

DOI: <http://dx.doi.org/10.12996/gmj.2024.4139>

Impact of Pandemic Measures on Emergency Department Visits: A Comparative Analysis of Medico-Legal Cases Before and During COVID-19

Pandemi Kısıtlamalarının Acil Servis Başvurularına Etkisi: COVID-19 Dönemindeki Adli Olguların Öncesindeki Dönem ile Karşılaştırmalı Analizi

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ABSTRACT

Objective: Proper analysis of the pandemic is vital for correctly managing future crises, predicting the problems encountered, reducing their effects, and taking appropriate precautions. In this study, we aimed to compare cases of emergency department (ED) in a tertiary care adult ED during the pandemic and the pre-pandemic periods to evaluate the effect of lockdowns and similar restrictive measures.

Methods: "Pandemic period" was defined as the period between 11.03.2020 and 11.03.2021, and "pre-pandemic period" was defined as the period between the same dates in the previous year. Thousand cases (500 from each period) were selected by sampling method among 7137 medicolegal cases presented to the Adult ED in these two years. The total number of ED admissions and medico-legal cases' quality, frequency, and diversity were compared.

Results: Total admissions to the adult ED decreased by 42.8% during the pandemic period compared with the pre-pandemic period. Although medico-legal cases also decreased, their proportion in all admissions increased by more than 50%. Leaving the hospital voluntarily reduced significantly ($p<0.001$). There was a significant decrease in the daily average number of medico-legal cases during the full-day lockdowns of the pandemic compared with all other periods ($p<0.001$). Medico-legal cases decreased on weekends when the lockdown was imposed more frequently ($p<0.046$). In the pandemic, traffic accidents increased due to motorcycle accidents ($p<0.010$).

ÖZ

Amaç: Gelecekteki krizlerin doğru yönetimi, karşılaşılan sorunların öngörülmesi, etkilerinin azaltılması ve uygun önlemlerin alınabilmesi için pandemi döneminin doğru analiz edilmesi büyük önem taşımaktadır. Bu çalışmada, bir üçüncü basamak yetişkin acil servisine pandemi ve pandemi öncesi dönemlerde başvuran olguların karşılaştırılması amaçlanarak, sokağa çıkma yasakları ve benzeri kısıtlayıcı önlemlerin etkilerinin değerlendirilmesi hedeflenmiştir.

Yöntemler: "Pandemi dönemi" 11.03.2020 ile 11.03.2021 tarihleri arasındaki süre olarak tanımlanırken, "pandemi öncesi dönem" bir önceki yılın aynı tarih aralığını kapsamaktadır. Bu iki yıl içerisinde acil servise başvuran toplam 7137 adli olgu arasından örnekleme yöntemiyle seçilen 1000 (her dönemden 500) olgu incelenmiştir. Bu örneklem üzerinden, acil servise toplam başvuru sayıları ile adli olguların niteliği, sıklığı ve çeşitliliği karşılaştırılmıştır.

Bulgular: Pandemi döneminde yetişkin acil servise toplam başvurular pandemi öncesi döneme kıyasla %42,8 oranında azalmıştır. Adli olgular da azalmasına rağmen, toplam başvurular içindeki oranı %50'den fazla artış göstermiştir. Hastaneden kendi isteğiyle ayrılma oranı anlamlı şekilde azalmıştır ($p<0,001$). Pandemi sürecindeki tam gün sokağa çıkma yasakları sırasında günlük ortalama adli olgu sayısında, diğer tüm dönemlere kıyasla anlamlı bir düşüş saptanmıştır ($p<0,001$). Sokağa çıkma yasağının daha sık uygulandığı hafta sonlarında adli olgu sayısında azalma görülmüştür ($p<0,046$). Pandemi döneminde motosiklet kazalarına bağlı olarak trafik kazalarında artış gözlenmiştir ($p<0,010$).

Cite this article as: Can MB, Özkök A, Aslaner MA, Akar T, Demirel B. Impact of pandemic measures on emergency department visits: a comparative analysis of medico-legal cases before and during COVID-19. GMJ. 2025;36:38-44

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Received/Geliş Tarihi: 12.02.2024

Accepted/Kabul Tarihi: 24.02.2024

Publication Date/Yayınlanma Tarihi: 09.01.2025



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ABSTRACT

Conclusion: During the pandemic, the significant decrease in overall ED visits compared with the number of medico-legal cases and the decline in the behavior of leaving the hospital voluntarily can indicate the high number of unnecessary green zone admissions in ordinary times. The change in living and consumption habits caused by the pandemic may also have changed the frequency and epidemiological distribution of forensic cases, such as motorcycle accidents.

