Medical Journal of Bakırköy

Med J Bakirkoy 2022;18:70-76
DOI: 10.4274/BMJ.galenos.2022.2021.11-6

Research

Impact of COVID-19 Outbreak on Pediatric Trauma Cases in a Tertiary Trauma Center

Üçüncü Seviye Bir Travma Merkezindeki Pediatrik Travma Olgularına COVID-19 Salgınının Etkisi

Buğra İlhan, Göksu Bozdereli Berikol, Halil Doğan

University of Health Sciences Turkey, Bakırkoy Dr. Sadi Konuk Training and Research Hospital, Clinic of Emergency Medicine, Istanbul, Turkey

ABSTRACT

Objective: To evaluate the change in the severity, frequency, and characteristics of pediatric trauma patients presented to the emergency department (ED) during the coronavirus disease-2019 (COVID-19) outbreak.

Methods: A retrospective comparative study was conducted in the ED of a tertiary trauma center in Istanbul, Turkey. Trauma patients aged under 18 years who presented to the ED between May 1st and June 30th, 2020 were included. The same dates of the previous year were included as a control group. Comparison of Manchester Triage Scale (MTS), disposition, injury characteristics, the location of the injury, region of injury, and ED length of stay (LOS) was done.

Results: 2,779 patients were included. There were a 60% reduction in total ED visits and a 50% reduction in daily ED visits. MTS orange code patients (1.1% vs 1.8%) did not change while MTS green code (69.6% vs 41.8%) decreased significantly. Arrival by ambulance (5.8% vs 11.5%) increased (p<0.001). Penetrating (7.2% vs 27.3%), in-home (48.1% vs 65.1%), and upper limb (27.1 vs 34.4%) injuries increased (p<0.001). Fracture (19.0% vs 14.1%) and blunt trauma (90.7% vs 70.9%) frequency, and fall from ground level (64.5% vs 49.3%) injuries decreased significantly. The ward and intensive care unit (ICU) admissions did not change and ED LOS decreased (p<0.001).

Conclusion: We highlighted that there was no change in critical pediatric trauma visits during the COVID-19 pandemic. There is still a need for ward and ICU beds for pediatric trauma patients. The change in injury severity and injury characteristics should be kept in mind while pandemic rearrangements were planned.

Keywords: COVID-19, pandemic, pediatric, trauma, wounds and injuries

ÖZ

Amaç: Koronavirüs hastalığı-2019 (COVID-19) salgını sırasında acil servise (AS) başvuran pediatrik travma hastalarının ciddiyet, sıklık ve karakteristiklerindeki değişikliği değerlendirmektir.

Gereç ve Yöntem: Bu geriye dönük karşılaştırmalı çalışma, Türkiye'nin İstanbul şehrindeki üçüncü basamak bir travma merkezinin AS'sinde gerçekleştirildi. 1 Mayıs-30 Haziran 2020 arasında acil servise başvuran 18 yaş altı travma hastaları dahil edildi. Bir önceki yılın aynı tarihleri kontrol grubu olarak dahil edildi. Manchester Triyaj Skalası (MTS), sonlanım, yaralanma karakteristikleri, yaralanmanın yeri, yaralanma bölgesi ve AS kalış süresi karşılaştırıldı.

Bulgular: Çalışmaya toplam 2.779 hasta dahil edildi. Toplam AS başvurularında %60 ve günlük AS başvurularında %50 azalma oldu. MTS turuncu kodlu hastalar (%1,1'e karşı %1,8) değişmezken, MTS yeşil kod (%69,6'ya karşı %41,8) anlamlı olarak azaldı. Ambulansla geliş (%5,8'e karşı %11,5) arttı (p<0,001). Penetran (%7,2'ye karşı %27,3), ev içi (%48,1'e karşı %65,1) ve üst ekstremite (%27,1'e karşı %34,4) yaralanmaları arttı (p<0,001). Kırık (%19,0'a karşı %14,1) ve künt travma (%90,7'ye karşı %70,9) sıklığı ve aynı seviyeden düşme (%64,5'e karşı %49,3) yaralanmaları önemli ölçüde azaldı. Servis ve yoğun bakım ünitesi (YBÜ) yatışları değişmedi ve acilde kalış süresi kısaldı (p<0,001).

