

Accidental Home Injuries in Children in The Second Wave Of COVID-19: A Single Center Experience

COVID-19 Enfeksiyonunun İkinci Dalgasında Çocuklarda Ev Kazaları: Tek Merkez Deneyimi

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ABSTRACT

Objective: The COVID-19 pandemic has affected the whole world in terms of health, social life, and economics. In this study, the frequency of pediatric home accidents in the second wave of the pandemic, where social isolation continues, was investigated.

Material and Methods: This is a single center, retrospective study. We evaluated cases of patients under the age of 18 who were admitted to the hospital due to a home accident between November 1, 2020 and January 31, 2021 (the second wave of the pandemic). Results were compared with the patients who were admitted to the same emergency department within the same period of the previous year. Researchers examined home accidents in three groups: crash-fall-incision (1), intoxication-foreign body ingestion (2), and burns (3). The patients were divided into four age groups: 0-1 year, 2-5 years, 6-11 years, and 12-17 years.

Results: The study was completed with 607 cases pre-Covid and 683 cases post-Covid. The median age was 44.4 month (17-57) from 2019-2020 and 49.1 month (18-64) from 2020-2021 ($p=0.154$). The outpatient and sequela-free discharges were more frequent in both periods ($p=0.046$). In the second wave of the pandemic, there was an increase in burns and fall related admissions compared to before the pandemic ($p<0.001$). All types of home accidents were frequently detected at the ages of five years and younger.

Conclusion: In this study, analyzing the second wave of the pandemic compared to pre-pandemic times, Researchers noted a decrease in the number of emergency admissions and an increase in admissions related to home accidents.

Key Words: Children, COVID-19, Home Accident



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ÖZ

Amaç: COVID-19 pandemisi tüm dünyada sağlık, sosyal hayat ve ekonomiyi etkilemiştir. Çalışmamızda pandeminin ikinci dalgasında, sosyal izolasyon devam ederken çocukluk dönemi ev kazalarının sıklığının araştırılmıştır.

Gereç ve Yöntemler: Çalışmamız tek merkezli ve retrospektif bir çalışmadır. 1 Kasım 2020-31 Ocak 2021 tarihleri arasında (pandeminin ikinci dalgası) ev kazası nedeniyle hastaneye başvuran 18 yaş altı hastalar değerlendirilmiştir. Sonuçlar bir önceki yılın aynı döneminde, ev kazası nedeniyle hastanemize başvuran hastalar ile karşılaştırıldı. Ev kazaları, çarpma-düşme-kesi, intoksikasyon-yabancı cisim alımı ve yanık olmak üzere 3 grupta incelendi. Hastalar 0-1 yaş, 2-5 yaş, 6-11 yaş ve 12-17 yaş olmak üzere dört yaş grubuna ayrıldı.

Bulgular: Çalışma Covid öncesi 607 olgu ve Covid-19 sonrası 683 olguyla tamamlandı. Ortanca yaş 2019-20 yıllarında 44.4 (17-57) ay, 2020-21 yıllarında 49.1 (18-64) aydı ($p=0.154$). Her iki dönemde de ayaktan hasta ve sekelsiz taburculuk daha sıkı ($p=0.046$). Pandeminin ikinci dalgasında pandemi öncesine göre yanık ve düşmelere bağlı başvurularda artış saptandı ($p<0.001$). Tüm kazalar 5 yaş ve altında daha sık görüldü.

Sonuç: Çalışmamızda pandemi öncesine göre pandeminin ikinci dalgasında; acil başvuru sayısında azalma gözlenirken, ev kazası nedeniyle başvuranlarda artış gözlemlendi.

Anahtar Sözcükler: Çocuklar, COVID-19, Ev Kazaları

INTRODUCTION

The COVID-19 pandemic started at the beginning of 2020 and quickly affected the entire world. The pandemic has had short-term and long-term effects on both health care systems and social circles globally. An impact of the first wave of COVID-19 on health services was a decrease in emergency department (ED) visits worldwide (1-3). This may be due to restrictions, stay-at-home orders, and fear of getting infected at the hospital. Another important feature of this period was the closure of social areas, such as schools and daycares, and restrictions on leaving the house. As was to be expected, studies have demonstrated a decrease in the number of ED visits due to sports-related injuries, traffic accidents and communicable infections (1,2). Other studies have shown an increase in home accidents in the first wave of the pandemic (4-6). After the first wave of the pandemic ended, long-term and initially undetectable effects began to be reported. What happened to the children who had stay home longer than typical with parents who worked remotely or with other caregivers such as their grandparents? There is not enough data on how such children were affected during the second wave.