Keywords: COVID-19 pandemic, lockdown, medico-legal cases, emergency department

ÖZ

Sonuç: Pandemi döneminde adli olgu başvurularına kıyasla acil servise yapılan toplam başvuruların sayısındaki belirgin düşüş, ve hastaneden kendi isteğiyle ayrılma davranışındaki azalma, olağan zamanlarda gereksiz yeşil alan başvurularının yüksekliğine işaret ediyor olabilir. Pandeminin sebep olduğu yaşam ve tüketim alışkanlıklarındaki değişiklikler, motosiklet kazaları gibi adli olguların sıklığını ve epidemiyolojik dağılımını da değiştirmiş olabilir.

Anahtar Sözcükler: COVID-19 pandemisi, sokağa çıkma yasağı, adli olgular, acil servis

INTRODUCTION

A pandemic is the spread of a disease or infectious agent to a large area in various countries, continents, or the world, affecting a large part of society and causing an epidemic (1). Throughout history, humanity has been tested many times by infectious diseases, leading to pandemics. During pandemics such as cholera, plague, and Spanish flu, many deaths occur at a level that changes the structure and order of society (1-4).

Similar to previous outbreaks, humanity has faced a pandemic in recent history. Coronavirus disease 2019 (COVID-19) was declared a pandemic on March 11, 2020. In the following periods, to minimize social contact, various measures were taken, and lockdowns were implemented from time to time. Although a specific treatment has not yet been developed, the disease has started to lose its effect over time with the impact of the vaccines produced. Cases and deaths due to the disease have decreased worldwide (5-7). Finally, on May 5, 2023, the World Health Organization (WHO) announced that COVID-19 no longer constitutes a “global health emergency” (8).

In addition to disease, lockdowns and related restrictions profoundly influenced various aspects of human life. Consequently, there has been a notable shift in the volume of applications to the emergency department (ED), which serves as the first point of contact. The most obvious examples of this situation are the changes in parameters such as ED workload, access to healthcare services, frequency, and epidemiological distribution of medico-legal cases during the pandemic. It is expected that ED admissions will decrease with the effect of restrictions during the pandemic, which has been shown by many studies. For instance, Law et al. (9) reported that visits to EDs related to nonfatal injuries decreased by 25% during the pandemic. Although total ED admissions have reduced significantly, there are studies indicating that serious emergencies such as stroke and cardiac conditions have decreased very slightly, and even resuscitation and emergency triage rates have increased (10,11).

Even though the pandemic has ended, it is necessary to understand this period in all its aspects to evaluate the impact of these and similar crises on human health, healthcare services, and health systems to make predictions about the problems that will arise and to take measures against these problems.

Within this scope, in this study, we aimed to compare the cases presented to a tertiary care adult ED during the pandemic and the pre-pandemic periods to evaluate how lockdowns and similar restrictive measures affected the total number of ED admissions, the quality, frequency, and diversity of medico-legal cases, and to discuss the measures to be taken.

MATERIALS and METHODS

Population and Sample

In our study, the “pandemic period” was defined as the period between 11.03.2020 and 11.03.2021, and the “pre-pandemic period” was defined as the period between the same dates in the previous year. The sample of our study consisted of the total number of patients admitted to the adult ED of Gazi University Hospital during the two periods. This retrospective study included medico-legal cases aged over 18 years. In calculating the sample size using the Open Epi program, 7137 medicolegal cases admitted to the ED within the last 2 years were used as references for the study population. With an unknown frequency of 50% and a margin of error of 3%, the number of cases to be included in the study was calculated as 927 with a design effect of 1.0, and 1000 cases were included in the study with 8% missing data. Half of these 1000 cases were selected from the pandemic period, and the other half were selected from the pre-pandemic period. First, the patients in each period were given a sequence number from old to new according to their admission dates, and then 500 patients to be included in the sample were selected from these numbers by systematic sampling method.

Hospital information management system records were used to obtain information about medicolegal cases presented to the adult ED. The pandemic and pre-pandemic periods were compared in terms of admission day, gender, age, event exposed, estimated event manner*, work accident, home accident, domestic violence, and discharge status.

*In the legal system of Türkiye, the precise manner of forensic events is determined by prosecutors’ offices or courts at the end of the process. Therefore, the manner of the incident, which was decided according to the information obtained from the medico-legal reports of the cases within the scope of the study, was named the “estimated event manner.”

In addition, a comparison was made by dividing the pandemic period into subgroups to determine the effect of full-day or certain-hour lockdowns imposed during the pandemic on the number of medicolegal cases. The days when the lockdown lasted for 24 hours were classified as “full-day lockdown”, when the lockdown was at certain hours of the day, were classified as “partial lockdown”, and the remaining days were classified as “no-lockdown” days of the pandemic.

This study was performed in line with the principles of the Declaration of Helsinki. Approval was obtained from the Ethics Commission of Gazi University (approval number: E-77082166-604.01.02-72964, date: 12.04.2021).

