

## Acil Serviste Değerlendirilen Künt Genel Vücut Travmasının Neden Olduğu Pediatrik Adli Vakaların Özellikleri: Tek Merkez Deneyimi

### Characteristics of Pediatric Forensic Cases Caused by Blunt General Body Trauma Evaluated in the Emergency Department: A Single Center Experience

<sup>1</sup>Mustafa Enes DEMİREL, <sup>2</sup>Güleser AKPINAR

<sup>1</sup>Abant İzzet Baysal University, Faculty of Medicine Department of Emergency Medicine, Bolu, Türkiye

<sup>2</sup>Düzce University, Faculty of Medicine Department of Emergency Medicine, Düzce, Türkiye

Mustafa Enes Demirel: <https://orcid.org/0000-0001-5187-5737>

Güleser Akpınar: <https://orcid.org/0000-0001-8559-5098>

#### ÖZ

**Amaç:** Bu çalışmada, acil servise başvuran çocuk adli olguların demografik özellikleri, başvuru özellikleri ve yönetim yaklaşımlarını değerlendirmeyi ve analiz etmeyi amaçladık.

**Materyal ve Metot:** 2011-2020 yılları arasında hastanemiz acil servisine trafik kazası, düşme ve şiddet nedeniyle başvuran 0-18 yaş arası toplam 518 çocuk çalışmaya dahil edildi. Hastaların yaşı, cinsiyeti, başvuru nedeni, başvuru zamanı, tanısı, yaralanmanın vücut bölgesi gibi demografik bilgiler ile birlikte konsültasyon ve tedavi sonuçları çalışmaya dahil edildi.

**Bulgular:** Hastaların ortanca yaşı 12 (dağılım: 6-16) ve 350'si (%67,6) erkekti. Düşme nedeniyle başvuran hastalarda ortanca yaş anlamlı olarak daha düşüktü. Hastaların acil servise en sık yaz aylarında (ağustos) ve cumartesi günleri başvurduğu saptandı. En sık genel tanı; yumuşak doku yaralanması (YDY) iken (%50,6) bunu kırık ve çıkıklar (%42,1) izlemekteydi. YDY; şiddet grubunda diğerlerine göre anlamlı olarak daha yüksek olduğu görüldü (her ikisi de,  $p<0,001$ ). En sık yaralanan vücut bölgesi baş/boyun bölgesi (%37,8) idi ve bunu ekstremiteler izledi. En sık konsülte edilen bölüm beyin cerrahisi olarak bulundu (%39,4). Çalışmamızda mortalite oranı %4,4 idi.

**Sonuç:** Acil servis uzmanları için adli tıp hastalarının demografik ve klinik özellikleri hakkında yeterli bilgiye sahip olmak daha etkin bir fizik muayene ve tedavi için önemlidir.

**Anahtar Kelimeler:** Adli vaka, düşme, pediatri, şiddet, trafik kazası

#### ABSTRACT

**Objective:** In this study we aimed to evaluate and analyse demographic features, presentations characteristics, and management approaches in paediatric forensic cases presenting to an emergency department.

**Materials and Methods:** A total of 518 children aged between 0-18 years, who presented to the emergency department of hospital between 2011 and 2020 due to traffic accidents, falls and violence, were included. Demographic information such as age, gender, reason for admission, time of admission, diagnosis, body region of the injury, and consultation and treatment results were included in the study.

**Results:** The median age was 12 years and 67.6% were boys. The median age was significantly lower in the patients who presented due to falls. The patients most presented to the emergency department in the summer months (August) and on Saturdays. The most diagnosis was in soft tissue injury (STI) (50.6%), followed by bone fracture / dislocation injury (42.1%). STI was higher in the violence group compared to others. The most injured body part was the head/neck region (37.8%). The most consulted department was neurosurgery (39.4%). The mortality rate was 4.4%.

**Conclusion:** For emergency specialists, it is important to have sufficient information about demographic and clinical features of paediatric forensic patients for a more efficient physical examination and management.

