Received: 1 Oct 2021 | **Accepted:** 10 Nov 2021
DOI: 10.54005/geneltip.996910

ORIGINAL ARTICLE

Investigation of the Non-Traumatic Forensic Cases Admitted to Pediatric Emergency Department, Selcuk University Medical Faculty Hospital

Selçuk Üniversitesi Tıp Fakültesi Çocuk Acil Polikliniğine Başvuran Travma Dışı Adli Olguların İncelenmesi

[1]Sevil Şen, Alaaddin Yorulmaz

[1]Sarayönü State Hospital, Clinic of Pediatrics, Konya, TURKEY

[2]Selçuk University Medical Faculty, Department of Pediatrics, Konya, TURKEY

Correspondence

Alaaddin Yorulmaz, Selçuk University Medical Faculty, Department of Pediatrics, Konya, TURKEY

E-Mail: dralaaddiny@gmail.com

How to cite ?

Şen S, Yorulmaz A. Investigation Of The Forensic Cases Who Had Been Admitted To Pediatric Emergency Department, Selcuk University Medical Faculty Hospital. Genel Tıp Derg. 2022; 32(2): 167-176

ABSTRACT

Objective: The aim of this study is to reveal the demographic epidemiological characteristics of pediatric forensic cases admitted to the emergency department of a medical school hospital, to determine the reasons for admission, admission times, hospitalization and death rates.
Material and Method: 1104 pediatric forensic cases who applied to Selcuk University Medical Faculty Hospital Pediatric Emergency Unit between 2016 and 2019 and patients up to 18 years old were analyzed retrospectively. Data on demographic characteristics, including age and gender, reasons for referral, time of presentation, hospitalization period, need for intensive care and mortality rates were determined.
Results: Of the patients, 538 (48.7%) were female and 566 (51.3%) were male. While the mean of boy was 57.86 months, the mean age of the girls was 81.43 months. When the mean age according to gender was analyzed statistically, a significant difference was found (p:0.001). The number of patients in the 0-6 age group (n=731, 66.2%) was higher than the others. Summer was the season in which applications were most frequently observed. The most frequently admittance time zone was between 16:00-23:59. The most common reason for admission was poisoning (n=855, 77.1%), followed by foreign body in the digestive tract (n=112, 10.5%).
Conclusion: In our study, the majority of forensic cases are forensic cases caused by accident in the 0-6 age group. It has been observed that these cases can be prevented by taking careful measures. Therefore, medicines and cleaning products should be kept out of reach of children. It was thought that giving importance to security measures at home and providing training on this could reduce the frequency of poisoning.

Key Words: Forensic case; pediatric, intoxication

ÖZ

Amaç: Bu çalışmanın amacı bir tıp fakültesi hastanesi acil servisine başvuran çocuk adli olguların demografik epidemiyolojik özelliklerini ortaya koymak, başvuru nedenlerini, başvuru zamanlarını, yatış ve ölüm oranlarını belirlemektir.
Gereç ve Yöntem: Selçuk Üniversitesi Tıp Fakültesi Hastanesi Çocuk Acil Ünitesine 2016 ile 2019 tarihleri arasında başvuran 0-18 yaş arasında adli vaka olarak kabul edilen 1104 hasta geriye yönelik olarak incelendi. Olguların yaş, cinsiyet, başvuru nedenleri, başvuru zamanları, hastanede yatış süreleri, yoğun bakım ihtiyacı varlığı ve ölüm oranları değerlendirilmiştir.
Bulgular: Çalışmaya 1104 hasta dahil edildi. Hastaların 538'i (%48,7) kız, 566'sı (%51,3) erkek idi. Erkeklerin yaş ortalaması yıl 57,86 ay iken; kızların yaş ortalaması 81,43 ay saptandı. Cinsiyete göre yaş ortalaması istatistiksel olarak incelendiğinde anlamlı bir fark tespit edildi (p:0,001). 0-6 yaş grubu hasta sayısı (n=731, %66,2) diğerlerine oranla fazla saptandı. Yaz mevsimi başvuruların en sık gözlendiği mevsim idi. En sık başvuru yapılan saat dilimi 16:00-23:59 arası saptandı. En sık başvuru nedeni zehirlenme (n=855, %77,1) ikinci sırada ise sindirim yolunda yabancı cisim (n=112, %10,5) saptandı.
Sonuç: Çalışmamızda adli vakaların büyük kısmını (n=732, %66,2) 0-6 yaş grubunda kaza nedenli meydana gelen adli vakalar oluşturmuş ve bu vakaların tedbir alınarak, dikkatli olarak önlenebileceği görülmüştür. Bu yüzden ilaç ve temizlik ürünlerinin çocukların ulaşamayacağı yerde saklanmalıdır. Ev içinde güvenlik tedbirlerine önem verilmesi ve buna yönelik eğitim verilmesi zehirlenme sıklığını azaltabileceği düşünüldü.

Anahtar Kelimeler: Adli vaka, çocuk, zehirlenmeler

Introduction

Every event causing deterioration in health, injury, or death as a result of the will, negligence, carelessness, and carelessness of a person or someone else as a result of external influences is defined as a judicial case. All injuries, no matter what they are caused by, being beaten by another person, sharp-penetrating injuries, explosive material, and firearm injuries, traffic accidents, falls, work accidents, poisonings, suspected poisoning cases, illegal substance use, suicide, burns, electricity, and all cases such as lightning strikes, foreign substance entering the body by any means, all kinds of suspicious deaths, human rights violations, torture allegations, and mechanical asphyxia are considered legal cases (1).

Pediatric age group cases have anatomical, physiological, and psychological characteristics that are different from those of adults. Children show more sensitivity to situations that may result in injury, especially trauma, compared to adults since they have not completed their physical and mental development yet (2). When the difficulty of taking an adequate

background from pediatric cases is considered, pediatricians need to have sufficient knowledge on examination and treatment methods regarding the characteristics of forensic cases (3).

Emergency Departments are usually the first place of application for forensic cases occurring in any age group. It was reported that accidental injuries and poisoning are among the main causes of preventable health problems, disability, and death in the pediatric age group (4-6).