Statistical Analysis

Statistical Package for Social Sciences (SPSS 25.0) statistical software was used in the data analysis of the study, and values with $p \leq 0.05$ (two-way) were considered statistically significant. Continuous data were defined as mean, median, maximum-minimum, and categorical data with frequency and percentage values in the statistical analysis. The compatibility of variables in groups with normal distribution was evaluated with the "Shapiro-Wilks Test". In the data that were determined not to show normal distribution as a result of the evaluation, "Mann-Whitney U Test" was used for pairwise comparison, and "The Kruskal-Wallis Test" was used for the comparison of more than two groups. "The chi-square test" was used to compare categorical data.

RESULTS

In the pre-pandemic period, the total number of admissions to the ED was 72.726, and the number of medico-legal case admissions was 3811. Meanwhile, the total number of admissions was 41.596, and the number of medico-legal case admissions was 3326 during the pandemic period. During the pandemic, there was a 42.8% decrease in the number of total admissions and a 12.7% decrease in the number of medico-legal case admissions. The rate of medico-legal cases in total admissions was 5.24% ($n=3.811$) in the pre-pandemic period and 7.99% ($n=3.326$) in the pandemic period. The rate of medico-legal cases in total admissions increased significantly during the pandemic period ($p=0.027$).

Among the 500 medico-legal cases included in the study with the systematic sampling method from both periods, the number of women was 151 (30.2%) in the pre-pandemic period, while it was 124 (24.8%) in the pandemic period ($p=0.056$). The median age of medico-legal cases in the pre-pandemic period was 32 (18-88), whereas it was 33 (18-91) in the pandemic period ($p=0.433$).

In addition to the pandemic and pre-pandemic periods, pandemic subgroups were compared regarding the average daily number of medico-legal cases. The analysis revealed that the daily average number of medico-legal cases decreased significantly in the full-day lockdown subgroup compared with all other periods and subgroups ($p < 0.001$) (Table 1). No significant differences were found in other comparisons between periods and subgroups.

Table 1. Comparison of the average daily number of medicolegal cases presented to the ED according to periods and subgroups

Periods	Average daily medicolegal case (n)	p*
Pre-pandemic period	10.5	0.725
Pandemic period	9.18	
Pre-pandemic period	10.5	<0.001
Full-day lockdown	6.42	
No-lockdown days of the pandemic	9.48	<0.001
Full-day lockdown	6.42	
Partial lockdown	9.48	<0.001
Full-day lockdown	6.42	

* $p \leq 0.05$,

ED: Emergency department

A comparison of the periods in terms of the forensic event type leading to ED visits revealed that the rate of ED visits due to traffic accidents was significantly higher during the pandemic period ($p=0.015$). In-group analysis showed that this difference was caused by motorcycle accidents, which occurred more frequently during the pandemic period ($p=0.010$). No significant difference was detected between the periods of in-vehicle and out-of-vehicle traffic accidents. In addition, cases of poisoning and injury by an object were found to be significantly higher in the pre-pandemic period. Although the number of animals in the sample was small, the number of animal attacks was significantly higher during the pandemic period. No significant differences were found between the periods in terms of other event types (Table 2).

No significant difference was found between the periods in terms of the estimated event manner (Table 3). Although there was a 3% decrease in occupational accidents during the pandemic period compared with the pre-pandemic period, no significant difference was found (Table 4). Although the number of home accidents and domestic violence cases in the sample was small, it was observed that home accidents decreased and domestic violence increased during the pandemic period; however, these changes were not significant. Medico-legal admissions to the ED decreased significantly on weekend days during the pandemic period ($p=0.046$). Moreover, the number of those who voluntarily left the hospital before the treatment process was completed also significantly reduced during the pandemic period ($p < 0.001$) (Table 4).

Table 2. Distribution of forensic event types according to periods

Forensic event	Pre-pandemic period n (%)	Pandemic period n (%)	p*
Traffic accidents	117 (23.4)	151 (30.2)	0.015
Passenger	78 (15.6)	89 (17.8)	0.195
Pedestrian	22 (4.4)	22 (4.4)	0.353
Motorcyclist	16 (3.2)	40 (8)	0.010
Unknown	1 (0.2)	0 (0.0)	0.437
Falls	74 (14.8)	77 (15.4)	0.791
Blunt force	78 (15.6)	64 (12.8)	0.205
Intoxication	37 (7.4)	18 (3.6)	0.008
Sharp force	51 (10.2)	69 (13.8)	0.080
Firearm wounds	5 (1.0)	4 (0.8)	1.000
Burn injuries	6 (1.2)	3 (0.6)	0.506
Animal attacks	2 (0.4)	9 (1.8)	0.034
Injuries by a tool or machine**	124 (24.8)	98 (19.6)	0.048
Other***	6 (1.2)	7 (1.4)	0.780