**Keywords:** Falls, Forensic cases, paediatrics, traffic accidents, violence

#### Sorumlu Yazar / Corresponding Author:

Mustafa Enes Demirel  
Abant İzzet Baysal Üniversitesi Tıp Fakültesi Hastanesi Gököy  
Yerleşkesi 14030 Bolu/Türkiye  
Tel: 0 505 3910903  
E-mail: [mustafaenesdemirel@ibu.edu.tr](mailto:mustafaenesdemirel@ibu.edu.tr)

#### Yayın Bilgisi / Article Info:

Gönderi Tarihi/ Received: 03/01/2022  
Kabul Tarihi/ Accepted: 01/06/2022  
Online Yayın Tarihi/ Published: 01/09/2022

**Atf / Cited:** Demirel ME and Akpınar G. Have Characteristics of Pediatric Forensic Cases Caused by Blunt General Body Trauma Evaluated in the Emergency Department: A Single Center Experience. *Online Türk Sağlık Bilimleri Dergisi* 2022;7(3):384-390. doi: 10.26453/otjhs.1052904

## INTRODUCTION

A case in which a person is exposed to physiological or psychological harm by deliberate, reckless or negligent behaviour of another person(s) is known as a forensic case.<sup>1</sup> Forensic cases may include falls, burns, intoxication, all types of asphyxia, traffic accidents, injury by sharp or blunt objects, electric shocks, drowning, physical assaults, maltreatment and abuse.<sup>2,3</sup> In addition, all sudden or suspicious or unexpected deaths and attempted suicides should also be evaluated as forensic cases.<sup>4</sup> Paediatric forensic events are difficult to distinguish from those seen in adults, because the child may not be able to express or disclose history of the case as adults and not provide sufficient information to help management of the situation.<sup>5</sup>

Emergency departments are the first places where forensic cases are presented, diagnosed and treated, including paediatric cases and thus, play a crucial role in the management of these cases. Forensic cases account for most patients presenting to emergency departments.<sup>6</sup> Forensic patients who are referred to universities or training and research hospitals for further investigation and treatment constitute a high portion of presentations to emergency departments with higher rates of morbidity and mortality.<sup>7</sup> Paediatric forensic cases require specific approaches by emergency specialists. Especially in cases where history is not sufficient, prompt physical examination should be performed and any sign of assault or abuse should be sought in the first place. Physical exam is supported by laboratory and imaging findings, and DNA analysis when necessary to reveal reasons for the event.<sup>8,9</sup> Psychiatric consultation should be asked if available and mandatory legal records should be kept.<sup>10</sup>

Given the difficulties in evaluation and clarifying paediatric forensic cases, etiological and epidemiological studies on this subject are of paramount importance. Although there are several studies in the literature on paediatric forensic cases,<sup>1,4,11</sup> further studies should be continuously performed to gain more insight into these cases, increasing and contributing to the existing evidence. Therefore, in this study we aimed to evaluate and analyse demographic features, presentations characteristics, and management approaches in paediatric forensic cases presenting to an emergency department.

## MATERIALS AND METHODS

**Ethical Considerations:** Before the beginning, the study protocol was approved by the Duzce University Non-Interventional Health Research Ethics Committee (Date: 15/03/2021, decision no: 2021/75). The necessary permission was obtained from the hospital management to use the information system.

Due to the retrospective nature of the study, signed informed consent forms from the patients and/or parents were waived. The study was conducted in accordance with the ethical principles of the Declaration of Helsinki.

Forensic pediatric cases who applied to the emergency department of our hospital between 2011 and 2020 due to traffic accidents, falls and violence that caused blunt body trauma were included. A total of 518 children aged 0-18 years, who were referred by ambulance or outpatient and evaluated as forensic cases, were evaluated as forensic cases. Patients aged over 18 years, those who presented due to reasons other than traffic accidents, falls and violence, and patients with missing data were excluded from the study.

Study data were obtained from the hospital forensic case information records, hospital archive and patient files. Patients' demographic features such as age and gender; reason for presentation; time of presentation (year, month, days of week, hours); Injury Severity Score and Glasgow Coma Scale scores; diagnosis; body site of injury; departments of consultation and treatment outcomes (hospitalization, discharge, referral or mortality) were recorded and analysed.