It is already known that most injuries can be prevented by knowing the possible risk factors in pediatric age groups. The effects of preventive measures and treatment approach to be taken in reducing the frequency and severity of forensic cases are indisputable. The socio-cultural and socio-economic outcomes of behaviors occurring as a result of intent or negligence to an individual, family, society, and therefore, country are quite severe (7).

The incidence of forensic events varies by age group and society. Physicians have responsibilities such as detecting forensic cases, their examination, taking necessary tests, and preparing forensic reports, especially in forensic cases physicians face often in Emergency Departments. It is very important to seek the opinions of physicians who face the events for treatment purposes, see the results themselves, and prevent or reduce the occurrence of these results in certain situations in determining the measures to be taken to prevent these undesirable events. When measures are taken, both families and individuals will not face negative outcomes, and the burden of the physician and other healthcare staff in Emergency Departments will be relieved.

The purpose of the present study was to determine the demographic and epidemiological characteristics of forensic cases applying to the pediatric emergency clinic of our hospital, which is a tertiary healthcare institution, to examine the treatment results, to compare these data with the literature, to contribute to the health data in this field, to determine the measures to be taken to prevent forensic cases occurring as a result of accidents, and to create resources that units will benefit from.

Materials and Methods

In the present study, 1104 forensic cases who were aged between 1 month and 18 years applying to the Pediatric Emergency Clinic of Selcuk University Medical Faculty Hospital between January 2016 and January 2019 were examined. Forensic cases were determined by examining the forensic case book and the data of the patients in the hospital registry system. The medical data of the patients were recorded in the form that was created by examining the file information retrospectively. Those who were non-forensic, over 18 years of age, trauma patients, those whose files could not be accessed, or whose files were severely lacking in information were not included in the study.

The age, gender, date and time of application to the pediatric emergency department, the season of admission, method of application, time to reach the hospital, the event that caused the forensic case, follow-up and treatment methods in the emergency department, cause of poisoning, the pharmacological agent that caused the poisoning, method of intake, time of taking the drug were recorded. Then, the time elapsed until the first medical intervention, the outcome of the patient, the place where the patient was followed, the examinations requested, and the results were evaluated. The vital findings, cardiopulmonary and neurological evaluations at the first admission were made and the need for urgent effective supportive treatment was determined.

The ages of the cases were evaluated over months and were then divided into 4 groups. Those between 0-60 months were classified as Group 1, those between 61-120 months were classified as Group 2, those between 121-180 months were classified as Group 3, and those between 181-216 months were classified as Group 4. In terms of the application times, the hours of the day were accepted as 00:00-08:00 time zone group A, 08:00-16:00 time zone group B, 16:00-00:00 time zone group C.

The patients were divided into 4 groups as spring, summer, autumn, and winter in terms of the application season, and the places of arrival were divided into groups as 3 big districts of Konya, Selçuklu, Meram, Karatay, and other districts. Whether or not the place the cases applied was the hospital for the first time was evaluated quantitatively, and the time between the event and the time of admission was evaluated in hours.

Medical drug poisoning was divided into two groups single drug intake and multiple drug intakes. All cases were evaluated according to whether there was a suicide intention or not.

All the cases were evaluated according to the presence of symptoms as the reason for admission. Any previously known disease was evaluated according to the CV part filled in the epicrisis.

All cases were evaluated according to 114 National Poison Information Center Consultation Status. The cases that were consulted were evaluated in quantitative terms regarding gastric lavage, activated charcoal, follow-up time in hours, and recommendation for follow-up in the Intensive Care Unit. Those with gastric lavage were also evaluated according to the lavage content. All cases were evaluated according to whether the entrance was forensic, writing a forensic report and epicrisis, the type of forensic report, the need for simple medical intervention, and whether there was a life-threatening

risk.

The Clinical Ethics Committee approval of the study was obtained at the Local Ethics Committee Meeting dated 12.06.2019, with the decision numbered 2019/144.

Statistical Analysis

The Statistical Package for Social Sciences (SPSS, Inc., Chicago, IL, USA) for Windows 23.0 program was used for the data that were obtained as a result of the study. When the study data were evaluated, descriptive statistical methods (mean, standard deviation) were used in the comparison of quantitative data, and the Student t-test was used to compare two independent groups. The categorical variables were compared with the Chi-Square Test (Fisher's Exact). The results were given as mean±SD at 95% Confidence Interval, and the significance was evaluated at the $p<0.05$ level.

Results

Among the 115505 patients who applied to the Pediatric Emergency Clinic of our hospital for 3 years between January 2016 and January 2019, 1104 (0.95%) were included in the scope of forensic cases; and among these, 538 (48.7%) were female and 566 (51.3%) were male. The mean age of the patients was 69.35±64.18 months (1-215 months), and the median was 39 months. The mean age of the girls was 81.43±70.57 months, and the mean age of the boys was 57.86±55.10 months. A statistically significant difference was found in terms of the mean age according to gender (p:0.001). Also, 731 (66.2%) of the patients who were included in the study were between 0-60 months, 98 (8.9%) between 61-120 months, 148 (13.4%) between 121-180 months, 127 of them (11.5%) were over 180 months. The distribution of the patients who participated in the study and according to age and gender is shown in Table 1.

Table 1: The distribution of the patients who participated in the study according to age and gender

Age Group	Female		Male		Total	
	n	%	n	%	n	%
0-60 month	318	59,1	413	73	731	66,2
61-120 month	40	7,4	58	10,2	98	8,9
121-180 month	94	17,5	54	9,5	148	13,4
>180 month ay	86	16	41	7,2	127	11,5
Total	538	100	566	100	1104	100

When the years of application were evaluated, it was seen that 406 (36.8%) of the cases applied in 2016, 314 (28.4%) in 2017, and 384 (34.8%) in 2018. When the patients who participated in the study were analyzed according to the season of admission, it was found that most cases were in summer with 318 (28.8%) cases, 281 (25.5%) cases were in autumn, 274 (24.8%) cases were in spring, and 231 (20.9%) cases were in the winter. When the month of admission was evaluated, it was found that the month with the highest number of cases was in August with 116 (10.50%) cases. The distribution of the patients according to the months of admission is shown in Figure 1.