* $p \leq 0.05$,

**Injuries by a tool or machine are used to describe injuries that occur mostly in occupational accidents and cannot be included in other classes, such as extremities caught in a tool or foreign body in the eye,

***Other: each group consists of injuries resulting from multiple causes, such as electrical injuries, explosive injuries, sexual assault, and hangings, or injuries resulting from multiple causes, with 2 or fewer cases in each group

Table 3. Distribution of estimated event manner according to period

Estimated event manner	Pre-pandemic period n (%)	Pandemic period n (%)	p*
-Accident	383 (76.6)	389 (77.8)	0.651
-Injury due to an attack	86 (17.2)	80 (16.0)	0.610
-Suicide attempt or self-harm	28 (5.6)	31 (6.2)	0.687
-Unknown	3 (0.6)	0 (0.0)	0.249

*p≤0.05

Table 4. Distribution of occupational accidents, domestic accidents, domestic violence, time of admission, and leaving the hospital voluntarily by periods

	Pre-pandemic period n (%)	Pandemic period n (%)	p*
Occupational accident	212 (42.4)	196 (39.2)	0,167
Domestic accident	10 (2.0)	3 (0.6)	0.052
Domestic violence**	7 (1.6)	12 (2.6)	0.356
Weekend admission	148 (29.6)	120 (24.0)	0.046
Leaving the hospital voluntarily	46 (9.2)	16 (3.2)	0.000

*p≤0.05,

**In 86 cases (53 cases in the pre-pandemic period and 33 cases in the pandemic period), information on domestic violence could not be reached

DISCUSSION

In our study, total admission to the adult ED decreased by 42.8% compared with the pre-pandemic period during the pandemic period. Although medico-legal cases also reduced (12.7%), since the decrease in total admissions was more pronounced, we found that the proportion of medico-legal cases in all ED admissions increased by more than 50% (pre-pandemic: 5.2%, pandemic: 8%). In addition, we observed that patients' behavior of "leaving the ED voluntarily" decreased significantly during the pandemic. We found that medical-legal case admissions decreased significantly, especially during the full-day lockdown. In relation to this, we observed that weekend applications were also reduced during the pandemic. Furthermore, contrary to expectations, we observed a significant increase in traffic accidents during the pandemic. This increase was mainly due to the rise in motorcycle accidents.

Numerous studies have shown that total ED admissions decreased during the pandemic. Moreover, in accordance with the results of our research, Isik et al. (12) determined that although the number of forensic cases decreased during the pandemic compared with the pre-pandemic period, the rate of forensic cases in all ED admissions increased during the pandemic. One reason for this may be that people want to protect their legal rights even if there is no health risk in forensic incidents or that they have to be taken away. In addition, another reason may be that unnecessary green zone admissions, which constitute a significant portion of ED admissions, decreased to a greater extent than forensic cases during the pandemic. In a systematic review in which 81 studies from 20 countries were analyzed, it was reported that the use of healthcare

services decreased by 37% on average during the pandemic, similar to the result in our study, and the highest rates of decline were seen in the mildest diseases (13). Another situation that may be affected by changes in unnecessary green space applications is the behavior of "leaving the hospital voluntarily". We observed that the number of those who voluntarily left the hospital during the pandemic decreased significantly. In the pre-pandemic period, some of the unnecessary green zone admissions to the hospital may have shown a higher rate of leaving because they did not have a condition requiring urgent medical attention. In the pandemic period, on the contrary, due to the decrease in unnecessary green zone applications, EDs became less crowded, and access to healthcare services became more effortless, which may have led to a decline in patients' behavior of leaving the hospital.

Although the average daily number of forensic cases decreased partially during the pandemic in our study, no significant difference was observed between the two periods. However, when the subgroups of the pandemic period were analyzed to evaluate the specific effects of the lockdown, a significant decrease was observed in the full-day lockdown subgroup compared to both the pre-pandemic period and other subgroups of the pandemic (partial lockdown days and no-lockdown days of the pandemic). This decrease may be due to the fact that lockdowns lasted all day and sometimes even for days. People were always at home, and their social and business participation was significantly restricted. Thus, the number of outpatients and forensic incidents decreased. Another study finding supporting the decline in medico-legal case admissions on weekend days during the pandemic. Because in Türkiye, full-day lockdowns were generally applied on weekends. On partial lockdown days, people continued their social and business lives to some extent. This situation may have enabled the number of medico-legal case admissions during the partial lockdown periods to approach the pre-pandemic period and the no-lockdown periods of the pandemic.