In terms of the reason for presentation, the patients were divided into three groups as those who presented due to traffic accidents, falls and violence. The variables were compared between these three groups. Hours of presentations were examined in three groups as 08:00-15:59, 16:00-23:59 and 00:00-07:59 to determine rush hours in the emergency department due to paediatric forensic cases.

**Statistical Analysis:** Data obtained in this study were statistically analysed with SPSS version 23.0 (SPSS, Statistical Package for Social Sciences, IBM Inc., Armonk, New York, USA) statistical package software. Normality of the variables was analysed using the Shapiro-Wilk test. Comparison of the variables between two groups was performed using the Mann-Whitney U test and between three groups using the Kruskal-Wallis test with Dunn-Bonferroni as post-hoc. Correlations between two independent variables were examined with the Pearson's Chi-square test and Fisher's Exact test. The numerical data were expressed as median, 25<sup>th</sup> and 75<sup>th</sup> percentiles and the categorical data as frequency and percentage.  $p < 0.05$  values were considered statistically significant.

## RESULTS

This study included a total of 518 paediatric patients who presented to our emergency department with 261 due to falls, 137 traffic accidents and 120 violence. The median age of the patients was 12 years

and 350 were boys. Demographic features of the patients were compared between these three groups of presentation. Accordingly, the median age was found as 14 years of age in the patients who presented due to traffic accidents, 8 years of age in those admitted for falls and 16 years of age in the patients who presented due to violence. No statistically significant difference was found in gender according to the reasons for presentations ( $p=0.673$ ). Six of the

presented patients died from traffic accidents and the others survived. No mortality occurred in the patients who presented due to violence and falls. Only five patients in the falls group were referred to another centre. Of all patients, 476 were hospitalized and treated as inpatients. Comparison of demographic features of the patients, hospitalized and mortality are shown in Table 1.

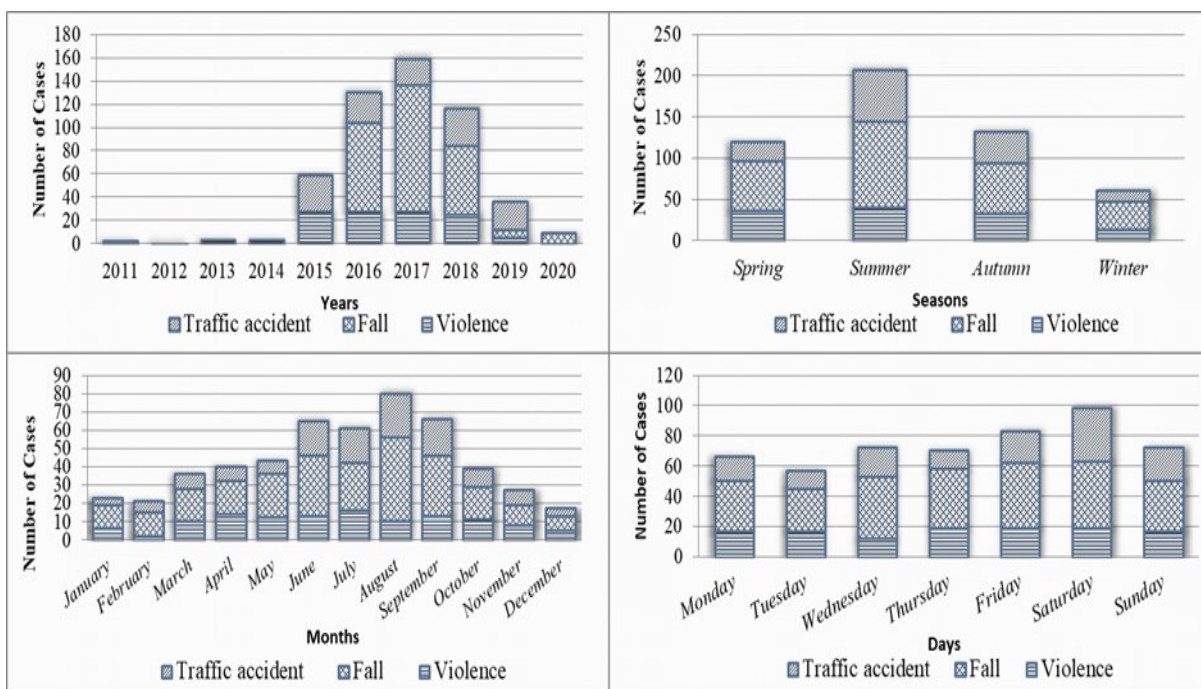
**Table 1.** Comparison of demographic features of the patients.