Sonuç: Pandemi döneminde kritik pediatrik travma vizitlerinde bir değişiklik olmadığını vurguladık. Pediatrik travma hastaları için hala servis ve YBÜ yataklarına ihtiyaç vardır. Pandemik düzenlemeler planlanırken yaralanma ciddiyeti ve karakteristiklerindeki değişiklikler akılda tutulmalıdır.

Anahtar Kelimeler: COVID-19, pandemi, pediatri, travma, yaralar ve yaralanmalar

Address for Correspondence: Buğra İlhan, University of Health Sciences Turkey, Bakırkoy Dr. Sadi Konuk Training and Research Hospital, Clinic of Emergency Medicine, Istanbul, Turkey
Phone: +90 507 236 86 04 E-mail: bugra_ilhan@yahoo.com ORCID ID: orcid.org/0000-0002-3255-2964

Cite as: İlhan B, Bozdereli Berikol G, Doğan H. Impact of COVID-19 Outbreak on Pediatric Trauma Cases in a Tertiary Trauma Center. Med J Bakirkoy 2022;18:70-76

Received: 22.11.2021
Accepted: 18.02.2022

INTRODUCTION

After atypical pneumonia cases, which first appear in Wuhan, China in December 2019, a different coronavirus subtype [croronavirus disease-2019 (COVID-19)] was detected. Due to its rapid spread, a new pandemic was declared by the World Health Organization (1). So far, above 254 million confirmed cases and more than 5.1 million deaths had been reported (2).

The COVID-19 virus infection brought many undesirable conditions with it. Turkey took some countermeasures to prevent its spread after the first case was detected on March 11th, 2020. These measures include curfews, closing schools and playgrounds, and restrictions in areas where people are crowded.

With the COVID-19 outbreak, healthcare organizations have defined designated areas for COVID-19 suspected patients. Also, there were changes in the frequency and characteristics of patients admitted to healthcare facilities. A decrease in the hospital admissions of patients with life-threatening conditions, acute stroke, and the acute coronary syndrome was detected (3-5). Similarly, the visit frequency of trauma patients and surgical emergencies, and the incidence and characteristics of fractures have changed (6-8).

The pandemic has caused several changes in the lives of children and adults. Similar to adults, pediatric visits to the emergency department (ED) have decreased (9,10). With the closure of schools, daycares, and playgrounds, children started to spend their time at home. These restrictions resulted in changes in pediatric orthopedic trauma admissions (7,11). However, the studies in the literature were focused on a specific region or specific department practices. The studies in the literature evaluating all pediatric trauma patients during the COVID-19 pandemic period were limited.

The current study evaluates the change in the severity, frequency, and characteristics of pediatric trauma patients who presented to the ED during the COVID-19 outbreak.

METHODS

Study Design

This retrospective observational study was done at tertiary training and research hospital. Approval for this study was obtained from the Bakirkoy Dr. Sadi Konuk Training and Research Hospital Institutional Review Board (decision no: 2020-24-06, date: 07.12.2020). The study hospital is a level 3 adult and pediatric trauma center in İstanbul, Turkey. The study ED is accepted approximately 350,000 patients annually. With the first confirmed case in our country on March 11th, 2020, the hospital started to accept COVID-19 patients except for non-COVID-19 patients.

Patient Selection and Groups

Trauma patients aged under 18 years and presented to our ED between May 1st and June 30th, 2020 were included in the study. Patients transferred from another healthcare center and have missing medical information were excluded from the study. The previous year's patients were included as a control group with the same months (May 1st-June 30th 2019) and the same inclusion/exclusion criteria. The informed consent could not be obtained because of the retrospective design. The flow diagram of the study is presented in Figure 1.

Patient data were collected from electronic and written patient files. Patient demographics, trauma type, fracture presence, fracture region, trauma mechanism, trauma location, consultations, and ED length of stay (ED LOS) were recorded and analyzed.