In general, traffic accidents are expected to decrease due to restrictions during the pandemic. Similarly, in a study evaluating the global impact of the pandemic on traffic accidents, a significant decrease in traffic accident deaths was observed in 32 out of 36 countries in April 2020 compared with the same month of the previous year. The annual evaluation of the same study showed that in the pandemic year (2020), there was a decrease in deaths due to traffic accidents in 33 of 42 countries compared with the pre-pandemic year (2019) (14). Another meta-analysis, which included 13 studies from 11 countries, reported that traffic accidents decreased significantly during the pandemic (15). Contrary to expectations, no significant difference was found between the two periods in terms of in-vehicle and out-of-vehicle traffic accidents, and total traffic accident admissions and motorcycle accident admissions were found to be significantly higher during the pandemic than during the pre-pandemic period. Similarly, in a study by Demir et al. (16) examining occupational accidents during the pandemic, an increase in motorcycle courier accidents was found. We believe that this significant increase in motorcycle accidents and consequently in traffic accidents can be explained by the revival in the cargo and motor courier sectors as a result of the change in consumer

behavior due to the effect of lockdowns and stay-at-home policies implemented during the pandemic and the increase in internet shopping and home delivery requests.

In addition, in our study, it was observed that poisonings decreased significantly during the pandemic. When poisonings were analyzed on a case-by-case basis to determine the cause of the decrease, it is noteworthy that food poisonings were more common in the pre-pandemic period. As a result, the reduction in food poisoning during the pandemic may have resulted from people being more careful against infectious agents during this period and, therefore, being more attentive to personal hygiene and food cleanliness.

Although the number of cases in our sample was small, animal attacks increased during the pandemic. When animal attacks were analyzed on a case-by-case basis, we found that most attacks were carried out by dogs. Although some studies report that dog attacks decreased or did not change during the pandemic, many studies report an increase (17-21). According to these studies, the increase is due to increased interaction with house dogs due to lockdowns and stay-at-home policies, and children are the most frequently injured. In our research, we observed that working adults were primarily exposed to dog attacks during work. One of the reasons for this may be stray dogs. Moreover, no significant difference was found when the lockdown days were compared with the other days of the pandemic to evaluate whether the deserted streets due to the lockdown affected this increase.

Considering the literature in terms of other types of forensic events in Table 2 (fall, blunt force, sharp force, firearm, and burn injuries) during the pandemic, it is seen that the authors reached different results. Abhilash et al. (22) reported that the incidence of falls decreased during the pandemic, while Hazra et al. (23) reported that the incidence of falls from height decreased, but the incidence of falls from their level increased. Chiba et al. (24) found an increase in sharps and firearm injuries during the pandemic and a decrease in assault crimes in the study of Balmori de la Miyar et al. (25). Georgeades et al. (26) reported that pediatric burn cases increased during the pandemic, whereas Chawla and Papp (27) reported that the incidence of kitchen-related burns in adults did not change during the pandemic. In our study, no significant differences were found between the two periods for fall, blunt force, sharp force, firearm, and burn injuries.

In our study, although there was a slight decrease in occupational accidents during the pandemic compared with the pre-pandemic period, no significant difference was found between the periods. In the study by Nuñez et al. (28) a significant decrease in injuries due to occupational accidents was found in the initial period of the pandemic. A study by Demir et al. (16) observed that occupational accidents decreased in total during the pandemic but increased in some sectors, especially in the transport sector due to accidents involving motor couriers and in the health sector due to increased workload. In the literature on occupational accidents in general, a significant decrease was found in the pandemic compared with the pre-pandemic period, and it is thought that this situation is because only compulsory occupational groups work during lockdown periods, while other occupational groups primarily work from home. The reason for the lack of a significant decrease in occupational accidents during the pandemic in our study can be explained by the substantial

increase in motorcycle accidents, which are primarily occupational accidents, as discussed above. On the other hand, the injuries that occur mainly in occupational accidents, such as extremities being stuck in a tool or foreign body penetration into the eye, which we define as "injury by an object" in the table of forensic event types, were significantly higher in the pre-pandemic period. This result may indicate that injuries in work branches other than motor vehicle use decreased during the pandemic.

Contrary to expectations, a decrease in home accidents was observed during the pandemic. This may be because our sample's total number of home accidents was small and may not reflect an accurate picture. However, in the literature, an increase in home accidents was generally found during the pandemic, and it was thought that this was due to the increased risk of exposure to home accidents of people who spend more time at home (29).