		Overall n:518	Violence n:120	Fall n:261	Traffic Accident n:137	p
<b>Demographic Features</b>	Age median	12	16	8	14	0.001
	(IQR)*	(6-16)	(13-17)	(3-14)	(8.5-16)	
	Female (%)	168 (32.4%)	35 (29.1%)	88 (33.7%)	45 (32.9%)	0.673
	Male (%)	350 (67.6%)	85 (70.9%)	173 (66.3%)	92 (67.1%)	
<b>Mortality n (%)</b>	Survive	512 (98.8%)	120 (100%)	261 (100%)	131 (95.6%)	-
	Dead	6 (1.2%)	0 (0%)	0 (0%)	6 (4.4%)	
<b>Hospitalized n (%)</b>	No	513 (99%)	120 (100%)	256 (98.1%)	137 (100%)	
	Yes	5 (1%)	0 (0%)	5 (1.9%)	0 (0%)	

\*IQR: interquartile range (Q1-Q3).

During the study period between 2011 and 2020, most presentations occurred in 2017. Most presentations due to traffic accidents took place in 2015 and 2018, due to falls in 2017 and because of violence in 2015, 2016 and 2017. The patients most presented to the emergency department in summer (n:206), Au-

gust (n:80) and on Saturdays (n:98). Figure 1 shows timeline distributions of the presentations. When times of the presentations were examined; most presentation was between 08:00-15:59 (n:99) and 16:00-23:59 (n:147) due to falls. The number of patients who presented between 00:00-07:59 (n:19)



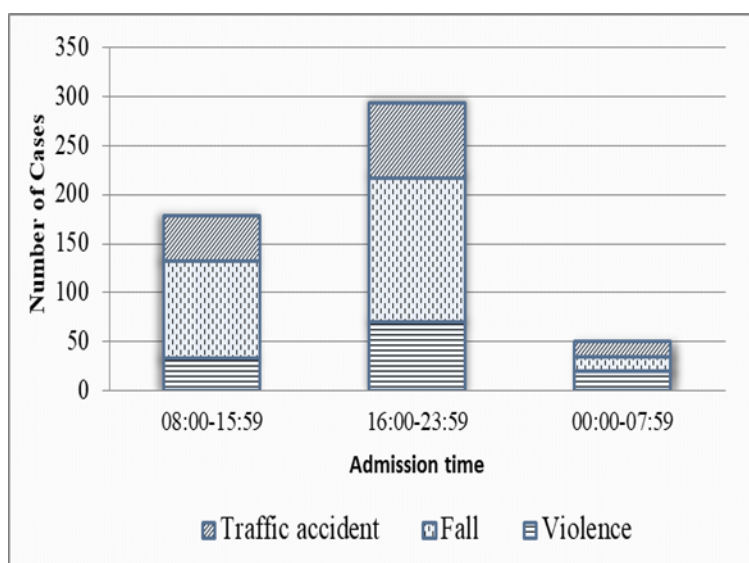
**Figure 1.** The numbers of patients who presented due to traffic accidents, falls and violence according to years, seasons, months and days of the week.

due to violence was significantly higher ( $p=0.015$ ) (Figure 2).