The aim of this study is to determine the frequency of home accidents in children during the second wave of the COVID-19 pandemic.

MATERIAL and METHODS

This is a retrospective, single-center study. It was approved by the medical ethics committee. From November 1, 2020 to January 31, 2021, patients under the age of 18 who were admitted to this hospital with ICD (International Classification of Diseases) diagnostic codes were included in the study. Researchers compared findings with the cases recorded over same period of the previous year.

Although the first known case of COVID-19 was recorded in December of 2019, the first case in Türkiye was reported on March 11th, 2020. Schools in Türkiye were closed on March

16th, 2020, and they remained closed throughout spring and summer. Schools temporarily opened at the end of September but closed again in November. Children remained at home until February 15th, 2021. Because Turkish schools were closed between November of 2020 and January of 2021, Researchers evaluated hospital admissions in this period to observe to effects of the second wave of the pandemic. Researchers designated the period of the second wave of COVID-19 as Group 2, and the same period of the previous year as Group 1.

Using accident-related ICD codes, (S00-T98, V01-X59, W00-W10, W17-19), Researchers identified 1.910 patients from 2019 to 2020 and 1.597 patients from 2020 to 2021 from November first to January 31st. Accidents outside of the home and intentional events were exclusion criteria. 162 admissions due to outdoor accidents, 116 traffic accident admissions, and 21 assault admissions were excluded from the study.

1.918 cases were removed due to incomplete file information (there was not enough evidence that the trauma occurred in the home). The study was completed with 607 cases in Group 1 and 683 cases in Group 2.

Home accidents were analyzed in three subgroups. Crash-fall-incision, intoxication-foreign body ingestion, and burns. Researchers divided children into four age groups: aged 0-1 year, 2-5 years, 6-11 years and 12-17 years.

SPSS Statistics 20 (IBM Corp, Armonk, New York) was used for statistical analysis. The Chi Square test was used to compare categorical variables between the pre-COVID-19 period and the COVID-19 period. A non-parametric test was used to compare the mean of two independent variables that were not normally distributed. The Kolmogorov-Smirnov test was used to evaluate normal distribution. $p < 0.050$ was considered statistically significant.

RESULTS

Although Researchers designed the study around hospital admissions, they also looked at the number of Emergency

Table I: Characteristics of pediatric home accident from Nov 1- Jan 31 stratified by Group 1 and Group 2

Characteristics	Group 1 (n=607)	Group 2 (n=683)	p
Gender			
Male*	338 (55.7)	373 (54.6)	0.699 [†]
Female*	269 (44.3)	310 (45.4)	
Median age, month (IQR)	31.0 (17-57)	34.0 (18-64)	0.154 [§]
Accident subgroups*			
Crash/fall/incision	149 (38)	243 (62)	<0.001 [†]
Intoxication/Foreign bodies	308 (52.6)	278 (47.4)	
Burns	150 (48.1)	162 (51.9)	
Follow-up*			
Outpatient	449 (48.5)	477 (51.5)	0.046 [†]
Inpatient	68 (38.4)	109 (61.6)	
Intensive care unit	90 (48.1)	97 (51.9)	
Prognosis*			
With sequelae	30 (51.7)	28 (48.3)	0.466 [†]
Without sequelae	577 (46.8)	655 (53.2)	

* n(%), [†]Chi-squared test, [§]Mann Whitney U test, **IQR**: Interquartile range

Table II: The frequency of home accidents in the pre covid and during the covid period according to age groups