With the pandemic measures, the number of people calling hotlines in Türkiye (country) increased by 55% in April 2020 and 78% in May 2020 compared with previous months. The most common reason for applications in April was sexual violence, while the most common reason for applications in May was psychological violence (30,31). In the European member states of the WHO, it has been reported that there is a 60% increase in the number of calls to emergency lines because of intimate partner violence (32). Again, in a systematic review and meta-analysis on domestic violence, it was stated that domestic violence increased during the pandemic (33). In general, an increase in cases of domestic violence has been found in the literature during the pandemic, and it has been suggested that spending more time together in a closed environment such as home may increase the risk of conflict between family members (34-37). In addition, the stress, economic, social, and psychological changes caused by the pandemic can also be considered to trigger domestic violence cases. Although there was an increase in cases of domestic violence in our study, no significant change was found between the two periods. This may be because the number of cases in our sample was small, and our study may not reflect the accurate picture, although there was a significant difference. Other reasons for not finding a significant difference, even if domestic violence is higher, may be the victim's hesitation to report due to the obligation to be in the same house during the pandemic, fear of the attacker being aware of the report, or the attacker preventing the report.

Despite a minimal decrease in assault injuries during the pandemic, no significant difference was found between the periods in this study. In the study conducted by Isik et al. (12) no significant difference was observed between the pandemic and pre-pandemic periods regarding injuries due to assault. However, in the literature, it was reported that there was a general decrease in injuries due to attacks during the pandemic. For instance, according to a global study with data collected from 27 cities in 23 countries, pandemic-era restrictions led to a decrease in all types of crime (37%), with the most minor reduction in homicide (14%), while the overall average of assault crimes decreased by 35% (38).

Although there was a minimal increase in suicide attempts or self-harm behaviors during the pandemic, no significant difference was found in the study. Similarly, Pirkis et al. (39) reported that suicide rates in most countries remained unchanged. However, they observed an increase in suicide attempts in some countries in

their data from 33 countries (39). Conversely, there are also studies indicating that there is a significant increase in suicide attempts and self-harm behavior during the pandemic period (40,41). Although it cannot be generalized, this increase in suicide attempts or self-harm behavior may be due to situations such as fear of virus transmission, economic difficulties, social isolation, uncertainty, chronic anxiety, and stress caused by the pandemic, which may increase or exacerbate psychiatric disorders (24,40,42).

CONCLUSIONS

One of the remarkable results of our study is that it indirectly showed that EDs were occupied with unnecessary green zone admissions. The appropriate use of EDs will facilitate access to healthcare services for those with indications, reduce the intensity of EDs and burden on health workers, ensure more efficient healthcare services, and reduce costs. Another outcome of our study was that medico-legal cases decreased significantly only during full-day lockdowns rather than during the pandemic in general or partial lockdown periods. Furthermore, during the pandemic, the increase in motorcycle accidents detected indicates that changes in living and consumption habits caused by events that affect society as a whole, such as the pandemic, may also change the nature of forensic events. To minimize the effects of pandemics and similar disasters that are likely to occur in the future, it is vital to predict possible problems. Within this scope, we believe that our study will contribute to the literature by describing the effects of the changes caused by the pandemic on social life and the natural consequences of these changes on medico-legal cases.

Ethics

Ethics Committee Approval: This study was performed in line with the principles of the Declaration of Helsinki. Approval was obtained from the Ethics Commission of Gazi University (approval number: E-77082166-604.01.02-72964, date: 12.04.2021).

Informed Consent: Retrospective study.

Acknowledgments

This study is derived from the thesis entitled "comparison of forensic cases admitted to the Emergency Department of Gazi University Health Research and Training Center Adult Emergency Service in one year during the Covid-19 pandemic period with forensic cases in the one-year period before the pandemic" completed by Mehmet Berkay Can under the supervision of Alper Özkök in September 2022.

Footnotes

Authorship Contributions

Concept: T.A., B.D., Design: A.Ö., Supervision: A.Ö., B.D., Resources: T.A., B.D., Material: M.B.C., Data Collection or Processing: M.B.C., A.Ö., T.A., Analysis or Interpretation: M.B.C., A.Ö., Literature Search: M.B.C., A.Ö., Writing: A.Ö., M.A.A., Critical Review: M.B.C., A.Ö., M.A.A.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study received no financial support.