The most diagnosis was soft tissue injury (STI) in 262 (50.6%), followed by bone fracture / dislocation injury in 218 (42.1%), head injury in 95 (18.3%) and visseral injury in 32 (6.2%) patients (both,  $p<0.001$ ). STI was significantly higher in the violence group compared to the falls and traffic accident groups (both,  $p<0.001$ ). Head injuries were higher in the falls group compared to the other patients ( $p<0.001$ ). The most injured body part was head/neck region in 196 (37.8%) patients followed by extremities in 123 (23.7%) patients. Extremity injuries were statistically higher among the patients who presented due to traffic accidents ( $p<0.001$ ), while abdominal injuries were lower in those admitted to the emergency de-

partment because of violence ( $p<0.01$ ). The most consulted department was neurosurgery in 204 (39.4%) patients followed by orthopedics in 187 (36.1%) and paediatric surgery in 170 (32.8%) patients. During the analysis, we grouped lesions such as abrasions, lacerations, ecchymosis and lesions requiring simple medical procedures such as sutures as soft tissue injury group. The diagnosis, distribution of the consulted departments and affected body parts according to the reasons for presentations are presented in Table 2.

The department of the most hospitalizations is neurosurgery with 91 patients and orthopedics with 82 patients. This is followed by the paediatric intensive care and paediatrics department. Only five patients



**Figure 2.** The number of presentations due to traffic accidents, falls and violence according to the time intervals of arrival to the emergency department.

**Table 2.** Distribution of diagnoses, injured body parts and distribution of the consulted departments according to the presentation groups.

		Overall n:518 (%)	Violence n:120** (%23.1)	Fall n:261** (%50.4) ***	Traffic Accident n:137** (%26.5) ***	p
<b>Diagnosis</b> n (%)	Soft Tissue Injury	262 (50.6)	111 (92.5)	121 (46.3)	30 (21.9)	0.001
	Bone Fracture / Dislocation Injury	218 (42.1)	9 (7.5)	109 (41.8)	100 (73.0)	0.001
	Visseral Injury	32 (6.2)	0 (0)	17 (6.5)	15 (10.9)	0.001
	Head Injury	95 (18.3)	0 (0)	78 (29.9)	17 (12.4)	0.001
	Thoracic Injury	18 (2.5)	0 (0)	9 (3.4)	9 (6.5)	0.006
	Muscle / Tendon Injury	4 (0.8)	0 (0)	3 (1.1)	1 (0.7)	-
<b>Injured Body Sited</b> n (%)	Head/Neck	196(37.8)	39(32.5)	128(49)	29(21.2)	0.001
	Extremities	123(23.7)	21(17.5)	59(22.6)	43(31.4)	
	Chest	14(2.7)	5(4.2)	6(2.3)	3(2.2)	
	Abdomen	50(9.7)	3(2.5)	35(13.4)	12(8.8)	
	Multiple sites	135(26.1)	52(43.3)	33(12.6)	50(36.5)	

\*ENT: Ear Nose Throat; \*\*: A group may have more than one diagnosis; \*\*\*: Percentages were calculated according to their column.

Table 2. Continue.

Consulted departments n (%)	Neurosurgery	204 (39.4)	3 (2.5)	96 (36.8)	105 (76.6)	0.001
	Paediatric surgery	170 (32.8)	2 (1.7)	72 (27.6)	96 (70.1)	0.001
	Orthopedics	187 (36.1)	5 (4.2)	85 (32.6)	97 (70.8)	0.001
	ENT*	34 (6.6)	10 (8.3)	15 (5.7)	9 (6.6)	0.639
	Ophthalmology	21 (4.1)	3 (2.5)	11 (4.2)	7 (5.1)	0.561
	Forensic medicine	22 (4.2)	0	22 (8.4)	0	0.001
	Plastic and Reconstructive Surgery	11 (2.1)	1 (0.8)	2 (0.8)	8 (5.8)	0.003
	General surgery	4 (0.8)	0 (0)	1 (0.4)	3 (2.2)	-
Gynecology	4 (0.8)	0 (0)	3 (1.1)	1 (0.7)	-	

\*ENT: Ear Nose Throat; \*\*: A group may have more than one diagnosis; \*\*\*: Percentages were calculated according to their column.

in the falls group were referred to another centre. Departments of hospitalization are shown in Table 3.

