



Emergency Medicine and Trauma Care Journal

Research Article

Al Ghamdi M, et al. Emerg Med Trauma. EMTCJ-100039

Patterns of Childhood Injuries (0-12 Years) At A Tertiary Hospital in Riyadh, Saudi Arabia: Observational Study

Al Ghamdi M*, Abduldaiem AMO, AlHowety A and AlDaher AS

King Fahad Medical City, Riyadh, Saudi Arabia

*Corresponding author: Maram Al Ghamdi, King Fahad Medical City, Riyadh, Saudi Arabia, Tel: 0503396366, Email: mhalghamdi@ hotmail.com

Citation: Al Ghamdi M, Abduldaiem AMO, AlHowety A, AlDaher AS (2020) Patterns of Childhood Injuries (0-12 Years) At A Tertiary Hospital in Riyadh, Saudi Arabia: Observational Study. Emerg Med Trauma. EMTCJ-100039

Received date: 11 April, 2020; Accepted date: 14 April, 2020; Published date: 21 April, 2020

Abstract

Introduction: Paediatric injuries have been a leading cause of death for 14% of infants and children under the age of 5 years in SaudiArabia.

Objective: The aim of this study is to analyse and rank children injuries commonly seen in an emergency department at King Fahad Medical City (KFMC) in Riyadh, Saudi Arabia during the years 2008-2009

Methods: This retrospective-descriptive chart review study was carried out in a tertiaryhospital (KFMC) in Riyadh. Study sampling is compréhensive. All database of paediatric cases under the category of injury and poisoning who visited the ER during the period (Jan,2008-Oct,2009) were reviewed. The study included 7522 patients. SPSS (version 17) was used for data cleaning, management, and analyses.

Results: This study included 7522 patients ages between (0-12). The mean age was 4.4 Years. 62% of injured cases were males. 39.3% of the sample falls between the age 1-3 years. Head-neck-face injury represent the high frequency in which 2872 patients had this injury (38.1%), followed by the upper limb injuries which was 30.3% the lower limb injuries (17%). The lowest frequency for electrical burn in which only two patients were recorded. Admitted cases accounted for 5.4%.

Conclusion: Results of this study showed that males have significantly higher predominance of injuries than females. Head, face and neck injuries showed the highest rate of injuries. Were commend an establishment of ED-based injury surveillance that may lead to a national injury surveillance database.

Keywords: Injuries; ED-based injury; Disease Prevention

Introduction

An injury is damage to a person's body in a physical sense such as a graze, bruise, sprain, strain, or broken bone over a short period of time [1]. These injuries have been a leading cause of death for 14% of infants and children under the age of 5 years in Saudi Arabia [2]. Researchers at the Center for Disease Prevention and Control (CDC) had discovered that the lifetime cost of unintentional injury among children who are 14-year-old or younger is around \$50 billion [3]. Direct medical costs were nearly \$11.9 billion per year while future earnings costs were \$38.7 billion per year [4].

A study conducted by the (CDC) during the period 2001-2006in order to find out the leading causes of nonfatal unintentional injuries among Children (0to19Years) in the United States revealed that the most frequent injury was unintentional fall in all age groups of childhood followed by unintentional struck [5].

In Thailand, a study was done in a pediatric emergency room at Ramathibodi Hospital, Bangkok, in order to analyses the epidemiological data of children injuries using a computerized data system from June 1995 to May 1996. Total number of pediatric

Citation: AlGhamdi M,Abduldaiem AMO, AlHowety A, AlDaher AS (2020) Patterns of Childhood Injuries (0-12 Years) At A Tertiary Hospital in Riyadh, Saudi Arabia: Observational Study. Emerg Med Trauma. EMTCJ-100039



patients was 14,427. The study showed that 1,023 children (7%) were injured. The majority of children were male, and under the age of 5 years (48%). Twenty-five percent of cases were referred to be true emergency cases. Common causes of injury included falls (38%), inanimate force (19%), transportation (14%), and animal bite (12%) [6]. Another study done in Al-Ain medical district, Al-Ain Teaching Hospital, UAE in order to determine the common types of injury commonly seen in children aged 0-14 years during the year 1994 where total number of injured children was 16,518 (69.9% boys; 30.1% girls). In the age group less than 5 years, the most frequent injury types were falls, blunt trauma, and burns or scalds. Road traffic accidents were the most common type of injury seen with children between the ages 5-14 years [7].

2

At the national level, one study had been done in Riyadh during 2000 and 2001 and included a total of 1412 injured children who had been seen in the emergency department at King Abdul Aziz Hospital. It revealed that boys had significantly higher injury rate than girls. Most injuries occurred at home. Playing was the leading context of both genders. The most common mechanism of injury was falls (44.5%), followed by road traffic injuries (14.0%), and foreign body ingestion/ inhalations (10%). Among children up to the age of 5, head and face were most frequently involved, while extremities were more common among older children [8].