REFERENCES

1. Tekin A. Tarihten günümüze epidemiler, pandemiler ve ekonomik sonuçları. Süleyman Demirel Univ Inst Soc Sci. 2021; 40: 330-55.
2. Turna N. İstanbul'un veba ile imtihanı: 1811-1812 veba salgını bağlamında toplum ve ekonomi. Studies of The Ottoman Domain. 2011; 1: 1-36.
3. Centers for Disease Control and Prevention. 1918 Pandemic (H1N1 virus) (online) (cited 2022 Mar 21). Available from: <https://www.cdc.gov/flu/pandemic-resources/1918-pandemic-h1n1.html>.
4. Wasserman IM. The impact of epidemic, war, prohibition and media on suicide: United States, 1910-1920. Suicide Life Threat Behav. 1992; 22: 240-54.
5. T.C. Sağlık Bakanlığı. COVID-19 genel bilgiler, epidemiyoloji ve tanı rehberi (online) (cited 2022 Mar 22). Available from: <https://covid19.saglik.gov.tr/Eklenti/39551/0/covid19rehberigenelbilgilerepidemiyojivetanipdf.pdf>.
6. WHO. COVID-19 dashboard (online) (cited 2022 Mar 22). Available from: <https://covid19.who.int/>.
7. Türkoğlu MC, Kantaş YF. Sağlık politikası analizi: Türkiye'de COVID-19 pandemi döneminde uygulanan sağlık politikaları. Toplum Politika Dergisi. 2021; 2: 11-29.
8. Rigby J, Satija B. WHO declares end to COVID global health emergency. Reuters (online) 2023 (cited 2023 May 8). Available from: <https://www.reuters.com/business/healthcare-pharmaceuticals/covid-is-no-longer-global-health-emergency-who-2023-05-05/>
9. Law RK, Wolkin AF, Patel N, Alic A, Yuan K, Ahmed K, et al. Injury-related emergency department visits during the COVID-19 pandemic. Am J Prev Med. 2022; 63: 43-50.
10. Wongtanasarasin W, Srisawang T, Yothiya W, Phinyo P. Impact of national lockdown towards emergency department visits and admission rates during the COVID-19 pandemic in Thailand: A hospital-based study. Emerg Med Australas. 2021; 33: 316-23.
11. Sweeny AL, Keijzers G, Marshall A, Hall EJ, Ranse J, Zhang P, et al. Emergency department presentations during the COVID-19 pandemic in Queensland (to June 2021): interrupted time series analysis. Med J Aust. 2023; 218: 120-5.
12. Isik GC, Cinpolat R, Kiris E, Cevik Y. Evaluation of forensic medical cases during COVID-19 pandemic. Clin Exp Heal Sci. 2022; 12: 205-8.
13. Moynihan R, Sanders S, Michaleff ZA, Scott AM, Clark J, To EJ, et al. Impact of COVID-19 pandemic on utilisation of healthcare services: a systematic review. BMJ Open 2021; 11: 045343.
14. Yasin YJ, Grivna M, Abu-Zidan FM. Global impact of COVID-19 pandemic on road traffic collisions. World J Emerg Surg. 2021; 16: 51.
15. Kabiri N, Abbasi A, Pashazadeh F, Hajebrahami S, Soleimanpour H. The Impact of the COVID-19 pandemic on hospital admissions due to road traffic crashes; a systematic review and meta-analysis. Arch Acad Emerg Med. 2023; 12: 12.
16. Demir U, Asirdizer M, Kartal E, Etli Y, Hekimoglu Y. An investigation of the effect of the COVID-19 (SARS-CoV-2) pandemic on occupational accidents. Arch Environ Occup Health. 2022; 78: 28-37.
17. Román J, Willat G, Piaggio J, Correa MT, Damián JP. Epidemiology of dog bites to people in Uruguay (2010–2020). Vet Med Sci. 2023; 9: 2032-7.
18. Taylor JQ, Krieger R, Blanco R, Austin TM, Abramowicz S. Pediatric dog bites to the face may have been less severe during COVID-19 pandemic: a retrospective cohort study. J Oral Maxillofac Surg. 2023; 81: 575-82.
19. Tulloch JSP, Minford S, Pimblett V, Rotheram M, Christley RM, Westgarth C. Paediatric emergency department dog bite attendance

