes during the non-holiday period, which was statistically significant.[13] Similarly, in our study, the length of stay during holidays (55.9±75.3 minutes) was shorter than the length of stay during non-holiday periods (56.3±71.9 minutes), but this difference was not significant. Moreover, the length of stay for patients receiving tests or consultation was shorter during the holiday periods (88.6 ± 92.8 minutes) than during the non-holiday periods (92.6±87.5 minutes), which was not significant statistically. In conclusion, we found that the increase in the volume of patient visits to emergency departments during holiday periods does not affect their length of stay in emergency departments. This is mostly due to the physicians' tendencies to limit test and consultation requests to avoid long wait times.

Mohammed et al. found that the majority of patients visiting emergency departments and those who were hospitalized during holiday periods were elderly and male.[14] Pekdemir et al. did not report any significant differences between the age of patients visiting during holiday and non-holiday periods.[13] In our study, there was no significant difference between the ages of the patients visiting during either period. However, we did observe that the number of male patients visiting the emergency department during the holiday period was 3.4% higher than those visits during the non-holiday period. We believe that this is because many of the local business are closed during the public holiday.

In our study, we observed a 1.6% increase in trauma cases during the holiday period, which was not statistically significant. Yıldırım et al. observed a 5.3% increase in the volume of patient visits due to traumatic reasons during the holiday period, and a 5.3% decrease in the volume of patient visits due to non-traumatic reasons.[9] Pekdemir et al. found that 19.1% of visits were due to traumatic reasons during the holidays and 19.7% during the non-holiday period, which was

not statistically significant.[13] Yıldırım et al. hypothesized that the 15% increase in car accidents during holiday periods is due to increased travelling and increased consumption of alcohol, while Pekdemir et al. did not observe such a difference in their studies.[9,13] Makela et al. reported that the increase in assault and car accidents during the weekends is due to the increased consumption of alcohol. They also emphasized that the risk of related injuries increases during the holidays and during the following three days, other than weekends.[15] In our study, we observed a 1.6% increase in traumatic cases during the holiday, although this was not statistically significant. In addition, we did not notice any increase in patient visits due to car accidents during the holiday or non-holiday period. This may be because there is no highway around the city, and because the city itself is not at the crossroads of major highways connecting other cities. While there was no significant difference in patient visits due to assault, there was a significant increase in the number of sharp object injuries during the holiday period, which coincided with the religious festival of sacrifice. Yıldırım et al. reported a 5% decrease in workplace accidents during the holidays,[9] while in our study, we noted a 0.1% increase. Although most of the local businesses were closed during the holiday period, patient visits due to workplace accidents were generally low in our study, even during non-holiday period.

We did not observe and significant differences in hospitalizations to regular departments or intensive care units with regards to how patient stay ended in the emergency department. Similarly, Yıldırım et al. and Pekdemir et al. did not find any significant difference regarding the rate of patients being hospitalized.[7,9] Keatinge et al. found that there was a 22% decrease in the number of patients hospitalized during the holiday period. They explained that this was due to physicians' tendencies to reserve that option only for patients whose health conditions were really critical.[3] In our study, we observed a statistically significant increase in discharge of patients during the holiday period. This result supports previous explanations regarding physicians making their decisions based on the increased workloads and long wait times during the holidays. There was also a statistically significant decrease in the number of patients refusing treatment or leaving the hospital without notice or permission during the holiday period. The possible reason might be the decrease in laboratory test requests or consultations, which extends the wait time of patients. Therefore, the length of stay at the emergency department during the holiday period was not increased.

Turkey is one of the exceptional countries in terms of celebrating such long public holidays. The impacts of short holidays, such as weekends, on patients in different countries have been well studied. Bell et al. and Freemantle et al. reported high mortality rates during weekends, and they addressed the lack of personnel, the impact of shifts, limitations in diagnosis methods, and limited experienced medical staff as the main reasons behind the disorientation in emergency departments.[16,17] Schmulevitz et al. and Cram et al. reported similar results, and referred to this phenomenon as "lost hospital phenomenon during weekend" and "weekend phenomenon," respectively.[6,18] Seward et al. indicated that the main reasons for the weekend phenomenon include difficulties in finding physicians to work and longer wait times for diagnoses and treatments.[19] Phillips et al. observed that experienced medical staff often refrains from weekend duties and discourages patients from visiting the hospitals during the weekends.[20] As previously mentioned, religious festivals coinciding with weekdays extend the duration of public holidays in our country, and therefore, their impact becomes more significant due to their extended length. We emphasize that although there is an increase in the volume of patients visiting the emergency department during the holiday period, this increase is not reflected in physicians' requests for laboratory tests and consultations. This is most likely done in order to avoid longer wait times during work overload periods, such as holidays.

Limitations

The holiday period designated for the study is known as Eid al-Adha, which is the feast of sacrifice. Therefore, the reasons for the increased numbers of visits due to traumatic cases and the increase in radiology examinations are most likely due to the way this festival is celebrated, and that is why these findings may not be applicable to other holiday periods.

Another important limitation of our study is that the hospital that hosted our study is a secondary health institution located in a rural area. Therefore, our findings may not be applicable to many of the other hospitals around the country.

Conclusion

As expected, we observed that the number of patient visits to emergency services increased during the holiday period. However, this increase did not lead to a similar increase in physicians' requests for tests and consultations, except for radiology examination requests. In addition, the length of stay for the patients in emergency services was not affected by the increase in the volume of patient visits during the holiday period.

Conflict of Interest

The authors declare that there is no potential conflicts of interest.

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