When the cases that were included in the study were examined, it was found that 361 (32.7%) of the cases were between 16:00 and 00:00, 264 (23.9%) were between 08:00 and 16:00, 95 (8.6%), 95 (8.6%) were between 00.00-08.00 hours. When evaluated according to the time of admission to the Emergency Department, 641 (58.1%) patients were between 16.00-00.00, 306 (27.7%) patients between 08.00-16.00, and 157 (14.2%) patients between 00.00-08.00. When the patients were examined in terms of the time elapsed between the time the forensic incident occurred and the time they applied to the hospital, it was found as 182.98±228.08 minutes (5-1400 minutes). No statistically significant differences were detected between gender and the time elapsed between the time the forensic event occurred and the time applied to the hospital (p:0.139). When the time between the occurrence of the event and the time of admission to the hospital was compared with the age groups, it was found that the duration of admission to the hospital shortened as the age decreased in the age groups, and it was statistically significant (p:0.001).

It was also found that 755 (68.65%) of 1104 cases with forensic nature applying to the pediatric emergency department of our hospital first applied to the pediatric emergency clinic of our hospital after the event, and 262 (23.73%) were referred to us from an external center. Based on the diagnosis, asphyxia (1/1), abuse-neglect (4/7), foreign body aspiration (9/30), poisonings (241/855) were identified as diagnosis types with a high rate of referral from an external center.

It was found that 724 (65.57%) of the patients applied to the Pediatric Emergency Clinic with their means, and 327 (29.61%) were brought by 112 Ambulance Service. When the diagnoses of 327 patients who were brought by Ambulance Service were evaluated, 307 (93.80%) had poisoning, 8 (2.44%) had foreign body aspiration, and 6 (1.83%) had a foreign body in the GIS. When the diagnoses were evaluated according to the rate of admission by ambulance, it was found that 3 (42.8%) of the 7 abuse-neglect cases applied by ambulance, and the highest rate of admission to the hospital by ambulance was in the abuse-neglect group.

When the forensic cases were analyzed according to the place of origin, it was found that Selçuklu District, where our hospital is located, had the highest rate (56.06%). Application rates from the other two central districts of Konya were Karatay with 71 (6.43%) cases and Meram with 30 (2.71%) cases. The number of

cases that came from other districts was 305 (27.62%). The number of cases that came from outside the city of Konya was 52 (4.71%), of which 19 (1.72%) were from Karaman, 14 (1.26%) from Aksaray, 11 (0.99%) from Afyon, 6 (0.54%) from Niğde, and 2 (0.18%) from Nevşehir.

When the admission complaints of the patients who were included in the study were examined, 156 (14.1%) of them had nausea-vomiting, 43 (3.89%) had abdominal pain, 42 (3.80%) had a change in consciousness, 25 (2.26%) had shortness of breath, and 17 (1.53%) had a headache. It was also found that 777 (70.38%) of the patients had no symptoms at the time of admission to the hospital. The symptoms of the patients at the time of admission are shown in Figure 2.

When the patients were evaluated in terms of the state of consciousness at the time of admission to the hospital, a change was detected in consciousness in 42 (3.80%). It was also found that 8 (0.72%) of them who had altered consciousness were unconscious, and 34 (3.07%) were confused. It was found that 5 of 8 unconscious patients applied to our hospital because of poisoning, one (0.09%) had abuse-neglect, one (0.09%) drowning-asphyxia, and 1 (0.09%) death of unknown cause.

When the patients who participated in the study were evaluated in terms of their diagnoses, 855 (77.44%) had poisoning, 112 (10.14%) had a foreign body in the Gastro-Intestinal System, 91 (8.24%) had a foreign body in the nose and ear, 30 (2.71%) of them had foreign