The patients' the first evaluation was done in the triage field by a registered nurse who received the Ministry of Health's triage training. The Manchester Triage Scale (MTS), which is easy to use and achieves successful pediatric patient results, was used to evaluate patients' severity (12). MTS consists of 52 different flowcharts and evaluates patients on a scale of 1 to 5 according to their urgency. Medical care should be given immediately at level 1 (red code), within 10 min at level 2 (orange code), within 60 min at level 3 (yellow code), within 120 min at level 4 (green code), and within 240 min at level 5 (blue code) (13).

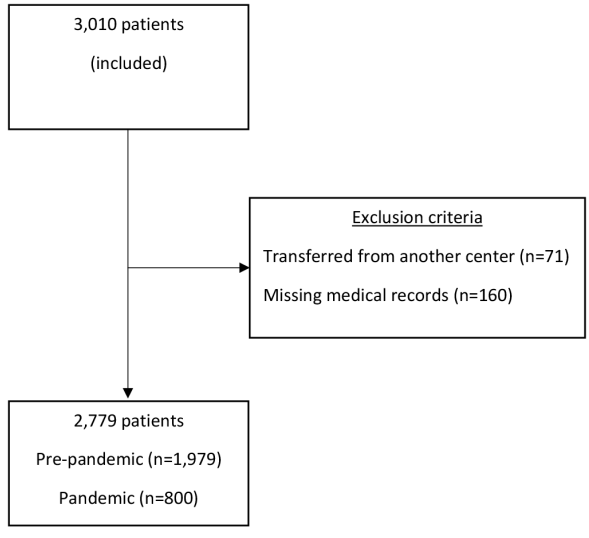

Figure 1. Flow diagram of the study

Outcomes

The primary outcome of the study is the change in the pediatric trauma visits frequency according to their severity levels during the pandemic. The secondary outcomes of the study are the change in injury type, injury region, injury mechanism, and ED LOS of pediatric trauma cases during the COVID-19 outbreak.

Statistical Analysis

Numerical variables were presented with median (interquartile range). Categorical variables were presented with numbers and percentages. The Shapiro-Wilks and Kolmogorov-Smirnov test determined the distribution of the groups. The relationship between numerical variables was evaluated with the Mann-Whitney U test. The relationship between categorical variables was assessed with the chi-square test. Spearman or Pearson test was used in correlation analysis. In univariate analysis, variables with a p-value less than 0.2, sample size greater than 20, and not correlating with each other were included in the logistic regression model. Odds ratios (OR) are presented with a 95% confidence interval (CI). SPSS® for Windows version 23.0 (IBM, Chicago, IL, United States) program was used for statistical analysis. Statistical significance level was set as $p<0.05$.

RESULTS

A total of 2,779 patients (1,979 patients pre-pandemic and 800 patients pandemic period) were included in the study. The mean age of the patients was 7 (range: 3-12) and 1,042 (37.5%) of the patients were girls. Boys presented to the ED more frequently both the pandemic and the pre-pandemic period. The patients who presented in the pandemic period were younger than the pre-pandemic period (Table 1).

An approximately 60% reduction in total ED visits and 50% reduction in daily ED visits were detected. When we evaluate the severity levels, the MTS orange code patients did not change during the pandemic ($p>0.05$). A significant increase in yellow code patients and a significant decrease in green code patients were detected (Table 1). A high negative correlation was found between yellow and green code patients ($p<0.001$, Spearman correlation coefficient: -0.974).

During the pandemic period, patients were presented to the hospital by ambulance at a higher rate [OR: 2.12 (95% CI 1.49-3.02), $p<0.001$)]. A significant decrease was detected in the ED LOS during the pandemic period [OR: 0.997 (95% CI 0.996-0.998), $p<0.001$]. While the proportion of discharged patients decreased significantly during the pandemic period, the ward and intensive care unit (ICU) admissions did not change. The patient characteristics of pre-pandemic and pandemic periods are shown in Table 1.

