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THE IMPACT OF LOCKDOWN MEASURES TAKEN TO COMBAT THE COVID-19 PANDEMIC ON THE PATTERN OF CLINICAL FORENSIC MEDICINE CASES

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Abstract: *Introduction.* Epidemiological studies comparing lockdown periods with other times take their place in the literature under many titles. However, there is no epidemiological study conducted in forensic medicine clinics and evaluating the entire spectrum of forensic cases, as far as we can reach. In this study, it is aimed to reveal the effects of lockdown measures during COVID-19 pandemic on the clinical forensic medicine case pattern by retrospectively evaluating the cases of a tertiary center forensic medicine clinic.

Materials and Methods. 2686 cases that were admitted to our center in the 19-month period following the announcement of the pandemic in our country and reported as forensic cases were investigated retrospectively and evaluated by dividing them into three groups as lockdown, post-lockdown, and other days according to the date of the event.

Results. It was seen that 1923 (71.6%) of the cases were male and 763 (28.4%) were female and have a median age of 29 (IQR: 27). It was determined that suicide attempts were most common the day after lockdown, suicide and self-harm cases were more frequent during the lockdown process compared to other days of the pandemic, and traffic accident injuries and workplace accidents were more frequent during the lockdown period.

Conclusion. Considering that there are many studies with very different results according to the center where the study was conducted, there is a need for multicenter studies investigating the lockdown effect to reach larger case numbers and obtain stronger results.

Keywords: COVID-19, pandemic, lockdown, clinical forensic medicine.

INTRODUCTION

The COVID-19 pandemic and the restrictions have become an entity that has profoundly influenced people's way of life and way of thinking around the world [1,2]. During the pandemic, the working order and case pattern of forensic medicine clinics as well as other healthcare professionals have changed [3]. Sociologically, major events that affect the society can change the behavior and impulses of the society, and these changes can lead to major changes in forensic medicine case patterns [4]. It is impossible for a pandemic that affects the whole world and the measures taken to reduce its effects not to have an impact on forensic medicine cases [5].

In studies comparing the pre- and post-pandemic conditions under the headings of work accident, traffic accident, interpersonal violence, and suicide in the literature, it is seen that the effect of the pandemic on case pattern changes occurs in different ways in different countries [5–11]. Changes that may occur during the pandemic period can be directly attributed to the effects of the pandemic, as well as the disease causing the pandemic itself, the individual-specific measures and/or the social measures taken during the pandemic period. Lockdown, one of the most prominent social measures taken during the COVID-19 pandemic period, has also led to changes in many issues.

Epidemiological studies comparing lockdown periods with other times take their place in the literature under many titles, including injuries in traffic accidents, traumatic damages and situations that are of interest to emergency health services [12–16]. The size of the data in these studies has not yet reached the size to make a clear deduction, moreover, there is no epidemiological study conducted in forensic medicine clinics and evaluating the entire spectrum of cases, as far as we can

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reach. Although the studies conducted in emergency trauma centers and crime statistics can be informative in terms of clinical forensic medicine practices, it is obvious that a study should be conducted using the data of forensic medicine clinics on the subject.

In this study, it is aimed to reveal the effects of lockdown measures during COVID-19 pandemic on the clinical forensic medicine case pattern by retrospectively evaluating the cases of a tertiary center forensic medicine clinic.

MATERIALS AND METHODS

All cases who applied to our hospital in the 19-month period from 11/03/2020, the date when the first COVID-19 case was announced by the Ministry of Health in our country, to 11/10/2021, were reported as forensic cases in our center, and whose report reached the conclusion, were retrospectively evaluated. The study population also includes a few cases of fatalities that may be classified as forensic pathology cases. These patients were also included in the research population since clinical forensic investigations of them were sought prior to the time of death or due to clinical investigations regarding their ante-mortem state. 126 instances were excluded because their treatment was either not completed, was not carried out in our clinic, or the forensic report did not reach a conclusion. The age, gender, diagnosis and treatment information of the cases and their discharge status were obtained from the patient file, and the information about the event was obtained from the patient file and/or from the forensic investigation file for the cases sent with a report request by legal authorities. In 78 of the cases, information about