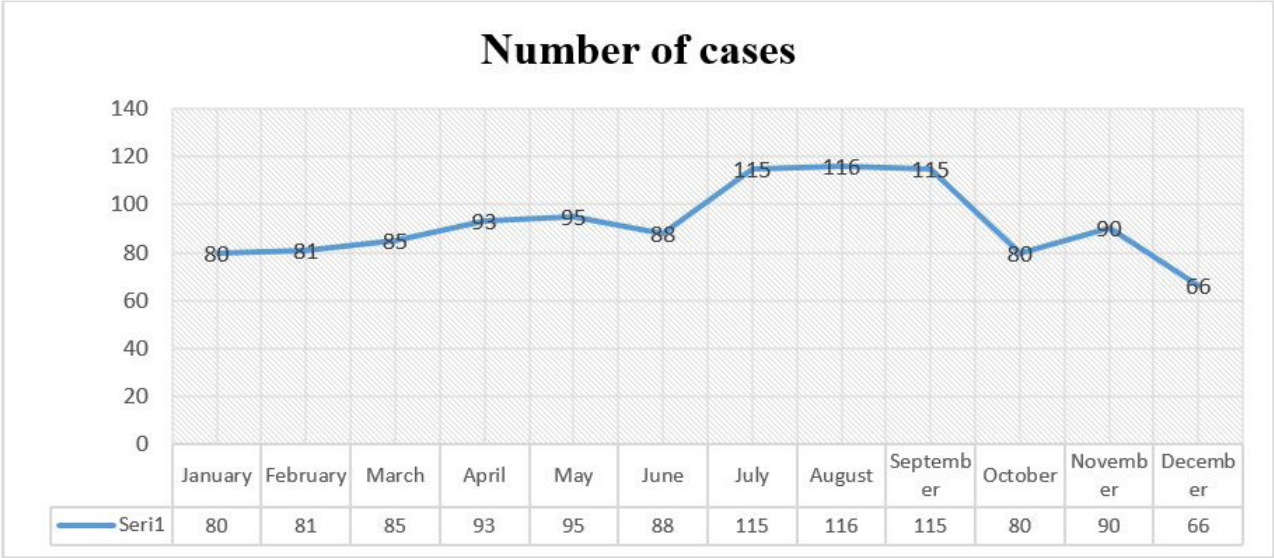

Figure 1: The distribution of the patients according to the months of admission

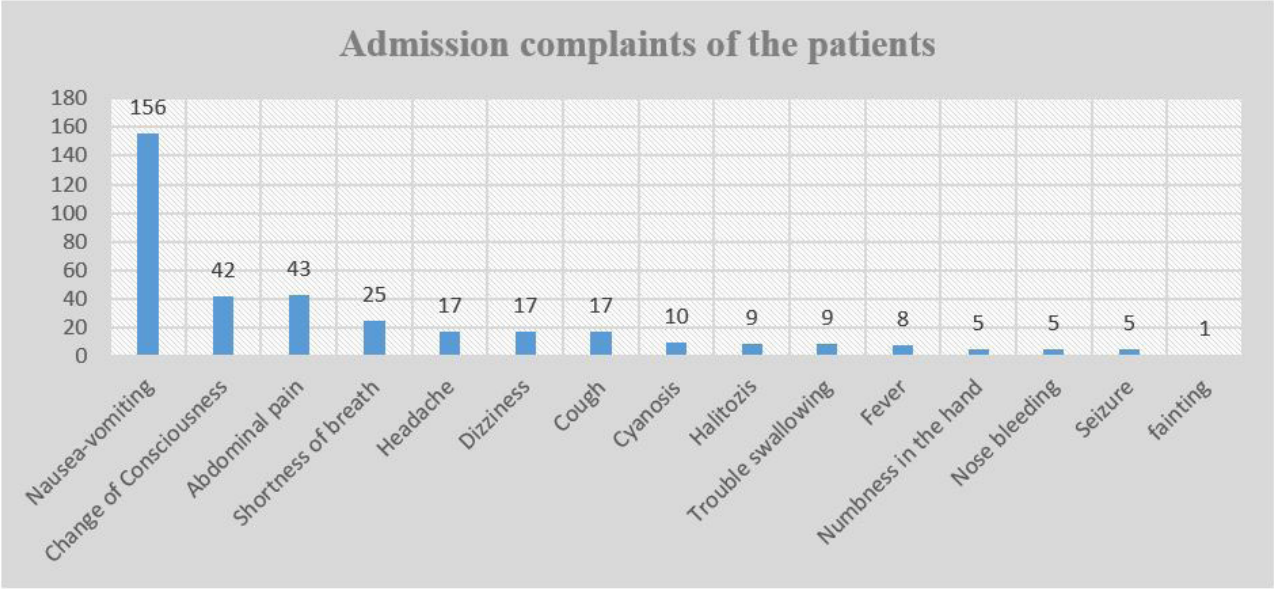

Figure 2: The symptoms of the patients at the time of admission

body aspiration, 7 (0.63%) abuse-neglect, 6 (0.54%) electric shock, 1 (0.09%) burn, 1 (0.09%) asphyxia-suffocation, and 1 (0.09%) death of unknown cause. The distribution of forensic cases according to gender is shown in Table 2.

Table 2: The distribution of forensic cases according to gender

Case Type	Female		Male		Total	
	n	%	n	%	n	%
Poisoning	428	50	427	50	855	77,4
Electric Shock	3	50	3	50	6	0,5
Foreign Body Aspiration	12	40	18	60	30	2,7
Foreign Body in the Nose and Ear	48	52,7	43	47,2	91	8,2
Foreign Body in the GIS	41	36,6	71	63,3	112	10,1
Abuse-Neglect	6	85,7	1	14,2	7	0,6
Death Of Unknown Cause	0	0	1	100	1	0,09
Burn	0	0	1	100	1	0,09
Asphyxia-Suffocation	0	0	1	100	1	0,09
TOTAL	538	48,7	566	51,2	1104	100

When the 1104 patients included in the study were examined in terms of consulting 114 Poison Information Center, it was found that 604 (54.71%) of them consulted the Poison Information Center, and 442 (40.03%) did not consult it. It was reported that out of 604 cases that consulted the Poison Information Center, 31 (2.80%) were offered follow-up in intensive care conditions, 142 (12.86%) were not recommended to follow-up in intensive care conditions, but intensive care may be needed.

When the patients accepted as forensic cases were analyzed according to the status of gastric lavage, it was found that gastric lavage was performed for 258 (30.17%) of the 855 cases suspected of poisoning. When these cases were examined, 223 (26.90%) of the 387 patients were admitted as medical drug poisoning, 2 (0.91%) of the 244 patients were admitted as corrosive substance poisoning, and 13 of the 33 patients were admitted as pesticide poisoning and (39.39%) underwent gastric lavage.

When the patients included in the study were examined in terms of consultation from other departments, it was found that consultation was requested mostly from the Pediatric Surgery Department (n:121, 10.9%). Also, 103 (9.3%) patients required otolaryngology department consultation, 17 (1.5%) chest surgery, 13 (1.1%) pediatric gastroenterology, 11 (0.9%) pediatric cardiology, 6 (0.5%) plastic and reconstructive surgery, 2 (0.1%) neurosurgery, and 1 (0.09%) dermatology consultation.

When the 121 patients consulted with Pediatric Surgery Department were evaluated, 94 (76.8%) had poisoning, 24 (19.8%) had a foreign body in the digestive tract, 2 (1.6%) had a foreign body in the gastrointestinal tract, and 2 (1.6%) had abuse-neglect. When the poisoning cases were examined, 90 (74.3%) patients had corrosive substance poisoning, 1 (0.8%) had chemical poisoning, 1 (0.8%) had plant poisoning, 1 (0.8%) had drug + corrosive substance poisoning, and were consulted to the pediatric surgery department.

When the 102 patients consulted with the Otolaryngology Department were evaluated, 76 (74.5%) patients had a foreign body in the ear-nose, 12 (11.7%) patients had a foreign body in the digestive tract, 7 (6.8%) patients had intoxication, and 7 (6.8%) had foreign body aspiration, and were consulted to the otolaryngology department.

When 13 patients consulted to the pediatric gastroenterology department were evaluated, it was determined that 10 (76.9%) patients had medical drug poisoning, 2 (15%) patients had corrosive substance poisoning, and 1 (7.6%) patient had mushroom poisoning.

It was found that 38 (46.9%) of the 81 poisoning cases with suicidal drug intake were referred to the pediatric psychiatry department, 37 (46.8%) of these patients had medical drug poisoning and 1 patient had pesticide poisoning.