DISCUSSION AND CONCLUSION

This study showed that forensic cases that caused blunt injury, which were compatible with the literature, applied to our hospital. The rate of paediatric forensic cases accounts for 3,6 -43% of all forensic cases presenting to the emergency departments.<sup>12,13</sup>

In the emergency departments, it may be challenging to take a sufficient history from paediatric forensic case. In these patients, a detailed physical examination and/or imaging modalities become more critical to find up the forensic reason for presentation. Although there are several studies in the literature addressing clinical characteristics of paediatric forensic cases,<sup>1-4,11,14</sup> further studies with a large patient population are still needed to add to our current

Table 3. Departments of hospitalization.

		Overall * n:238 (% 100)	Fall n:101 (%42.4)	Traffic Accident n:137 (%57.6)
Departments of hospitalization n (%)	Paediatric Surgery	23 (9.7)	4 (4)	19 (13.9)
	Neurosurgery	91 (38.2)	60 (59.4)	31 (22.6)
	Orthopedics and Traumatology	82 (34.5)	27 (26.7)	55 (40.1)
	Paediatric ICU	28 (11.8)	3 (3)	25 (18.2)
	Paediatrics	2 (0.8)	2 (2)	0 (0)
	Thoracic Surgery	3 (1.3)	1 (1)	2 (1.5)
	Ear, Nose, Throat Diseases	4 (1.7)	2 (2)	2 (1.5)
	Plastic and Reconstructive Surgery	2 (0.8)	2 (2)	0 (0)
	Anesthesiology and Reanimation	2 (0.8)	0 (0)	2 (1.5)
	Gynecology and Obstetrics	1 (0.4)	0 (0)	1 (0.7)

\*: No patient hospitalized due to violence.

knowledge.

In the present study, we investigated demographic features, presentation characteristics, and management approaches of paediatric forensic cases who presented to our emergency department due to falls, traffic accidents and violence. In our study, forensic cases evaluated in the emergency department were mostly male patients by 67.6%. In a study by Ozdemir et al, the rate of male paediatric forensic patients was reported as 61.9%.<sup>15</sup> Numerous studies in the literature have reported similar higher rates of boys present to paediatric emergency services.<sup>16,17</sup> Male gender has been reported as a risk factor for injuries in the paediatric population and this has been attributed to the fact that boys are more active and have different areas of interest.<sup>12,18,19</sup>

In the present study, the median age of patients was 12 years, which indicates a more active period of life for children, increasing risky behaviours and being

more vulnerable to injuries. The mean age of paediatric forensic cases was reported as 9.9±5.5 years by Korkmaz et al.,<sup>16</sup> 8.77±4.99 years by Ozdemir et al.<sup>15</sup> On the other hand, paediatric patients under 5 years old applied at the highest statistical significance.<sup>20</sup> Differences between the studies could be attributed to different children groups included and the used methodology.

In our study, the most common cause of presentation was found as falls (50.4%) followed by traffic accidents (26.4%) and violence (23.4%). This finding was consistent with the previous studies.<sup>11</sup> This rank changed in a study by Oner et al. as falls, traffic accidents and violence<sup>1</sup> and as traffic accidents, violence and falls in another study by Kadioglu.<sup>21</sup> There are possible factors in these different results reported by studies, including paediatric patient populations involved, methodology of study grouping, the region and/or institution of the study etc. However, these

three reasons for presentations of paediatric forensic patients to the emergency department are at high ranks in all studies.

In our study, the demographic and clinical characteristics of the patients were compared according to these three forensic reasons. The median age in the fall group was higher than in the traffic accidents and violence groups, consistent with other studies.<sup>12</sup> This can be explained by the fact that older children participate more in social settings as a group and increase the risk of violence due to disagreements in peer groups.

It was found that the majority of the presentations occurred in summer by 39.8%, August by 15.4% and on Saturdays by 18.9% in all three groups. In a study by Demir et al., the most common season of presentation was summer, while the most common month was June.<sup>11</sup> In another study by Altıntop et al., the most common month was reported as May,<sup>10</sup> while Ozdemir et al. reported the most common month as June.<sup>15</sup> It is difficult to make an exact comparison and interpretation among the studies, since as mentioned above, many factors contribute to these differences, including age groups and different geographical areas and socio-cultural structures.