While the number of penetrating trauma increased during the pandemic period, there was a significant decrease in blunt trauma ($p<0.001$). There was a 70% reduction in fracture frequency ($p=0.002$). There was a significant increase in the number of dislocations ($p=0.045$). When injury locations were evaluated, it was found that while the frequency of in-home injuries increased, there was a decrease in the frequency of injuries in schools, daycares, and sports fields. The frequency of upper limb injuries increased, while other body parts' injuries did not change or decrease during the pandemic period. When we evaluated the mechanisms of injuries, a significant decrease was detected in the fall from ground level. During the pandemic period animal bites increased while sports-related injuries decreased. All other causes of injury remained unchanged. Pre-pandemic and pandemic injury characteristics are presented in Table 2.

Distal forearm fractures were the most common in both pre-pandemic and pandemic periods. The most common fractures are shown in Table 3. Locations of fractures observed pre-pandemic and pandemic periods are shown in Figure 2.

A significant decrease was detected in the total trauma consultations requested from the ED during the pandemic period ($p<0.001$). While there was a significant decrease in the orthopedics department's consultations, there was no significant change in the other trauma consultations. As the number of fractures, there was a significant decrease in the number of orthopedics consultations requested from the ED ($p<0.001$). A moderate correlation was found between the total number of fractures and the total number of consultations and orthopedics consultations ($p<0.001$, $r=0.510$ and $p<0.001$, $r=0.516$, respectively).

In multivariate analysis, MTS green code [OR: 0.24 (95% CI 0.19-0.30), $p<0.001$], blunt trauma [OR: 0.24 (95% CI 0.17-0.34), $p<0.001$], injuries at home [OR: 2.38 (95% CI 1.84-3.08), $p<0.001$], injuries at the street [OR: 2.35 (95% CI 1.73-3.18), $p<0.001$], and upper limb injury [OR: 1.57 (95% CI 1.21-2.03), $p=0.001$] were determined as factors affecting pediatric trauma visits during the pandemic period. Factors affecting pediatric trauma visits during the pandemic period are shown in Table 4.

DISCUSSION

The frequency of total and daily pediatric trauma visits decreased more than 50% in our study. When evaluated in

terms of patient severity, no significant change was detected in critical patient visits, while a significant decrease in the green triage code patients' visits was detected.

Similar to our study, Rotulo et al. (10) found no change in critically ill patients' presentations during the pandemic period. Here, we can say that while there is no change in the critical pediatric trauma patient visits during the pandemic period, non-urgent visits have decreased. We can show country-wide restrictions and the decrease in non-urgent patient visits, which constitute the most patients in the pre-pandemic period, as the reasons for reducing total and daily patient visits. Besides, increased mortality rates and the fear of becoming infected may have decreased non-urgent ED presentations (14). The frequency of pediatric trauma visits decreased, but the critical patients, ward, and ICU admissions did not change in the pandemic period. We still need ward and ICU beds and surgeons to follow up on the pediatric trauma cases. The need for ward/ICU beds and surgeons should be kept in mind while the pandemic rearrangements were planned.

In a study evaluating orthopedic emergencies by Nabian et al. (11), a decrease in orthopedic trauma cases was found similar to our study. Similarly, a decrease of approximately 53% in pediatric trauma patients was found in the study by Greenhalgh et al. (7), and a 64% decrease in the study by Dayananda et al. (15). Unlike other studies, all trauma patients were included in our study. The inclusion of other traumas besides orthopedic traumas in our study may have caused the difference in rates. Although, the reduction in the number of emergency pediatric trauma visits, the critical patient rate did not change. Trauma is still an important cause of pediatric critical visits during the pandemic. Trauma units and staff should continue their duties as a trauma team during a pandemic.

While the hospitalization rates increased in Sugand et al.'s (16) study, there was no change in our study. Besides, a decrease in the rate of discharge from the ED was detected. The reason for this decrease may be the decrease in non-urgent visits. In our study, a significant decrease was found in the ED LOS during the pandemic period. This decrease may be that the patients did not want to wait in the ED with the fear of contamination and left the hospital against medical advice at a higher rate. In a study conducted in Turkey, Demir et al. (17) found that the most frequent reason for discharge against medical advice is the fear of infected by COVID-19 virus.