When the final results of the patients admitted to the pediatric emergency department after the examination in the emergency department were examined, it was found that 921 (83.4%) of them were treated as outpatients, 165 (14.9%) were treated as inpatients in the pediatric health and diseases ward, and 15 (1.35%) continued their treatment in the Pediatric Intensive Care Unit. It was also found that 65 of them (5.88%) refused treatment and follow-up voluntarily, and 5 of them left the hospital without permission. Despite the treatment, 3 (0.27%) of the inpatients died.

After the procedures of the 1104 patients admitted to the Pediatric Emergency Clinic of our hospital, it was found that 1024 (92.8%) patients were written epicrisis in the electronic environment, and 80 (7.2%) patients were not. When the 80 patients for whom epicrisis was not written were evaluated, 37 (46.2%) had poisoning, 24 (30%) had a foreign body in the ear-nose, 17 (21.2%) had a foreign body in the digestive tract, and 2 (2.5%) had foreign body aspiration. When the patients for whom epicrisis was not written electronically were evaluated with regards to the diagnostic classes, it was found that the diagnosis group for which epicrisis was not written the most was the group with a foreign body in the ear-nose (27.47%).

It was found that forensic case report was prepared for 751 (68%) patients after all the procedures of the patients who applied to the pediatric emergency clinic, and it was not prepared for 353 (32%) patients. When the patients who had a forensic case report

were examined, provisional reports were given to 534 (71.1%) of the patients, and final reports were issued to 69 (9.2%). It was also determined that the report types of 148 (19.7%) patients were not specified. It was stated that there was a vital risk in 336 (44.74%) of the patients for whom a forensic report was issued, and it was stated that 378 (34.23%) did not have a life-threatening risk. It was not stated whether the risks were life-threatening or not in the forensic case report of 36 (3.26%) patients.

The poisoning cases constituted 0.74% of the forensic cases admitted to the pediatric emergency clinic. Among these cases, 428 (50.1%) were female and 427 (49.9%) were male. The mean age of the patients was 76.15±68.01 months (1-215 months). When the mean age was evaluated according to gender, it was found as 59.26±2.86 months for boys, and 73.35±3.54 months for girls, and there was a statistically significant difference (p:0.001). The distribution of poisoning cases according to age groups and gender is shown in Table 3.

Table 3: The distribution of poisoning cases according to age groups and gender

	Male		Female		Total	
	n	%	n	%	n	%
0-60 month	301	56,7	230	43,3	531	62,1
61-120 month	36	54,5	30	45,5	66	7,7
121-180 month	51	37,5	85	62,5	136	15,9
>180 month	39	32	83	68	122	14,3
TOTAL	**427**	**49,9**	**428**	**50,1**	**855**	**100**

Although 575 (67.3%) of the poisoning cases that were included in the study first applied to the emergency clinic of our hospital, 241 (28.2%) were referred from other hospitals; 539 (63.0%) of them applied to the pediatric emergency clinic of our hospital by their means, 307 (35.9%) were brought by the 112 Emergency Ambulance Service. The mean time between the poisoning event and admission to the hospital was found as 172.92±221.727 minutes (5-1400 minutes) in patients who applied to the emergency clinic of our hospital due to poisoning, and it was found as 230.30±251.016 minutes in non-poisoning cases. A statistically significant difference was detected in this respect (p:0.009).

When the 855 poisoning cases included in the present study were examined in terms of the causes, it was found that the most common cause of poisoning was medical drug poisoning with 387 (45.4%) patients. Corrosive substance poisoning was found in 244 (28.5%) patients, food poisoning in 72 (8.2%), carbon monoxide poisoning in 60 (7.0%), pesticide poisoning in 33 (3.8%), and intoxication with chemical substances in 30 (3.5%) patients. The distribution of the poisoning types according to gender is shown in Table 4.

Table 4: The distribution of the poisoning types according to gender

	Female		Male		Total	
	n	%	n	%	n	%
Medical Drug Poisoning	221	57,1	166	42,8	387	45,2
Food Poisoning	42	58,4	30	41,6	72	8,2
Pesticide Poisoning	15	45,4	18	54,5	33	3,8
Alcol	4	30,7	9	69,2	13	1,5
Scorpion Bites	0	0	2	100	2	0,2
Carbon Monoxide Poisoning	28	46,6	32	53,3	60	7
Corrosive Substance Poisoning	98	40,1	146	59,8	244	28,5
Poisoning With The Plant	1	14,2	6	85,7	7	0,8
Narcotic-Stimulant Substance	2	66,6	1	33,3	3	0,3
İntoxication with Chemical Substances	15	50	15	50	30	3,5
Medical Drug+ Corrosive Substance Poisoning	1	100	0	0	1	0,1
Medical Drug+ Alcol	1	100	0	0	1	0,1
Pesticide Poisoning+ Pesticide Poisoning	0	0	1	100	1	0,1
Unknown	0	0	1	100	1	0,1
TOTAL	**428**	**50**	**427**	**50**	**855**	**100**

When all the 855 poisoning cases were evaluated according to the way the agent was taken, it was found that 758 (88.65%) of the patients had the agent through the oral route. This was followed by inhalation with 71 (8.30%) cases, through the skin with 11 (1.28%) cases, and through the parenteral route with 1 (0.11 %) case.

When the poisoning cases were analyzed in terms of consulting 114 Poison Information Center, it was found that 592 (69.2%) of them were consulted, 247 (28.9%) were not consulted, and 16 (1.9%) of them were not mentioned in the electronic records. It was reported that out of the 592 poisoning cases that were consulted to the Poison Information Center, 31 (3.62%) of them were recommended to be followed up in intensive care conditions, 142 (16.60%) were not recommended, but the need for intensive care may be required in the follow-up.

It was found that 275 (32.2%) of the patients admitted to the pediatric emergency clinic as poisoning cases were given activated charcoal treatment. Among these patients, 232 (84.36%) had medical drug poisoning, 17 (6.18%) mushroom poisoning, 14 (5.09%)

pesticide poisoning, 6 (%) 2.18) chemical poisoning, 3 (1.09%) corrosive substance poisoning, 2 (0.72%) plant poisoning, 1 (0.36%) pesticide+corrosive substance poisoning.