Looking at the time of arrival to the emergency department, it was found that the majority of the paediatric forensic cases presented between 16:00-23:59. This finding was in parallel with a study by Türe et al. which similarly reported 16:00-23:59 as the most frequent time period.<sup>20</sup> Again Kadioglu reported similar findings.<sup>21</sup> We think that this period of time involves rush hours of the day, magnifying the incidence of forensic cases higher.

In our study, the most common diagnosis was soft tissue injuries (50.6%), followed by bone fracture and dislocation injury (42.1%). Fractures were significantly higher in traffic accident victims, as expected. In another study by Korkmaz et al., the most common diagnosis was reported as soft tissue injury followed by tendon injury and fractures.<sup>16</sup> In a recent study by Kang et al. with children presenting to the emergency department due to various injuries, the most common diagnosis of injury was reported as open wound followed by superficial injury, dislocation, tendon injury and fractures.<sup>22</sup> The diagnoses of injury were in general similar among the studies and dependent on the mechanisms of injury.

In the present study, the most injured body part was the head/neck region by 37.8% followed by extremities in 23.7% of the patients. The extremities were statistically significantly most common among the paediatric forensic patients presenting due to traffic accidents, while abdominal injuries were significantly higher among the children who were exposed to violence. Similarly, in a study by Korkmaz et al., the most injured body parts of paediatric forensic pa-

tients were head/neck and extremities.<sup>16</sup>

In our study, the most consulted departments included neurosurgery (39.4%) followed by orthopedics (36.1%) and paediatric surgery (32.8%). Similarly, in the study by Ayaz et al., the most consulted services were reported as neurosurgery, orthopedic and general surgery.<sup>23</sup> This finding was expected because of the higher rate of head/neck and extremity injuries.

The mortality rate was found as 4.44% in our study. All deaths occurred due to traffic accidents. This rate was reported as 1.8% by Ayaz et al., 0.4% by Demir et al., and 0.7% by Kadioglu.<sup>11,21,23</sup> Our lower number of deaths can be explained by the relatively lower number of patients included in the study.

In conclusion, our results are largely consistent with the literature with some different findings due to the differences between study designs. The most common reasons for presentations of paediatric forensic patients to the emergency department were falls, traffic accidents and violence, respectively. The patients most frequently presented to the emergency department most frequently in summer, August and on Saturdays. The most common diagnosis was fracture, most frequently injured body part was head/neck and most consulted service was neurosurgery. For emergency specialists, it is important to have sufficient information about demographic and clinical features of paediatric forensic patients for a more efficient physical examination and management. In addition, having knowledge about clinical features can enable patients to be assessed by more competent and specialized physicians in accordance with the injured body area in the early period. This study has some limitations. First, it was designed as a retrospective study and conducted in a single centre. Second, only patients presented with traffic accidents, falls and violence were included. Finally, study groups could be created as age groups instead of the reasons for presentation. However, given that such studies are continuously needed in the literature to make contribution to the existing evidence on this issue, our results will be guiding for future studies.

**Ethics Committee Approval:** Our study was approved by the Duzce University Non-Interventional Health Research Ethics Committee, (Date: 15/03/2021, decision no: 2021/75).

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

**Author Contributions:** Concept – MED, GA; Supervision – MED, GA; Materials – MED, GA; Data Collection and/or Processing – MED, GA; Analysis and/ or Interpretation – MED, GA; Writing – MED, GA.