Accident subgroups Age groups	Crash/fall/ incision (n=392)	Intoxication/ Foreign bodies (n=586)	Burns (n=312)	Total (n=1290)	p
1-1 years*					
Group 1	57 ^a (36.5)	87 ^b (52.1)	74 ^a (56.5)	218 (48)	0.001
Group 2	99 ^a (63.5)	80 ^b (47.9)	57 ^{a,b} (43.5)	236 (52)	
2-5 years*					
Group 1	60 ^a (35.7)	165 ^b (55.2)	57 ^a (45.2)	282 (47.6)	<0.001
Group 2	108 ^a (64.3)	134 ^a (44.8)	69 ^a (54.8)	311 (52.4)	
6-11 years*					
Group 1	21 ^a (48.8)	42 ^a (47.7)	13 ^a (38.2)	76 (46.1)	0.586
Group 2	22 ^a (51.2)	46 ^b (52.3)	21 ^{a,b} (61.8)	89 (53.9)	
12-17 years*					
Group 1	11 ^a (44)	14 ^a (43.8)	6 ^a (28.6)	31 (39.7)	0.473
Group 2	14 ^a (56)	18 ^a (56.2)	15 ^a (71.4)	47 (60.3)	

* n(%), ^{a, b}: Each subscript letter denotes a subset of accident groups whose column proportions do not differ significantly from each other at the 0.05 level.

Department admissions. Group 2 saw a 12% increase in November compared to Group 1, while there was a 62% decrease in December and a 50% decrease in January, respectively.

The number of pediatric patients admitted to this hospital with home accident-related ICD codes between November 1st and January 31st decreased in Group 2 compared to the Group 1. A statistically significant increase was found in Group 1 when home accident rates were examined according to the number of admissions. There was no significant difference between Groups 1 and 2 according to gender, age, prognosis, and follow-up. The median age was 44.4 month (17-57) in Group 1 and 49.1 month (18-64) in Group 2 (p=0.154) (Table I).

In this study, while there was an increase in burn and fall related admissions in Group 1, there was a decrease in intoxication and foreign body ingestion cases (Table I). All types of home accidents were frequently detected at the ages of five years and younger. While there was a significant difference between the home accident subgroups in the first five years of age, there was no difference in the ages of six years and older (Table II).

Most crash and fall injuries were caused by falling from furniture and beds. There were 16 cases of falling from great heights (windows and balconies), and 69% of them were in Group 2 (Table III). The mean age in cases of falling from great heights was 119±79 months. Half of the cases were under the age of five, but eight cases were over the age of 11. The children over the age of 11 had fallen while cleaning windows or running away from home. Older children drank corrosive substances stored in reused old water bottles, mistaking them for water. 88% of intoxications and 83% of foreign body aspirations occurred in children five years or younger. Bronchoscopy was performed in 53 cases, and esophagoscopy and clamp procedures were performed in 13 cases. No foreign body was found in 36% of those who were procedures. Two of the 15 magnet ingestion cases developed intestinal perforation cases and were discharged with sequelae.

Intensive care unit (ICU) stays (102 cases, 54.5%) and discharges with sequelae (42 cases, 72.4%) were significantly higher in the burn group (p<0.001). However, there is no significant difference between Group 1 and 2.

Table III: Some characteristics of home accidents subgroups

	Group 1 n (%)	Group 2 n (%)	Total
Crash/fall/incision injuries	149	243	392
Falling from furniture	36 (32)	76 (68)	112
Falling from beds	30 (40.5)	44 (59.5)	74
Falling from height	5 (31)	11 (69)	16
Incision	30 (62.5)	18 (37.5)	48
Others*	48 (33.8)	94 (66.2)	142
Intoxication/foreign body ingestion	308	278	586
Intoxication			
Medication	34 (56.6)	26 (43.4)	60
Corrosive substance intake	34 (56.6)	26 (43.4)	60
Carbon monoxide poisoning	30 (49.2)	31 (50.8)	61
Foreign body ingestion**			
Coins	24 (55.8)	19 (44.2)	43
Nuts	25 (49)	26 (51)	51
Toy parts	9 (37.5)	18 (62.5)	27
Button batteries	21 (77.7)	6 (22.2)	27
Magnets	6 (40)	9 (60)	15
Others*	125 (51.6)	117 (48.4)	242
Burns	150	162	312
Tea/coffee/boiling water	51 (49.5)	52 (50.5)	103
Contact with stove or heater	25 (45.5)	30 (54.5)	55
Others†	74 (48)	80 (52)	154

*Few, nonspecific, or unknown causes that cannot be grouped, †Those that are categorized into groups of foreign bodies are those that are aspirated through breathing. Eye, ear, and nasal incontinence are in the others

DISCUSSION

The first wave of COVID-19 had serious health consequences including high ICU admissions

and the fact that people were still afraid of being infected with COVID-19 and avoided attending hospitals as much as possible.