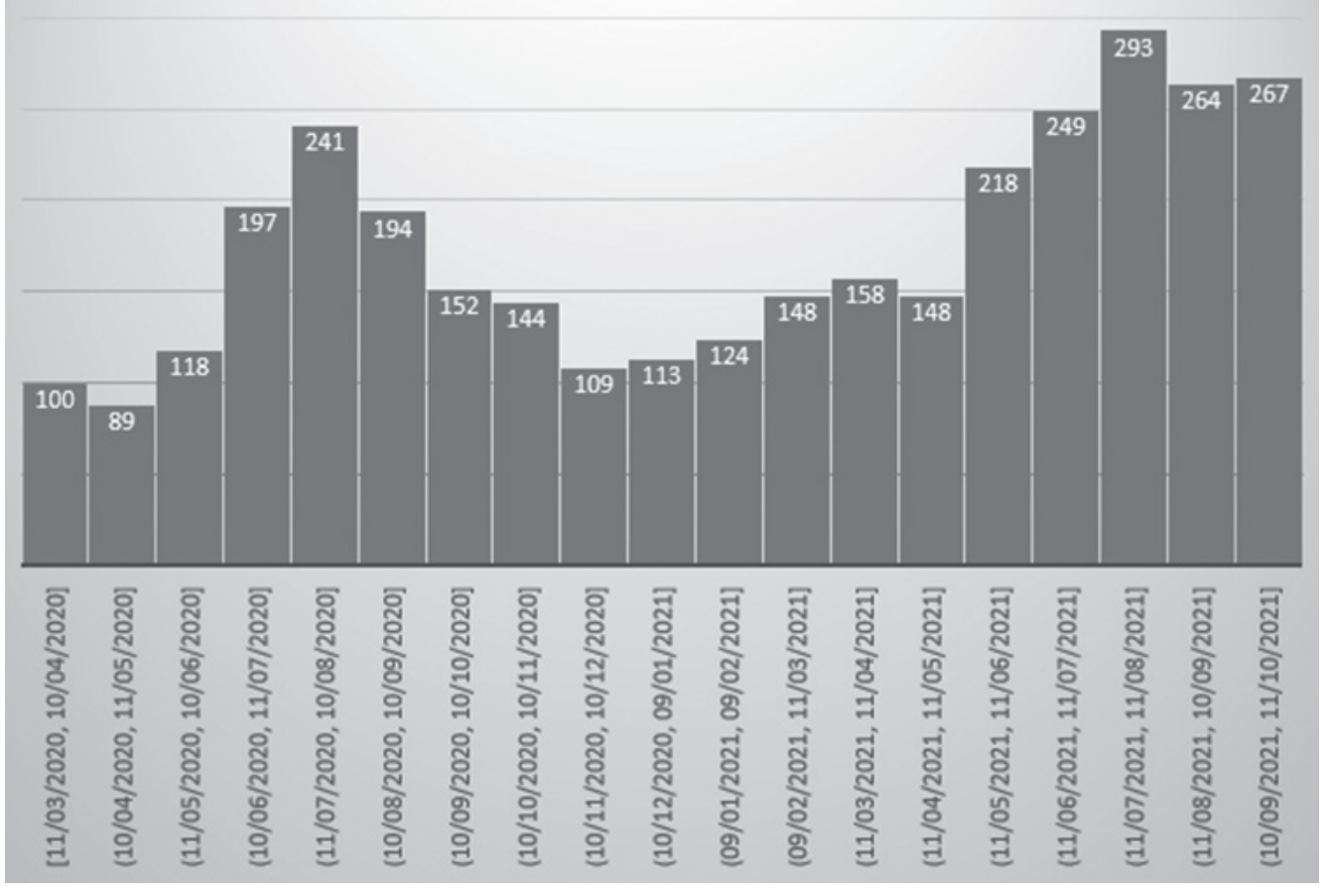

Figure 1. Distribution of all cases during the investigated timeline.

Table 1. Age, GCS and hospitalization duration of the cases

	Minimum	Maximum	Median	IQR
Age (years)	0	91.00	29	27.00
GCS	3.00	15.00	15	0.00
Hospitalization duration (days)	0	367.00	1	1.00

GCS: Glasgow coma scale, IQR: interquartile range.

manner could not be reached. All cases were divided into three groups: events that occurred on the days of the lockdown measure (125 days) (group I), events that occurred the day after the lockdown measure (23 days) (group II), and events that occurred on the other pandemic days (432 days) (group III).

Simple frequency analyzes were performed on the data obtained, then the data distribution was analyzed using the Kolmogorov-Smirnov test with the help of SPSS 22 for statistical analysis, and it was seen that the data did not have the normal distribution required for the parametric test. Chi-square test was used in the analysis of nominal data.

The study was reviewed and approved by Ministry of Health of Turkey and the Board of the Medical Ethics Committee of Afyonkarahisar Health Sciences University with the decision numbered 2022/97 taken at the meeting numbered 2022/2.

RESULTS

Within the specified date range 2686 cases were evaluated. The ages of the cases were between 0 years and 91 years (Median: 29.00, IQR: 27.00) (Table 1).

It was seen that 1923 (71.6%) of the cases were male and 763 (28.4%) were female (Table 2). There was no statistically significant difference between the date groups of events in terms of age, first admission Glasgow Coma Score (GCS), and length of hospital stay.