One can notice that most, if not all, of these injuries can be prevented. Methods of prevention of such injuries, and saving many children's lives can be achieved by determining common risk factors associated with these injuries. Parents must be made aware of such leading factors to injuries as this will help reduce the incidence of unintentional injuries among children. In New York City, window-falls mortality rate was reduced by 50% in two years after the introduction of an educational program targeting families who have small children and live in high-risk areas of the city to provide free easily installed window guards [9].

The aim of this study is to analyses and rank children injuries commonly seen in an emergency department at King Fahad Medical City in Riyadh, Saudi Arabia. The investigators are also interested in finding the demographic characteristics of injured children. Thus, safety educational programs can be implemented accordingly thus, mortality and morbidity of such injuries can be reduced.

Materials and Methods

This retrospective-descriptive study was carried out in a tertiary hospital (King Fahad Medical city) in Riyadh Saudi Arabia, 2010-2011. The study was reviewed and approved by the Institutional Review Board (IRB) at King Fahad Medical City. Sampling technique of this study was comprehensive. All pediatric cases under the category of injury and poisoning was retrieved from the pediatric emergency department database. Cases that were included in this study are from the period of January, 2008 to October,2009. The study included 7.522 patients all in the ages between (0-12 years). Patient's ages were classified into 4 categories: infants less than 1 year, toddlers (1-3 years), preschool age (4-5 years) school age (6-12 years).

Types of injuries were classified as documented in the literatures according to mechanisms. There were 11 categories: Head, neck and face injuries, which included fractures, cuts, nerve or blood vessels injury to any of the head, neck and face (including eyes, nose, mouth). Other categories were: upper limb injury, lower limb injury, pelvic injury, chest and back injuries, abdominal injuries which included fractures, joint dislocations, tendon strains, nerve or blood vessel injury to the referred organ . Injuries to more than one organ or unspecified injuries are categorized under more unspecified injuries category. The rest of the categories were bites, poisoning, foreign body ingestion or aspiration and electrical burns.

Data was entered into Microsoft Excel program, and then transferred to SPSS (version 17) for data cleaning, management, and analysis. Categorical variables were summarized by calculating the number and percent, whereas the mean and standard deviation were calculated for continuous variables. Comparing the relations between age group/type of injury and gender/type of injury was done by using the Chi-square test for categorical variables, and the student's t-test for continuous variables. A p-value of less than or equal to 0.05 was considered to be statistically significant.

Results

Demographic characteristics: Our study included 7.522 patients. Male accounted for 4667 (62 %) while female accounted for 2855 (38 %) (Table 1).

Gender	Frequency	Percentage
Male	4667	62%
Female	2755	37.9%

Table 1: Gender Distribution.

All 7.522 patients were children ranging from 0-12 years old. The mean age was 4.4. The majority of the sample falls between the age (1-3 years) (39.3%) (**Table 2**).

Age group	Frequency	Percentage	
Infants	743	10%	
Toddlers	2963	39.30%	
Preschool age	1305	17.30%	
School age	2512	33.40%	

 Table 2: Distribution of Injuries According to Age Group in years.

As shown in **Table 3**, head-neck-face injury represent the highest frequency in which 2.872 patients had this injury 38.1%, followed by the upper limb injuries and lower limb injuries which they accounted for 30.3% and 17% respectively.

Citation: AlGhamdi M,Abduldaiem AMO, AlHowety A, AlDaher AS (2020) Patterns of Childhood Injuries (0-12 Years) At A Tertiary Hospital in Riyadh, Saudi Arabia: Observational Study. Emerg Med Trauma. EMTCJ-100039

-		Total			
Type of injury	Infants	Toddlers	Preschoolers	School Age	-
Head & Neck injuries	474	1204	495	699	2872
Chest & Back injuries	2	22	10	41	75
Abdominal injuries	7	15	6	18	46
Lower limb injury	58	363	207	651	1279
Pelvis injuries	4	9	9	14	36
Poisoning	11	84	15	5	115
Electrical Burn	0	0	1	1	2
Bites	7	18	7	26	58
Foreign Body	30	230	100	136	496
Other types of injuries	30	99	42	93	264
Total	743	2963	1304	2512	7522

 Table 3: Injury Types Distribution Among Different Age Groups.

The lowest frequency for electrical burn in which only two patients were recorded. The most common type of injuries in those less than 6 years was head, neck and face injuries which accounted for 2.173 (43.8%) cases followed by upper limb injuries which constituted of 1.451 cases (28.96%). However, upper limb injuries represented the highest type of injuries among school age children (32.97%) which is higher than head injuries (27.8%).