In this study, fall injuries increased the most sharply of all home accidents post-pandemic. As in the literature, most of the fall injuries in this study were low-energy traumas that did not require hospitalization and were non-sequelae; moreover, most fall injuries were caused by falling from home furniture. Although the exact incidence of falls from great heights in children is not known in Türkiye, in a Turkish study it was demonstrated that the most common two causes of injury in the zero to four-year-old age group were burns and falls, and the most common cause of injury in the five to nine-year-old age group was falls (12). In a pediatric ICU study conducted in this hospital, 106 cases of falls from great heights were reported in one year (13). Falling from windows and balconies is a problem that has been largely solved by preventative measures in developed countries (14). A study from France pointed out that during the COVID-19 pandemic, there was a nearly 30% increase in home accidents and a 3.2-fold increased risk of falling from window (15). The Researchers note that although the study was carried out in winter period, 16 cases of falls from great heights have been recorded in the study.

In this study, burns are another group of home accidents that have increased significantly during the pandemic. Previous

studies demonstrated that while there was a decrease in the number of burn-related injuries during the pandemic, the cases that did occur were more severe (16). In this study, unlike reported articles, there was an increase in total burn admissions during the pandemic, but there was no change in severe burn cases. This can be explained by the fact that the hospital observed is an important reference burn center in Türkiye; moreover, serious burn cases continued to be referred to this hospital both before and during the pandemic.

The rate of sequelae at discharge was also found to be higher in cases with high degree burns at the time of hospital admission. Surprisingly, only one in 16 patients who fell from great height were discharged with sequelae (usually those who fall from the 1st and 2nd floor). Intoxication, foreign body aspiration, and corrosive substance intake are known to be high risk in terms of morbidity and mortality (8). In this study, the most common sequelae after burns were due to battery ingestion, foreign body aspiration, and corrosive substance intake. Many foreign body ingestions involve batteries. These cases can have long-term complications such as perforation and increased possibility of sequelae. Previously, a significant increase in accidental battery ingestion was detected in the literature (17, 18). This increase continued during and even after the pandemic period, and various studies reported a significant number of accidental battery ingestions (19-21).

During the COVID-19 lockdown, one of the issues was the potential social and economic stress for parents and the reduced protective social support for children. This has raised concerns about possible increases in child neglect cases (22).

The studies evaluating childhood maltreatment cases have conflicting results. While some studies report an increase in childhood maltreatment cases during the pandemic, others demonstrate the opposite (23-26). It is conceivable that the increased number of child home accidents may be attributed to the arbitrarily increased time spent at home during pandemic. This can explain the increased rates of child maltreatment. However, the lack of protective social support may coincide with less frequent reporting of maltreatment cases. So, actual maltreatment cases might not change but may go undetected (27).

Strengths and limitations

The long-term impact of social isolation and economic stress on children, which continued after the first wave of the pandemic, has not been studied in detail. The Researchers hold that this report will reveal the importance of this issue. This is an important strength of this study.

Retrospective and single-centered design are the most important limitations of this study. The other limitation is that incomplete file information was commonly detected among cases with accident-related ICD codes, so these cases may be underreported.

There is a much greater likelihood of accidental injuries at home than detected, which has increased significantly during the pandemic period. Similarly, outpatient admissions may also be excluded. This should be taken into consideration when evaluating the study results.

CONCLUSION

In this study, Researchers found that in the 2nd wave of the COVID-19 pandemic, while social isolation continued, hospital admissions due to home accidents in children were higher than in the previous year. While a statistically significant increase in home accidents was found only in fall and burn injuries, a decrease in intoxication was detected. There is a significant difference in the subgroups of fall and burn injuries before and during the pandemic, especially at the ages of five and under.

In times of difficult health conditions, such as pandemics, the damage to vulnerable groups may be greater than expected.

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