In our study, while the frequency of penetrating trauma increased, blunt trauma frequency decreased significantly. Similarly, in the study by Nabian et al. (11), an increase in the frequency of penetrating injuries was found, and they stated that this increase might be caused by the rise in the frequency of playing with sharp objects in the home. However, in our study, there was no change in the number of injuries with penetrating objects. The rabies vaccination program started in September 2019 in our ED, and animal bites' presentations began to be accepted afterward. The onset of this vaccination program may elucidate why the increase in the number of penetrating traumas and animal bites during the pandemic period.

In the study by Bram et al. (6), an approximately 2.5-fold decrease in pediatric fracture incidence was found.

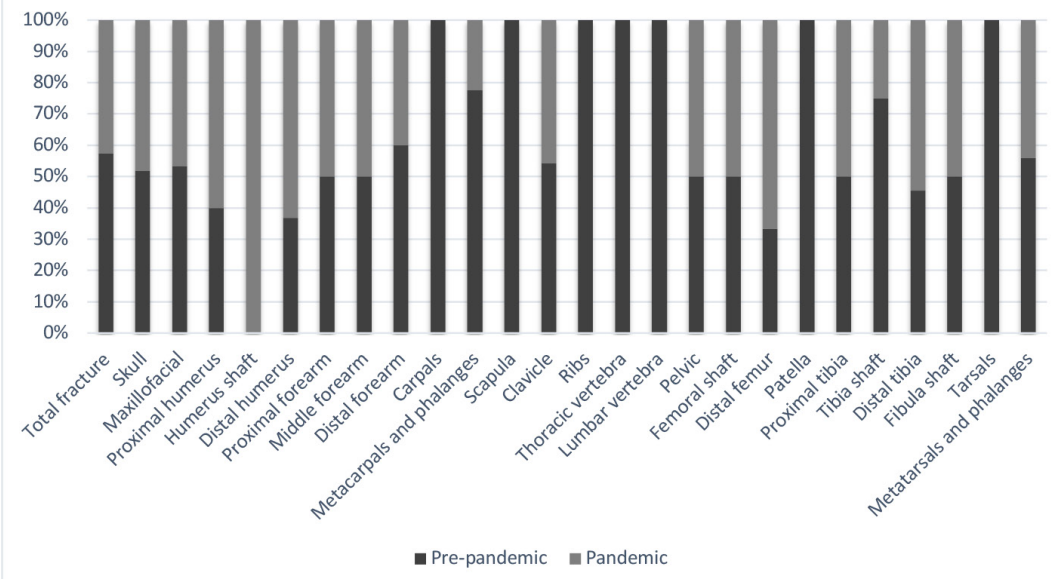

Figure 2. Fracture locations of the patients during pre-pandemic and pandemic period

Similarly, in our study, an about 70% decrease in pediatric fracture frequency was detected. Gumina et al. (18) found a reduction in upper limb injuries during the pandemic period and stated that ground-level falls were frequently caused at home. In our study, while upper limb injuries increased, lower limb and pelvis/genital area injuries decreased. Low energy trauma under parental protection at home compared to schools and playgrounds may have led to reduced fracture frequency. Distal forearm fractures were the most common fractures in our study, similar to Nabian et al.'s (11) study. Parents and caregivers should be aware of the in-home injuries of the pediatric population during the pandemic.

Table 1. Pre-pandemic and pandemic characteristics of the patients

	Pre-pandemic	Pandemic	p-value
Total ED visits, n	1,979	800	-
Daily visits, median (IQR)	24 (21-31.5)	12 (10-15.5)	**<0.001****
Demographics			
Girl, n (%)	719 (36.3)	323 (40.4)	**0.046***
Age (years), median (IQR)	8 (3-13)	5 (2-11)	**<0.001****
Arrival, n (%)			
Ambulatory	1864 (94.2)	708 (88.5)	**<0.001**
EMS, ambulance	115 (5.8)	92 (11.5)	-
Manchester Triage Scale, n (%)			
Red (level 1)	0	0	-
Orange (level 2)	21 (1.1)	14 (1.8)	0.140*
Yellow (level 3)	581 (29.4)	452 (56.5)	**<0.001***
Green (level 4)	1377 (69.6)	334 (41.8)	**<0.001***
Blue (level 5)	0	0	-
Disposition, n (%)			
Discharge	1885 (95.3)	745 (93.1)	**0.024***
Ward admission	52 (2.6)	24 (3.0)	0.586*
ICU admission	2 (0.1)	4 (0.5)	0.061*
Against medical advice	33 (1.7)	20 (2.5)	0.146*
Referral to another hospital	7 (0.4)	7 (0.9)	0.133*
Exitus	0	0	-
ED LOS, median (IQR)	36 (19-80)	31.5 (17-67)	**<0.001****