- during the COVID-19 pandemic: an audit at a tertiary children's hospital. *BMJ Paediatr Open*. 2021; 5: 001040.
20. Plana NM, Kalmar CL, Cheung L, Swanson JW, Taylor JA. Pediatric dog bite injuries: a 5-year nationwide study and implications of the COVID-19 pandemic. *J Craniofac Surg*. 2022; 33: 1436-40.
 21. Pitak-Arnop P, Auychai P, Subbalekha K, Sirintawat N, Tangmanee C, Meningaud JP, et al. COVID-19 pandemic and lockdown increase the frequency and severity of periorbital dog bite injuries in children. *J oral Biol craniofacial Res*. 2022; 12: 666-72.
 22. Abhilash KPP, Paul AJ, Das S, Hazra D, Jain S, Dhinakar Arelly SP. Changing pattern of trauma during the COVID-19 pandemic. *Med J Armed Forces India*. 2021; 77: 338-44.
 23. Hazra D, Jindal A, Fernandes JP, Abhilash KPP. Impact of the lockdown due to COVID-19 pandemic on the spectrum and outcome of trauma in India. *Indian J Crit Care Med*. 2021; 25: 273-8.
 24. Chiba H, Lewis M, Benjamin ER, Jakob DA, Liasidis P, Wong MD, et al. "Safer at home": The effect of the COVID-19 lockdown on epidemiology, resource utilization, and outcomes at a large urban trauma center. *J Trauma Acute Care Surg*. 2021; 90: 708-13.
 25. Balmori de la Miyar JR, Hoehn-Velasco L, Silverio-Murillo A. Druglords don't stay at home: COVID-19 pandemic and crime patterns in Mexico City. *J Crim Justice*. 2021; 72: 101745.
 26. Georgeades CM, Collings AT, Farazi M, Fallat ME, Minneci PC, Sato TT, et al. A multi-institutional study evaluating pediatric burn injuries during the COVID-19 pandemic. *J Burn Care Res*. 2023; 44: 399-407.
 27. Chawla S, Papp A. Adult kitchen-related burn injuries: The impact of COVID-19. *Burns*. 2023; 49: 1328-34.
 28. Nuñez JH, Sallent A, Lakhani K, Guerra-Farfan E, Vidal N, Ekhtiari S, et al. Impact of the COVID-19 pandemic on an emergency traumatology service: Experience at a tertiary trauma centre in Spain. *Injury*. 2020; 51: 1414-8.
 29. Pichard R, Kopel L, Lejeune Q, Masmoudi R, Masmajejan EH. Impact of the CoronaVirus Disease 2019 lockdown on hand and upper limb emergencies: experience of a referred university trauma hand centre in Paris, France. *Int Orthop*. 2020; 44: 1497-501.
 30. Nisan 2020 Başvuru Karşılama Raporu. Kadın Cinayetlerini Durduracağız Platformu. (online) (cited 2022 Aug 24). Available from: <http://kadincinayetleriniurduracagiz.net/aciklamalar/2912/nisan-2020-basvuru-karsilama-raporu>. 2020.
 31. Mayıs 2020 Başvuru Karşılama Raporu. Kadın Cinayetlerini Durduracağız Platformu. (online) (cited 2022 Aug 24). Available from: <http://kadincinayetleriniurduracagiz.net/aciklamalar/2918/mayis-2020-basvuru-karsilama-raporu>. 2020.
 32. Mahase E. COVID-19: EU states report 60% rise in emergency calls about domestic violence. *BMJ* (online) 2020 (cited 2024 Jan 9): 369:m1872. Available from: <https://www.bmj.com/content/369/bmj.m1872>
 33. Piquero AR, Jennings WG, Jemison E, Kaukinen C, Knaul FM. Domestic violence during the COVID-19 pandemic - Evidence from a systematic review and meta-analysis. *J Crim Justice*. 2021; 74: 101806.
 34. Ertan D, El-Hage W, Thierrée S, Javelot H, Hingray C. COVID-19: urgency for distancing from domestic violence. *Eur J Psychotraumatol*. 2020; 11: 1800245.
 35. Ergönen AT, Biçen E, Ersoy G. Domestic violence during the COVID-19 pandemic. *Bull Leg Med*. 2020; 25: 47-56.
 36. Güngör V, Aşkın D. Disaster and family affairs: the effect of Covid-19 pandemic on disputes between family members and domestic violence. *Bitlis Eren Üniversitesi Sos Bilim Derg*. 2021; 10: 46-55.
 37. Esposito M, Salerno M, Scoto E, Di Nunno N, Sessa F. The impact of the COVID-19 pandemic on the practice of forensic medicine: An overview. *Healthc*. 2022; 10: 319.
 38. Nivette AE, Zahnow R, Aguilar R, Ahven A, Amram S, Ariel B, et al. A global analysis of the impact of COVID-19 stay-at-home restrictions on crime. *Nat Hum Behav*. 2021; 5: 868-77.
 39. Pirkis J, Gunnell D, Shin S, Del Pozo-Banos M, Arya V, Aguilar PA, et al. Suicide numbers during the first 9-15 months of the COVID-19 pandemic compared with pre-existing trends: An interrupted time series analysis in 33 countries. *EClinicalMedicine*. 2022; 51: 101573.
 40. Olding J, Zisman S, Olding C, Fan K. Penetrating trauma during a global pandemic: Changing patterns in interpersonal violence, self-harm and domestic violence in the COVID -19 outbreak. *Surgeon* (online) 2021 (cited 2023 Aug 29): 19:9-13. Available from: <https://pmc.ncbi.nlm.nih.gov/articles/PMC7392113/>
 41. Savrun A, Aydın İE. Change in forensic cases admitted to emergency department before and during COVID-19 pandemic. *Konuralp Medical Journal*. 2021; 13: 108-13.
 42. Sher L. The impact of the COVID-19 pandemic on suicide rates. *QJM*. 2020; 113: 707-12.