The numerical distribution of the cases between the one-month intervals during the examined period is shown in Figure 1.

Table 2. Frequencies of case characteristics

Sex		Frequency	Percent
	Male	1923	71.6
	Female	763	28.4
	Total	2686	100.0
Injury mechanism			
	Traffic accidents	1086	40.4
	Blunt trauma*	792	29.5
	Incisive injury	345	12.8
	Intoxication	214	8.0
	Other	159	9.6
Case type			
	Forensic case	1314	48.9
	Traffic accident	1019	37.9
	Workplace accident	353	13.1
Discharge status			
	Treated	2620	97.5
	Death in hospital	52	1.9
	Death in ambulance	14	.5
Incident scene			
	Home	628	23.4
	Workplace	350	13.0
	Outside	1708	63.6
Manner			
	Accident	2122	79.0
	Intentional violence	391	14.6
	Suicide/self-harm	127	4.7
	Natural	4	.1
	Unknown	42	1.6
Case group			
	Group I	640	23.8
	Group II	97	3.6
	Group III	1949	72.6
Injured body part			
	Head-neck	963	36.3
	Thorax	322	12.1
	Lumbar-pelvic	293	11.0
	Extremities	1074	40.5
	Total	2652	100.0

*Blunt trauma cases other than traffic accidents.

Of the cases 23.8% (n=640) admitted due to events that occurred on lockdown days, 3.6% (n=97) on post-lockdown days, and 72.6% (n=1949) on other days.

Due to the difference in the number of days of the three groups, cases were evaluated on the basis of the mean number of cases per day and the ratios among all cases. There were statistically significant differences between the groups in the rates of case numbers by gender, discharge status rates and injury mechanism (Table 3).

Since there was a significant difference between the groups in the chi-square test, the groups were compared among themselves. When the injury mechanism is compared within itself, there was no statistically significant difference between group I and group II (p=0.252), there was no statistically significant difference between group II and group III (p=0.052), there was a significant difference between group I and group III (p=0.031). When the discharge status is analyzed in itself, there was no significant difference between group I and group II, and between group II and group III (p=0.301 and p=0.112, respectively), there was a statistically significant difference between group I and group III (p=0.007).

DISCUSSION

According to reports, there are notable variances between nations in the case pattern modifications identified in epidemiological papers covering the field of clinical forensic medicine from various clinics after the pandemic [5].

The fact that our case series is male dominated is not surprising considering that most of the cases have a traumatic origin. In the literature, it has been reported in many studies that traumatic injuries are more common in men [17,18]. Additionally, the fact that men make up a higher percentage of cases on lockdown days, the rate at which men work in our nation is higher than the rate at which women work, and the number of men who are actively employed on lockdown days all contribute to the statistically significant difference between lockdown days and other days.

When we look at the distribution of the number of cases throughout the process (Fig. 1), it seems that there is a significant increase in the summer months without lockdown application in our country, which is in line with the studies expressing that traumatic injuries decrease with lockdown applications [18].

In our study, the cases were evaluated according to three pre-determined groups under different headings, and although within-group ratios were used in the statistical analyzes to better reflect the case pattern, the mean number of cases per day shows more interesting features.

First of all, in our study, it is seen that injuries related to traffic accidents are more common on lockdown days. Contrary to our findings, there are studies in the literature showing that injuries related

Table 3. Mean case numbers per day by groups

		Group I (125 days)	Group II (23 days)	Group III (432 days)	p*
Sex	Male	3.76 (n=470)	2.57 (n=59)	3.23 (n=640)	0.04
	Female	1.36 (n=170)	1.65 (n=38)	1.28 (n=555)	
	Total	5.12 (n=640)	4.21 (n=97)	5.99 (n=1949)	
Case type	Forensic case	2.3 (n=288)	2.43 (n=56)	2.24 (n=970)	
	Traffic accident	2.15 (n=269)	1.39 (n=32)	1.66 (n=718)	NS
	Workplace accident	0.66 (n=83)	0.39 (n=9)	0.60 (n=261)	
Discharge status	Treated	5.06 (n=633)	4.22 (n=97)	4.37 (n=1889)	
	Death in hospital	0.05 (n=6)	0.00 (n=0)	0.03 (n=46)	0.01**
	Death in ambulance	0.01 (n=1)	0.00 (n=0)	0.11 (n=13)	
Incident scene	Home	1.09 (n=136)	1.35 (n=31)	1.07 (n=461)	
	Work	0.67 (n=84)	0.30 (n=7)	0.60 (n=259)	NS
	Outside	3.36 (n=420)	2.56 (n=59)	2.84 (n=1229)	
Injury mechanism	Blunt***	3.60 (n=450)	2.52 (n=58)	3.17 (n=1370)	
	Incisive	0.73 (n=91)	0.78 (n=18)	0.55 (n=236)	0.01
	Firearm	0.10 (n=13)	0.13 (n=3)	0.08 (n=35)	
Manner	Accident	4.11 (n=514)	3.17 (n=73)	3.55 (n=1535)	
	Intentional violence	0.74 (n=93)	0.61 (n=14)	0.66 (n=284)	NS
	Self-harm – Suicide	0.21 (n=26)	0.30 (n=7)	0.07 (n=94)	