ED: Emergency department, IQR: Interquartile range, EMS: Emergency medical service, ICU: Intensive care unit, LOS: Length of stay, *Chi-square test; **Mann-Whitney U test, p<0.05 considered significant

Table 2. Pre-pandemic and pandemic injury characteristics of the patients

	Pre-pandemic	Pandemic	p-value*
Injuries, n (%)			
Blunt trauma	1,794 (90.7)	567 (70.9)	**<0.001**
Penetrating trauma	143 (7.2)	218 (27.3)	**<0.001**
Burn	42 (2.1)	15 (1.9)	0.677
Fractures	376 (19.0)	113 (14.1)	**0.002**
Open fractures	5 (0.3)	1 (0.1)	**0.009**
Dislocations	26 (1.3)	19 (2.4)	**0.045**
Location of injury, n (%)			
Home	951 (48.1)	521 (65.1)	**<0.001**
Street	380 (19.2)	174 (21.8)	0.128
School	280 (14.1)	0	**<0.001**
Daycare	33 (1.7)	0	**<0.001**
Playground	263 (13.3)	101 (12.6)	0.683
Sports field	66 (3.3)	3 (0.4)	**<0.001**
Workplace	6 (0.3)	1 (0.1)	0.681
Region of injury, n (%)			
Multiple trauma	152 (7.7)	62 (7.8)	0.950
Head and maxillofacial	772 (39.0)	316 (39.5)	0.810
Cervical	17 (0.9)	8 (1.0)	0.722
Thorax	66 (3.3)	21 (2.6)	0.330
Abdomen	34 (1.7)	6 (0.8)	0.052
Upper limb	537 (27.1)	275 (34.4)	**<0.001**
Lower limb	339 (17.1)	102 (12.8)	**0.004**
Pelvis and genital region	62 (3.1)	10 (1.3)	**0.005**
Mechanism of injury, n (%)			
Fall from ground level	1,276 (64.5)	394 (49.3)	**<0.001**
Fall from height	196 (9.9)	76 (9.5)	0.746
Motor vehicle accident	20 (1.0)	10 (1.3)	0.580
Pedestrian accident	64 (3.2)	28 (3.5)	0.723
Motorcycle accident	19 (1.0)	6 (0.8)	0.595
Bicycle accident	49 (2.5)	23 (2.9)	0.549
Gunshot wounds	3 (0.2)	0	0.562
Penetrating objects related injury	144 (7.3)	69 (8.6)	0.226
Sports related injury	68 (3.4)	3 (0.4)	**<0.001**
Direct blow	88 (4.4)	31 (3.9)	0.500
Animal bites	10 (0.5)	145 (18.1)	**<0.001**
Burns	42 (2.1)	15 (1.9)	0.677

*Chi-square test, p<0.05 considered significant

When the factors affecting pediatric trauma visits during the pandemic period were evaluated, it was mainly associated with home and street injuries. Similarly, Bram et al. (6) found an increase in-home and street injuries. The frequency of in-home injuries has increased in our study due to the curfews' effect and the closure of schools and playgrounds. Besides, burn frequency did not change in our study. Public information should be provided to prevent burns and in-home injuries of the pediatric population.

In our study, the fractures and orthopedics consultation decreased, but other injury mechanisms, injury regions (head, thorax, and abdomen), and trauma consultations did not change. We still need trauma surgeons to follow up the pediatric trauma patients. This situation should be kept in mind while planning the physicians' work areas, especially sending surgeons to COVID-19 wards.

The frequency of ground-level falls decreased during the pandemic period, while sports-related injuries decreased and other mechanisms did not change. Similar to our study, a decrease in sports injuries was found in Sugand et al.'s (16) study. We think that this decrease was caused by schools' closure, daycares, and sports fields during the pandemic period.