**Peer-review:** Externally peer-reviewed.

## REFERENCES

1. Oner S, Harmanogullari LU, Yapici G. Evaluation of forensic cases admitted to the paediatric emergency service of a hospital. *Ejpmr*. 2017;4(8):90-95.
2. Sever M, Saz EU, Koşargelir M. An evaluation of the paediatric medico-legal admissions to a tertiary hospital emergency department. *Ulus Travma Acil Cerrahi Dergisi*. 2010;16(3):260-267.
3. Mace SE, Gerardi MJ, Dietrich AM, et al. Injury prevention and control in children. *Ann Emerg Med*. 2001;38(4):405-414.
4. Smith A. Nonaccidental injury in childhood. *Aust Fam Physician*. 2011;40(11):858-861.
5. Gökçen C, Dursun OB. Bir eğitim hastanesi çocuk psikiyatri birimine gönderilen adli olguların incelenmesi/Evaluation of forensic cases referred to the child psychiatry clinic of a research hospital. *Dusunen Adam J Psychiatry Neurol Sci*. 2012;25(3):238-243.
6. Feury KJ. Injury prevention. Where are the resources? *Orthop Nurs*. 2003;22(2):124-130.
7. Duramaz BB, Yıldırım HM, Kıhtır HS, Yeşilbaş O, Şevketoğlu E. Evaluation of forensic cases admitted to paediatric intensive care unit. *Türk Pediatri Ars*. 2015;50(3):145-150
8. Offiah A, van Rijn RR, Perez-Rossello JM, Kleinman PK. Skeletal imaging of child abuse (non-accidental injury). *Pediatr Radiol*. 2009;39(5):461-470.
9. Jewkes R, Christofides N, Vetten L, Jina R, Sigsworth R, Loots L. Medico-legal findings, legal case progression, and outcomes in South African rape cases: retrospective review. *PLoS Med*. 2009;6(10). doi:10.1371/journal.pmed.1000164
10. Altıntop I, Kaynak MF, Altuntas M, Yılmaz M, Vural A, Yurtseven A. An evaluation of paediatric forensic trauma cases: a retrospective study. *J Turgut Ozal Med Cent*. 2016;23(2):177-180.
11. Demir OF, Aydın K, Turan F et al. Analysis of paediatric forensic cases presented to emergency department. *Türk Arch Ped*. 2013;49(4):235-240.
12. Büken E, Yaşar ZF. Assessment of forensic children cases applying to the emergency service of Başkent University Ankara Hospital. *Adli Tıp Bülteni*. 2015;20(2):93-98.
13. Demircan A, Keleş A, Guerbuez N, et al. "Forensic emergency medicine-six-year experience of 13823 cases in a university emergency department." *Turkish journal of medical sciences*. 2008;38(6):567-575.
14. Polat S, Terece C, Yaman A, Gurpinar K. Evaluation of Forensic Cases in the Pediatric Intensive Care Unit. *Sisli Etfal Hastanesi Tip Bul*. 2021;55(1):122-127.
15. Ozdemir AA, Ergormus Y, Cag Y. Evaluation of The Pediatric Forensic Cases Admitted to Emergency Department. *Int J Basic Clin Med*. 2016;4(1):1-8.
16. Korkmaz T, Erkol Z, Kahramansoy N. Evaluation of paediatric forensic cases in emergency department: a retrospective study. *Med Bull Haseki*. 2014;52(4):271-277.
17. Anil M, Anil AB, Köse E et al. The evaluation of the patients admitted to the paediatric emergency department in a training and research hospital. *J Pediatr Emerg Intens Care Med*. 2014;1(2):65-71.
18. Amanullah S, Heneghan JA, Steele DW, Mello MJ, Linakis JG. Emergency Department Visits Resulting From Intentional Injury In and Out of School. *Pediatrics*. 2014;133(2):254-261.
19. Çınar O, Acar YA, Çevik E ve ark. Acil Servise Başvuran 0-18 Yaş Grubu Adli Olguların Özellikleri. *AJCI*. 2010;4(3):148-151.
20. Türe E, Erarslan E, Yazar A, Akın F, Odabaş D. Evaluation of Clinical and Demographical Characteristics of the Patients who Admitted to the Pediatric Emergency Department of a University Hospital. *Haydarpaşa Numune Med J*. 2020;60(3):292-299.
21. Kadioglu E. Pediatric forensic cases: An emergency department experience. *J For Med*. 2018;32(1):1-9.
22. Kang MS, Kim HS. Characteristics and trends of traumatic injuries in children visiting emergency departments in South Korea: A retrospective serial cross-sectional study using both nationwide-sample and single-institutional data. *PLoS One*. 2019;14(8). doi:10.1371/journal.pone.0220798
23. Ayaz N, Turgut K, Turtay MG et al. Evaluation of home accidents of forensic nature among children. *Medicine Science*. 2020;9(4):1032-1035.