The most common type of head and neck injuries was open wounds which accounted for 18% followed by Crush injuries accounting for 16.8%. Among upper limbs, lower limbs, chest and back injuries, fractures were the most common type of injuries accounting for 24.3%, 14.9% and 10% respectively. Muscle / tendon injuries were the most common type of injury among pelvis and abdominal injuries accounting for 22.5% and 15.2% respectively. In foreign body cases, the respiratory system was the most common system to be involved constituting 52% of cases. Among all sample, cases that required admission were 408 (5.4%).

Discussion

The male predominance has been similarly reported in study which was conducted in the Emergency department of King Abdul Aziz Hospital, Saudia Arabia on 2001. This can be due to the fact that males universally are more active and are more involved in more risky physical encounters [8].

Our study shows that the highest age group affected are toddlers which represented 39.3% among all cases. The least affected age group were those less than 1 year which accounted for 10%. This is consistent with the observations of in a study done in Al-Ain, United Arab Emirates (UAE) during a 12-month period from January to December, 1995. It revealed that the highest

numbers of presentations were recorded in the age group of (1-4 years). This is likely due to the fact that this age group lack risk identification and always requires adult close supervision. This age group are most likely to get benefited from parent's educational programs [7].

Head, face and neck injuries showed the highest rate among the age group (1-3 years) years old. This is also in consistence with *Rehmani, et al* study [8].

Regarding the age group (6-12 years), study found that school age children were more likely to have extremities and trunk injuries. Our study showed some similarities in which upper limb injuries had the highest rate among children between the ages of 6-12 years. Children at this age play more at school and playground which likely an explanation of such high prevalence of this kind of injuries among such age group [9].

Foreign body accidents occurred mostly in the age group between (1-3 years) (46.37%). This finding is sin agreement with the aforementioned study of *Rothman et al.* which showed that 80% of pediatric foreign body ingestion or aspiration episodes occurred in children younger than three years, with a peak incidence between one and two years of age [10].

Limitations

One of this study limitations is not being population based. Injuries presented in the ER of one tertiary hospital was only included. Absence of the cause of injuries and where it happened limited us in comparing our findings with other studies that have findings based on causes of injury. There were also inherent deficiencies due to retrospective nature of the study. There is a need for more complete documentation of circumstances surrounding injuries and treatment records.

Citation: AlGhamdi M,Abduldaiem AMO, AlHowety A, AlDaher AS (2020) Patterns of Childhood Injuries (0-12 Years) At A Tertiary Hospital in Riyadh, Saudi Arabia: Observational Study. Emerg Med Trauma. EMTCJ-100039

Conclusion

This retrospective descriptive study showed that males have higher predominance of injuries than females. Head, face and neck injuries showed the highest rate of injuries among all age groups except for the school age group where upper limb injuries were the most encountered type of injuries.

Recommendation

We recommend an establishment of ED-based injury surveillance that may lead to a national injury surveillance database. Patients' charts should be computerized which can facilitate data collection. Thus, more studies can be done on patterns of injuries. These procedures can help in making national registry of injuries available for further studies. This can greatly help in promoting injury prevention.

Preventive measures and child safety precautions should be taught to mothers and caregivers. There should be an enforcing laws that aim in more child safety such as the use of car seats, wearing helmets and knee/elbow protectors while running bicycles or vehicles to minimize injury damages to these areas.

References

 United States Department of Health, Education, and Welfare (1964) National Center for Health Statistics. The change in mortality trend in the United States, Government Printing Office, Washington, DC.

- 2. http://www.who.int/whosis/mort/profiles/mort_emro_sau_saudiarabia. pdf
- Centers for Disease Control (1998) National Center for Injury Prevention and Control1997 Fact Book, Government Printing Office, Washington, DC.
- Corso P, Finkelstein E, Miller T, Fiebelkorn I, E Zaloshnja E (2006) Incidence and lifetime costs of injuries in the United States. InjPrev 12:212.
- 5. http://www.cdc.gov/safechild/childhoodinjuryreport/chapter5_6.html
- Plitponkarnpim A, Ruangkanchanasetr S, Thanjira S (1999) Pediatric injuries in emergency room, Ramathibodi Hospital. J Med Assoc Thai 82:S168-739.
- Bener A, el-Rufaie OE, Al-Suweidi NE (1997) Pediatric injuries in an Arabian Gulf country. InjPrev 3:224-226.
- Rahmani R (2008) Childhood injuries seen at an emergency department. J Pak Med Assoc 58: 114-118.
- 9. https://webapp.cdc.gov/sasweb/ncipc/leadcaus10.html
- Rothmann BF and Boeckman CR (1980) Foreign bodies in the larynx and tracheobronchial tree in children. A review of 225 cases. Ann Otol-RhinolLaryngol 89:434-436.

Citation: AlGhamdi M, Abduldaiem AMO, AlHowety A, AlDaher AS (2020) Patterns of Childhood Injuries (0-12 Years) At A Tertiary Hospital in Riyadh, Saudi Arabia: Observational Study. Emerg Med Trauma. EMTCJ-100039