Westgard et al. (19) found a decrease in the arrival by emergency medical service (EMS). Still, in our study, the patients prefer to arrive by EMS more frequently during the pandemic period [OR: 2.12 (95% CI 1.49-3.02), p<0.001]. The EMS should be supported with additional personnel and ambulances by the Health Ministries during a pandemic.

Study Limitations

The first limitation of the study was that it was a retrospective study and based on medical records. Some data was missing because of the retrospective design. The second limitation was that there was no mortality in the patients so that no comment could be made on the change in mortality. Besides, the rabies vaccination program did not begin in the pre-pandemic period of the study, which may have affected the distribution imbalance of animal bites between the groups and the results.

Table 3. The most seen fracture locations of the patients

n, (%)	Pre-pandemic	Pandemic
Distal forearm	89 (4.5)	24 (3.0)
Metacarpals and phalanges	76 (3.8)	9 (1.1)
Maxillofacial	47 (2.4)	17 (2.1)
Skull	29 (1.5)	11 (1.4)
Clavicle	26 (1.3)	9 (1.1)
Distal humerus	14 (0.7)	10 (1.2)
Proximal forearm	9 (0.5)	4 (0.5)
Proximal humerus	7 (0.4)	5 (0.6)
Total fractures	376 (19.0)	113 (14.1)

CONCLUSION

There was no change in critical pediatric trauma visits during the outbreak, and there was a decrease in non-urgent visits. The ward and ICU admissions did not change. Trauma is still an important cause of critical emergency visits of the pediatric population during the outbreak. This situation should be kept in mind while personnel and bed managements was done. Patients preferred to arrive ED by ambulance more frequently during the pandemic. EMSs should be supported by the Ministry of Health. In-home and upper limb injuries increased while blunt trauma, ground-level fall, and fracture frequency decreased. Public information should be provided to pay attention to in-home injuries and prevention methods.

Acknowledgement: The authors would like to thank Mr. Hüseyin Uzunoğlu for his valuable assistance in querying and creating the data set used in this study.

Table 4. Factors affecting the pediatric trauma visits during COVID-19 outbreak

	Odds ratio	95% CI	p-value
Age	0.94	0.92-0.96	**<0.001**
Gender, girl	0.92	0.76-1.11	0.380
Arrival, ambulance	2.12	1.49-3.02	**<0.001**
MTS, green code	0.24	0.19-0.30	**<0.001**
Blunt trauma presence	0.24	0.17-0.34	**<0.001**
Fall from ground level	1.17	0.90-1.52	0.216
Location of injury, home	2.38	1.84-3.08	**<0.001**
Location of injury, street	2.35	1.73-3.18	**<0.001**
Upper limb injury	1.57	1.21-2.03	**0.001**
Lower limb injury	1.01	0.74-1.36	0.940
Fracture presence	0.84	0.63-1.12	0.248
Disposition, discharge	1.05	0.69-1.61	0.788
ED LOS	0.997	0.996-0.998	**<0.001**

CI: Confidence interval, MTS: Manchester Triage Scale, ED LOS: Emergency department length of stay, p<0.05 considered significant

ETHICS

Ethics Committee Approval: Approval for this study was obtained from the Bakirkoy Dr. Sadi Konuk Training and Research Hospital Institutional Review Board (decision no: 2020-24-06, date: 07.12.2020).

Informed Consent: The informed consent could not be obtained because of the retrospective design.

Authorship Contributions

Surgical and Medical Practices: B.İ., G.B.B., H.D., Concept: B.İ., G.B.B., H.D., Design: B.İ., G.B.B., H.D., Data Collection or Processing: B.İ., G.B.B., H.D., Analysis or Interpretation: B.İ., G.B.B., H.D., Literature Search: B.İ., G.B.B., H.D., Writing: B.İ., G.B.B., H.D.

Conflict of Interest: The authors declare that they have no conflict of interest.