NS: not significant. *All analyzes were made with Pearson's test except discharge status. **Discharge status variables analyzed with Fisher's test. ***Including blunt trauma cases due to traffic accidents.

to traffic accidents decrease during lockdown periods and linking this situation with lockdown measures [7,13,18–20]. The most likely explanation for this situation, which does not correspond to the information that the total number of traffic accidents and the number of deaths due to traffic accidents decreased in 2020, when lockdown measures and travel bans were applied intensively, can be explained as changing driver behaviors [20,21]. Although the total number of injuries decreased, it is one of the hypotheses put forward in the literature that there is an increase in driving speed and risky behaviors due to the effect of the empty roads during lockdown periods, and that this situation may increase accidental injuries during lockdown periods [11,12,20,22,23].

Another study result, which is contrary to the literature, is the daily mean number of workplace accidents. Contrary to studies stating that occupational accidents decreased during the pandemic period and this decrease was evident during lockdown periods, in our study, higher daily workplace accidents were observed during the lockdown period [6,18,24]. We think that the high number of COVID cases during lockdown periods, the increase in workload of other employees due to the fact that COVID positive cases are under quarantine, and the increase in accidents as a result may lead to these results.

It is reasonable to expect forensic incidents to happen at home rather than at work or other outside locations during lockdown periods since many business lines operate as home-offices and it is prohibited to be outside – with the exception of employees of some certain business lines – during lockdown periods. In line with this expectation, there are studies in the literature showing that workplace and outside traumas decreased in emergency department cases, while domestic injuries increased [13–16]. However, contrary to expectations, higher numbers of daily events occurred during lockdown periods, both in the workplace and outdoors in our study. The fact that traffic accidents and workplace accidents occur more frequently during the lockdown period stands out as a possible reason for this situation., The reason why the accidents are often as manner in the lockdown period is also compatible with the fact that traffic accidents and work accidents are more frequent in this period.

Many papers published at the beginning of the pandemic stated that the risk of suicide increased during the pandemic period and that measures including quarantine and lockdown had a share in this risk increase [10,25,26]. Later research, however, revealed that suicide ideation and its incidence dropped during pandemic, quarantine, and lockdown procedures, and they noted that this circumstance had also been present throughout earlier significant social crises [10,27–29]. Mortality statistics have not been disclosed since the beginning of the pandemic in our country, and the death and suicide statistics for the last two years have been shown in the "in progress" stage by TurkStat, although at the time of this writing, 1 year and 8 months have passed for 2020 and 8 months for 2021 statistics. Therefore, we do not know the change in the frequency of suicide during the pandemic period at national level. However, our study results show that, contrary to the literature, the number of suicides per day during lockdown periods is higher than other days in the pandemic process. In the only study in which results similar to ours were obtained, it was reported that the frequency of suicide increased during the lockdown process in the spring of 2020 in Spain [30].

Another important finding about suicides is that the number of suicide attempts per day is the highest on the day after the lockdown period. This may be related to the fact that suicide cases who completed the decision process could not find the necessary opportunity during the lockdown process. Cases who cannot find enough personal space to attempt suicide, because their households are at home during the lockdown period, may be putting their thoughts into action at the first opportunity right after the lockdown period.

The first limitation of this study is that the study method is retrospective. The most prominent restriction is the small number of some variables and consequently the research population, which prevents advanced statistical analysis from being done.

The most basic output of this study is that the lockdown measures taken to combat the COVID-19 pandemic have effects on the clinical forensic medicine case pattern as expected. This pattern change shows a wide variation like other studies including traumatic cases. Contrary to what is more commonly expressed in the literature, in our study, it was determined that suicide attempts were most common the day after lockdown, suicide and self-harm cases were more frequent during the lockdown process compared to other days of the pandemic, and traffic accident injuries and workplace accidents were more frequent during the lockdown period. Moreover, proportional disparities in case patterns between lockdown days and other days were found in terms of gender, discharge status, and injury mechanism. Considering that there are many

studies with very different results according to the center where the study was conducted, it is clear that there is a need for multicenter studies investigating the lockdown effect in order to reach larger case numbers and obtain stronger results.

Conflict of interest

The authors declare that they have no conflict of interest.

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