When the poisoning cases were evaluated according to the final results after the examination in the Emergency Department, it was found that 329 (38.47%) patients were discharged after monitoring, and 143 (16.72%) were hospitalized and treated in the pediatric health and diseases ward. Twelve (1.40%) patients were treated in the pediatric Intensive Care Unit. It was also found that 59 (6.90%) of them voluntarily refused treatment/follow-up, and were discharged, and 5 (0.58%) left the hospital without permission. One (0.11 %) patient died in the Pediatric Intensive Care Unit of our hospital.

It was found that 82 (7.4%) of the forensic cases that were included in the study had a suicide intent. All of these cases were poisoning, of whom 79 (96.34%) were poisoned by medical drugs, 2 (2.43%) by pesticides and 1 (1.21%) with medical drugs + alcohol. It was also determined that 69 (84.1%) of the patients were female and 13 (15.8%) were male.

The mean age of the cases that had suicidal poisoning was 185.85±17.18 months, and the mean age of the cases with non-suicidal poisoning was 59.60±56.57 months. Statistically significant differences were detected in the comparisons (p:0.001). It was significantly higher in cases over 180 months when compared in statistical terms according to age groups in cases with suicidal intent (p:0.001).

When the distribution of the cases that had suicidal intentions was examined according to the seasons, it was seen that it was most common in summer with 24 (29.3%) cases, and it was least common in winter with 18 (22.0%) cases. When the distribution of the suicidal poisoning cases according to months was examined, it was found that it was most common in June with 10 (12.5%) cases, and it was the least in October with 3 (3.65%) cases.

Discussion

Forensic cases make up an important part of emergency polyclinic applications and are evaluated differently from other cases. Since the emergency departments of healthcare institutions are among the first authorized units to which forensic cases apply, they play important roles in the determination of forensic cases. To determine the childhood forensic case profile of our region, we examined the forensic case records of our pediatric emergency department. In the study, 1104 (0.95%) of the 115505 patients who applied to the pediatric emergency department for 3 years were defined as pediatric patients included in the forensic case. Different results reported in previous studies were interpreted by including trauma patients in forensic cases (8-10). Trauma patients were not included in our study.

According to the data of the American Center for Disease Control and Prevention (CDC), non-fatal injuries are more common in boys who are aged 1-18 years (11). It is reported in studies conducted in our country and abroad that accidental injuries and forensic case applications are higher in boys than in girls; and for this reason, the presence of the male gender is considered a risk factor. This is explained by the fact that boys are more active and their interests differ (12-14). In our study, although it was not statistically significant, the rate of forensic cases was higher in boys (51.3%).

When the mean age in juvenile forensic cases was examined, it was found that the mean age was 69.35±64.18 months, the median value was 39 months, and the frequency of admission was higher in the group that was under 5 years of age. Although Korkmaz et al. reported the mean age at the admission of forensic cases as 5.55±5.11 years, Demir et al. reported it as 8.8±4.37 years, and Özdemir et al. as 8.77±4.99 years (3, 15, 16). The reason why the mean age was lower in our study when compared to the literature data was associated with the fact that poisoning, which constituted a significant part of our patient population, was observed more frequently between the ages of 1-5. Although the mean age of boys was 57.86±55.10 months, it was 81.43±70.57 months in girls, which was statistically significant. These values were consistent with the literature data.

Forensic cases are mostly detected under the age of 5 in the childhood age group. In the study of Akça et al., nearly half of the forensic cases were under the age of 5. It was observed in the study of Yazar et al. that the highest number of applicants was in the group under the age of five with 63.5% (8, 9). In our study, 66.21% of the juvenile forensic cases were found to be under the age of 5, the highest number of cases in both genders was in this age group, and there were more boys (471/358) in the first 10 age group, more girls after 10 years (180/95).

When the application time of juvenile forensic cases was evaluated, Akça et al. found that the highest number of admission was in winter with 30.2%, and in the study of Büken et al., it was in the spring months (9, 13). Ozdemir et al. and Korkmaz et al. found that most cases were seen in the summer months (2, 16). The results of the present study were compatible with the results of Özdemir and Korkmaz et al. It was concluded that the reason for this may be because the school period is over in the summer months and the rate of children spending time in the outside environment and the activities they perform increase.

When the admission time of the forensic cases during the day was evaluated, it was found that 58.1% was in the period between 16:00 and 00:00 at the most. When the results of previous studies were evaluated, it was found in the study of Akça et al. that the highest number of applications was in that period with 44.3%, and our study was compatible with the literature data

(9). This result was considered to be related to the fact that children often play and do social activities in this period, away from the supervision of parents or teachers, after school, and outside home.

When the way of application of the child forensic cases to the hospital was examined, although the rate of admission by ambulance was 24.7% in the study of Akça et al., it was reported as 36% in the study of Yücel et al. (9, 17). This was 29.61% in our study, which is consistent with the literature data.

When the patients who were included in the study were examined in terms of the time elapsed between the time of the forensic event and the time of applying to the hospital, it was found that the mean time was 182.98±228.08 minutes. In their study, Araz et al. reported it as 186.44±400.21 minutes, and Ulu et al. found it 81.71±64.00 minutes (10, 18). No statistically significant differences were detected when compared according to gender. However, it was also found that the duration of admission to the hospital was shortened as age decreased in age groups, and it was statistically significant.

When the hospitalization rates of the forensic cases admitted to the pediatric emergency department were evaluated, Korkmaz et al. reported it as 19.7% in their study, Özdemir et al. reported it as 12.1%, and Yazar et al. as 40.8% (8, 15, 16). In our study, this was found as 14.9%, which is consistent with the literature data.

According to the reports of the American Association of Poison Control Centers (AAPCC) in 2014, it is known that 61.28% of poisoning cases occur in the childhood age group (19). Poisoning is the 4th most common type of accident in children after traffic accidents, falls, and burns in our country (20). When the types of forensic cases in our study were evaluated, it was found that the highest number of cases was in poisoning with a rate of 77.4%.