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

REFERENCES

1. Cucinotta D, Vanelli M. WHO Declares COVID-19 a Pandemic. Acta Biomed 2020;91:157-60.
2. World Health Organization. Coronavirus disease (COVİD-19) Dashboard. https://covid19.who.int/ (Accessed: Nov 18, 2021).
3. Hoyer C, Ebert A, Huttner HB, Puetz V, Kallmünzer B, Barlinn K, et al. Acute Stroke in Times of the COVID-19 Pandemic: A Multicenter Study. Stroke 2020;51:2224-7.
4. Lange SJ, Ritchey MD, Goodman AB, Dias T, Twentyman E, Fuld J, et al. Potential indirect effects of the COVID-19 pandemic on use of emergency departments for acute life-threatening conditions - United States, January-May 2020. Am J Transplant 2020;20:2612-7.
5. Mafham MM, Spata E, Goldacre R, Gair D, Curnow P, Bray M, et al. COVID-19 pandemic and admission rates for and management of acute coronary syndromes in England. Lancet 2020;396:381-9.
6. Bram JT, Johnson MA, Magee LC, Mehta NN, Fazal FZ, Baldwin KD, et al. Where Have All the Fractures Gone? The Epidemiology of Pediatric Fractures During the COVID-19 Pandemic. J Pediatr Orthop 2020;40:373-9.
7. Greenhalgh M, Dupley L, Unsworth R, Boden R. Where did all the trauma go? A rapid review of the demands on orthopaedic services at a UK Major Trauma Centre during the COVID-19 pandemic. Int J Clin Pract 2021;75:e13690.
8. Patel R, Hainsworth AJ, Devlin K, Patel JH, Karim A. Frequency and severity of general surgical emergencies during the COVID-19 pandemic: single-centre experience from a large metropolitan teaching hospital. Ann R Coll Surg Engl 2020;102:1-6.
9. İlhan B, Bozdereli Berikol G, Dogan H. Impact of COVID-19 Outbreak on Emergency Visits and Emergency Consultations: A Cross-Sectional Study. Cureus 2021;13:e14052.
10. Rotulo GA, Percivale B, Molteni M, Naim A, Brisca G, Piccotti E, et al. The impact of COVID-19 lockdown on infectious diseases epidemiology: The experience of a tertiary Italian Pediatric Emergency Department. Am J Emerg Med 2021;43:115-7.
11. Nabian MH, Vosoughi F, Najafi F, Khabiri SS, Nafisi M, Veisi J, et al. Epidemiological pattern of pediatric trauma in COVID-19 outbreak: Data from a tertiary trauma center in Iran. Injury 2020;51:2811-5.
12. van Veen M, Moll HA. Reliability and validity of triage systems in paediatric emergency care. Scand J Trauma Resusc Emerg Med 2009;17:38.
13. Marsden J, Windle J, Mackway-Jones K. Emergency triage. Emerg Nurse 2013;21:11.
14. Mantica G, Riccardi N, Terrone C, Gratarola A. Non-COVID-19 visits to emergency departments during the pandemic: the impact of fear. Public Health 2020;183:40-1.
15. Dayananda KSS, Mercer ST, Agarwal R, Yasin T, Trickett RW. A comparative review of 1,004 orthopaedic trauma patients before and during the COVID-19 pandemic. Bone Jt Open 2020;1:568-75.
16. Sugand K, Park C, Morgan C, Dyke R, Aframian A, Hulme A, et al. Impact of the COVID-19 pandemic on paediatric orthopaedic trauma workload in central London: a multi-centre longitudinal observational study over the "golden weeks". Acta Orthop 2020;91:633-8.
17. Demir MC, Ağaçkıran İ, Özdamar Y, Boğan M. The pandemic's effect on discharge against medical advice from the emergency department. J Surg Med 2021;5:433-8.
18. Gumina S, Proietti R, Villani C, Carbone S, Candela V. The impact of COVID-19 on shoulder and elbow trauma in a skeletally immature population: an Italian survey. JSES Int 2021;5:3-8.
19. Westgard BC, Morgan MW, Vazquez-Benitez G, Erickson LO, Zwank MD. An Analysis of Changes in Emergency Department Visits After a State Declaration During the Time of COVID-19. Ann Emerg Med 2020;76:595-601.