The prevalence of poisoning varies among countries, and the ratio of admissions to the Emergency Department was reported as 3% in China, 1% in England, and 0.11% in our country, according to the 2008 data of the National Poison Information Center (21). In the study that was conducted by Öztoprak et al. with patients admitted to the Pediatric Emergency Department between 2001 and 2005, it was reported as 1.66% (22). When other national studies were examined, Ulu et al. reported this ratio as 0.13%, Özdemir et al. 0.3%, Araz et al. 0.4%, Akgul et al. 0.5% (10, 16, 18, 23). In our study, the incidence of poisoning was 0.74%.

When poisoning cases in the childhood age group were divided into age groups, it was found that 47.65% of all poisoning cases were under the age of 5, 6.1% were between the ages of 6-12, and 7.32% were between the ages of 13-19. In our study, the most poisoning cases (62.1%) were detected in the group between 0-60 months. The reason why poisoning was found more common under the age of five is that children are at risk for childhood accidents as a result of their constant interaction and exploration process with the environment at this age (24). When the gender distribution of the poisoning cases was evaluated in age groups, the study of Günay et al. reported the male gender as more common in the 0-13 age group and female gender as more common in the 13-18 age group (25). It was determined in our study that the male gender (337/260) was more common in the 0-10 age group, and the female gender (168/90) in the 10-18 age group. It was found in previous studies that were conducted in our country that female patients attempted suicide more in line with the literature data (26). Various reasons such as mood disorders being more common in girls after puberty and girls being more emotional and fragile explain this prevalence.

Poisoning is an important healthcare problem, especially in the childhood age group, in our country as well as all over the world. It is already known that the most common cause of forensic cases admitted to pediatric emergency departments with the diagnosis of intoxication is medical drugs (8, 10, 15, 23). In the present study, the poisoning agent was mostly a medical drug with a rate of 45.4% (387/855), which is in line with the literature data. In our study, corrosive substance intake was determined at a rate of 28.5% in the second most frequent intoxication cases. Similar to our study, in the study of Çam et al. conducted in our country, poisoning cases with corrosive substances were reported to be the second most common cause after drug intake (27). These results show how important it is for families to store drugs and other harmful substances they use regularly under appropriate conditions.

When the poisoning cases were evaluated in terms of the way of ingestion, it was found that 88.65% of the patients took the poison orally. When the literature was examined, Ulu et al. conducted a study in 2019 and reported the rate of oral intake as 96.9%, and Ozdemir et al. as 78% (10, 16).

When the poisoning cases were evaluated in the literature according to their origins, the rate of accidental poisoning was reported in the study of Ulu et al. as 81.6% in 2019, 80.4% in Araz et al.'s study that was conducted in 2016, 66% in Ozdemir et al.'s study that was conducted in 2019, and 72.1% in the study of Akgül et al. (10, 16, 18, 23). In our study, this rate was 86.4%.

When child poisoning cases, which are considered to be forensic, were evaluated in terms of the findings at the time of application, Ozdemir et al. found 38% findings in their study (16). In their study, Yorulmaz et al. reported no symptoms in approximately one-third of poisoning cases, and they also reported that the most common findings were nausea, vomiting, dizziness, and restlessness (28). In the present study, no findings were detected at the rate of 64.9% (555/855) at the time

of admission. The most common findings in poisoning cases are nausea-vomiting (16.9%), abdominal pain (4.7%), altered consciousness (4.2%), dizziness (1.9%), and headache (1.8%). These data are consistent with the literature data.

One of the treatments in poisoning cases is the removal of the poison from the body. The most common procedures for this purpose are gastric lavage and activated charcoal. When the literature was reviewed regarding the decontamination processes applied in poisoning cases, Yorulmaz et al. reported it as 34.65% for gastric lavage and 26.04% for activated charcoal, Ulu et al. 23% for activated charcoal, and 12.8% for activated charcoal-gastric lavage (10, 28). Also, Özdemir et al. reported it as 14.4% for gastric lavage, 18% for activated charcoal, 12% for gastric lavage + activated charcoal, Araz et al. reported it as 39.5% for gastric lavage and 57.3% for activated charcoal (16, 18). In the present study, it was found that this rate was 30.17% for gastric lavage and 32.2% for activated charcoal.

Poisoning cases occur because of accidents between the ages of 0-5, and for suicide in adolescence. Suicidal poisoning rate was reported by Ulu et al. as 13.3%, and Araz et al. as 19.6% (10, 18). Also, Akgul et al. found this rate as 24.2% in their study, Ozdemir et al. 31%; Tekerek et al. 28.5% (16, 23, 29). In the present study, this rate was 9.5%. According to the literature data, the lower rate of poisoning developing with the aim of suicide in our study was associated with the presence of other pediatric emergency centers in our region.

When the child poisoning cases were examined according to the outcomes, Ulu et al. found that 5.1% of the patients were followed in the pediatric emergency clinic, 81.6% in the pediatric emergency department, and 7.1% in the pediatric ward (10). It was determined in the present study that 38.47% were followed in the emergency clinic and ward, and 16.72% in the pediatric health and diseases ward. When evaluated in terms of hospitalization rate of the poisoning cases in the Intensive Care Units, Ozdemir et al. reported it as 25.3%; Araz et al. 14.7%; Ulu et al. 6.1%, and Tekerek et al. 5.4% (10, 16, 18, 29, 30). In the present study, the rate of hospitalization in the Intensive Care Units was found to be 1.4%.

Mortality rates of forensic cases followed in various studies that were conducted in our country ranged between 0.015-0.4% (2, 3, 14). In the present study, it was reported that 0.27% of the cases were lost in line with the literature data.

Conclusion

According to the data obtained in this study, the majority of forensic cases in the pediatric age group in our country, as in all developed and developing countries, are poisoning cases following traffic accidents. All of these reasons are important because they are preventable. Necessary regulations must be made for safety in the environment where children live and at home, and appropriate security tools must be used when necessary to ensure safety.

The cooperation of Non-Governmental Organizations and the media as a public service tool to attract the attention of families and raise awareness can help in this respect. Also, regular training must be provided to children and parents by educators and healthcare professionals in the framework of injury-protection programs. Such studies that will be conducted for each region have great importance for a fast and correct approach to these cases.

References

1.Adli Tıp Uzmanları Derneği. Birinci Basamak İçin Adli Tıp El Kitabı. Polat Matbaası, Ankara. 1999:83-4.

2.Korkmaz T, Erkol Z, Kahramansoy N. Evaluation of Pediatric Forensic Cases in Emergency Department: A Retrospective Study The Medical Bulletin of Haseki 2014;52:271-7.

3.Demir ÖF, Aydın K, Turan F ve ark. Analysis of pediatric forensic cases presented to emergency department. Turk Arch Ped. 2013;48:235-40.

4.Baysal S, Birinci A. Çocukluk çağında kazalar ve yaralanma kontrolü. Turkiye Klinikleri J Pediatr Sci 2006;2:64-8.

5.Ozturk C, Sari HY, Bektas M, et al. Home accidents and mothers measurements in preschool children. Anatol J Clin Investig 2010;1:15-21.

6.Kenefake ME, Swarm M, Walthall J. Nuances in pediatric trauma. Emerg Med Clin North Am 2013;31:627-52.

7.Turla A, Aydın B. Ondokuz Mayıs Üniversitesi Tıp Fakültesine başvuran adli nitelikli çocuk olguların değerlendirilmesi. Adli Tıp Bülteni 2007;12:106-11.

8.Yazar A, Akın F, Türe E ve ark. Evaluation of Forensic Cases Admitting to Pediatric Emergency Clinic. Dicle Medical Journal. 2017;44(4):345-53.

9.Akça H, Oğlakçıoğlu A, Güneri K. Evaluation of Forensic Cases Admitted to Pediatric Emergency Department: A Single-Center Experience. Cerrahpaşa Medical Journal, 2019. 43(3): 75-9.

10.Ulu K, Akkuş CH, Ulu ŞE ve ark. Retrospective Evaluation of Childhood Poisoning and Cost Analysis. Çocuk Dergisi,2019;19(3):138-47.

11.Borse N, Sleet DA. CDC Childhood Injury Report: Patterns of Unintentional Injuries Among 0 to 19-year Olds in the United States, 2000-2006. Fam Community Health. 2009;32:189.

12.Çınar O, Acar YA, Çevik E, et al. Analysıs of Forensıc Cases in The 0-18 Years Age Group That Were Presented to Emergency Department. Anatol J Clin Investig. 2010;4:148-51.

13.Büken E, Yaşar ZF. Başkent Üniversitesi Ankara Hastanesi Acil Servisine Başvuran Adli Nitelikteki Çocuk Olguların Değerlendirilmesi. Adli Tıp Bülteni. 2015;20:93-8.

14.Sever M, Ulaş E, Koşargelir M. An evaluation of the pediatric medico-legal admissions to a tertiary hospital emergency department. Turkish Journal of Trauma & Emergency Surgery. 2010;16:260-7.

15.Korkmaz, MF, Bostanci M, Tutanç M. An Evaluation of the Hospitalized Pediatric Forensic Cases at a Tertiary Hospital. Journal of Pediatric Emergency and Intensive Care Medicine, 2019. 6(3):140-6.

16.Özdemir AA, Elgörmüş Y, Çağ Y. Evaluation of The Pediatric Forensic Cases Admitted to Emergency Department. Int J Basic Clin Med. 2016;4:1-8.

17.Yücel AB, Sütoluk Z, Yılmaz HL ve ark. Çukurova Üniversitesi Tıp

Fakültesi Çocuk Acil Servisi'ne 2004 yılında başvuran ve adli vaka olarak kayıtlara geçen olguların değerlendirilmesi. Adli Tıp Bülteni 2005; 10: 90-5.

18.Araz C, Toklucu MÖ, Güven Ş ve ark. Retrospectıve Analysıs of Chıldhood Poısonıng in Ümraniye. Haydarpaşa Numune Eğitim ve Araştırma Hastanesi Tıp Dergisi 2016; 56 (3):147-60

19.Mowry JB, Spyker DA, Brooks DE et al. 2014 Annual Report of the American Association of Poison Control Centers' National Poison Data System (NPDS): 32nd Annual Report. Clin Toxicol 2015; 53(10): 962-1147.

20.Ataş Berksoy E, Çelik T, İşgüder R ve ark. Evaluation of demographic characteristics in childhood poisoning cases. İzmir Dr. Behçet Uz Çocuk Hast. Dergisi. 2014;4:25-30.

21.Özcan N, İkincioğulları D. Ulusal Zehir Danışma Merkezi 2008 Yılı Çalışma Raporu. Turk Hij Den Biyol Derg. 2009;66:29-58.

22.Öztoprak Ü, Energin VM. Evaluation of Patients Admitted to the Pediatric Emergency Department with Intoxication. J Contemp Med 2020;10(4):585-90

23.Akgül F, Er A, Çelik FÇ ve ark. Retrospective Analysis of Childhood Poisoning. J Pediatr Emerg Intensive Care Med. 2016;3:91-6.

24.Oguche S, Bukbuk D, Watila I. Pattern of hospital admissions of children with poisoning in the Sudano-Sahelian North eastern Nigeria. Niger J Clin Pract. 2007;10:111-5.

25.Günay A, Uğurlu Z, Ceylan A, Ayten N. A Retrospective Investigation of Poisoning Cases Presented to the Pediatric Emergency Department of Başkent University Ankara Hospital Between 2012 and 2017. J Pediatr Emerg Intensive Care Med 2019;6:13-17

26.Aktepe E, Kandil S, Goker Z, et al. İntihar girişiminde bulunan çocuk ve ergenlerde Sosyodemografik ve psikiyatrik özelliklerin Değerlendirilmesi. TAF Prev Med Bull. 2006;5:444-54.

27.Çam H, Kıray E, Taştan Y, Özkan HÇ. Review of poisoning cases followed in the pediatric emergency division of Istanbul University, Cerrahpafla Medical Faculty, Department of Pediatrics. Turk Pediatri Ars. 2003;38:233-9.

28.Yorulmaz A, Akbulut H, Yahya İ et al. Retrospective Evaluation of Patients Admitted to the Pediatric Emergency Department with Intoxication. J Pediatr Emerg Intensive Care Med 2017;4:96-103

29.Tekerek N, Dursun A, Akyıldız BN. Retrospective Analysis of Poisoning Cases Our Followed in Pediatric Intensive Care Unit. Pediatr Emerg Intensive Care Med. 2016;3:21-6.