

ORIGINAL ARTICLE

Pediatric Injury Patterns Presenting at a Tertiary Care Hospital Emergency DepartmentTAHIR MUHAMMAD YASEEN¹, SHABBIR HUSSAIN², AISHA FAZAL³, ATIF ZULFIQAR⁴¹Senior Registrar Pediatric Surgery, Liaquat National Medical College and Hospital Karachi, Pakistan²Consultant Pediatric Surgery, Liaquat National Medical College and Hospital Karachi, Pakistan³Resident Pediatric Medicine, Baqai Medical University and Hospital Karachi, Pakistan⁴Resident Pediatric Surgery, Liaquat National Medical College and Hospital Karachi, PakistanCorresponding author: Tahir Muhammad Yaseen, Email: tahir_yaseen_gem@yahoo.com**ABSTRACT****Introduction:** Injuries in the pediatric population relate to significant liability, especially in low- and middle-income countries.¹ The aim of this study is to decipher the patterns of pediatric injury in Pakistan. This may give the data on the pattern of pediatric injuries, thereby strategies could be made to deal such patients and eventually reduce the mortalities and morbidities.**Objective:** To evaluate pediatric injury patterns presenting in emergency department of Liaquat National Hospital, Karachi.**Methodology:** The study was held at the Emergency department of LNH for six months from 11th may 2018 to 11th November 2018. It was a cross sectional study. Ninety children suffering from trauma as per their history were included in this study. Demographics were noted of all the patients enrolled in the study. An approved Performa was used for recording the outcome variables .**Results:** - The median age of the children was 4.81±3.12 years. Out of 90 children, 71(79%) were boys and 19(21%) were girls. Pattern of injury were included road traffic injuries (54.4%), falls from height (31.1%), poisoning (9%) ,burns (3.3%) and electrocution (2.2%)**Conclusion:** We conclude that the patterns of pediatric injuries in children presenting in accident and emergency department shows road traffic accidents as the leading cause followed by fall from height, poisoning and burns. The study emphasizes the need to build an injury surveillance in the emergency dept that would be a building block for a national injury surveillance database. Along with it, study highlights necessary injury prevention measures that would assist in addressing preventable childhood injuries in Pakistan .**Keywords:** Pediatric injuries, Road traffic injuries, Poisoning**INTRODUCTION****Objective:** To evaluate pediatric injury patterns presenting in emergency department of Liaquat National Hospital, Karachi.**Operational Definition: Patterns of Pediatric Injury: Fall from height:** If the patient falls from like stairs, terrace, bed, chair or tree.**Road traffic injury:** Pedestrian/Two wheeler/four wheeler.**Burns:** If patient get injury from scald (hot liquid), contact burn, electric, cracker and flame.**Poisoning:** Kerosene, Insecticides, Castor seeds and Drugs**MATERIAL AND METHODS****Duration of study:** Six months from 11th may 2018 to 11th November 2018**Study Settings:** Accident & Emergency department of LNH, Karachi.**Sampling Technique:** Non- Probability consecutive sampling technique.**Study Design:** Cross sectional study.**Sample Size:** By taking the prevalence of burns i.e. 8.8%², margin of error = 4%, confidence level = 95%, then at least a sample of 90 was required.**Inclusion Criteria:**

- Children of age between 1 to 15 years presenting in accident and emergency department of LNH with history of trauma of any kind.

- Both gender.

Exclusion Criteria:

- Children without next to Kin to consent for study.
- Death before assessment.

Data Collection Procedure: After taking the approval of synopsis, all the patients fulfilling the inclusion criteria were enrolled in the study. The parents or caregivers of the patients were consulted for taking consent. Demographics were noted of all the patients enrolled in the study. Outcome variables i.e. road traffic injury, burns, poisoning and fall from height were recorded on approved Performa as per operational definition.**Data Analysis Procedure:** Data was entered and analyzed by using the SPSS software 20. Mean and standard deviation was

calculated age of the patients, height, weight and BMI. Frequency and percentages were calculated for the gender of the patient, socio-economic status, educational status of mother and father of the patient and patterns of the injury.

Stratification analysis with respect to age, BMI, gender, socio-economic status and educational status of mother and father of patient were done. Post stratification chi-square test was applied to see the significant effect between strata's. P-value≤0.05 was taken as significant.

RESULTS

Ninety children presenting in accident and emergency with history of trauma were included in this study. Most of the children were 1 to 5 years of age . The average age of the children was 4.81±3.12 years and mean weight, height and BMI of the children are also reported in table 1. Out of 90 children, 71(79%) were boy and 19(21%) were girl . Education of father and mother were presented in bar charts (figure 1 and 2). Regarding socio economic status, most of the families belonged to poor and middle class with 25 participants earning less than 20K , 64 earning between 21-50K and only 11 earning >50K .

Patterns of pediatric injuries in children presenting in accident and emergency is presented in figure 3. Pattern of injury were included road traffic injuries (54.4%), falls from height (31.1%), poisoning (9%)burns (3.3%) and electrocution (2.2)%. Rate of RTA was significantly high in 11 to 15 years of age children (p=0.001) while rate of falls, poisoning and burn was not statistically significant among different age groups. Gender wise difference was not statistically significant in all patterns. Rate of RTA, poisoning and burn was also statistically significant among different BMI of the children .

Table 1: Descriptive Statistics of Patient's Characteristics

Variables	Mean	Std. Deviation	95% Confidence Interval for Mean	
			Lower Bound	Upper Bound
Age (Years)	4.81	3.12	4.380	5.250
Weight (in kg)	16.38	8.10	15.25	17.51
Height (in cm)	117.34	18.93	114.70	119.98
BMI (kg/m ²)	17.59	1.61	17.37	17.82

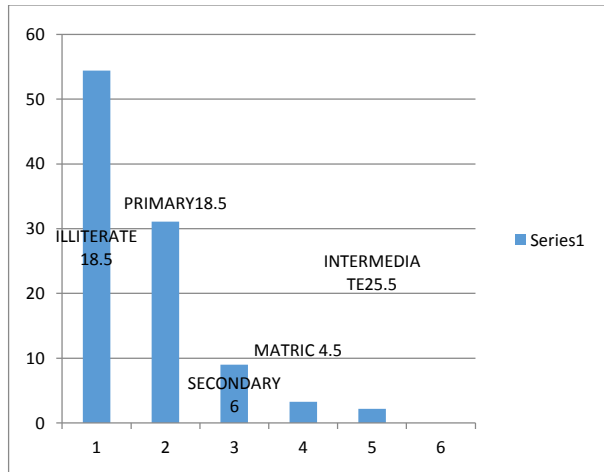


Figure 1: Education of Father of the Patients n=90

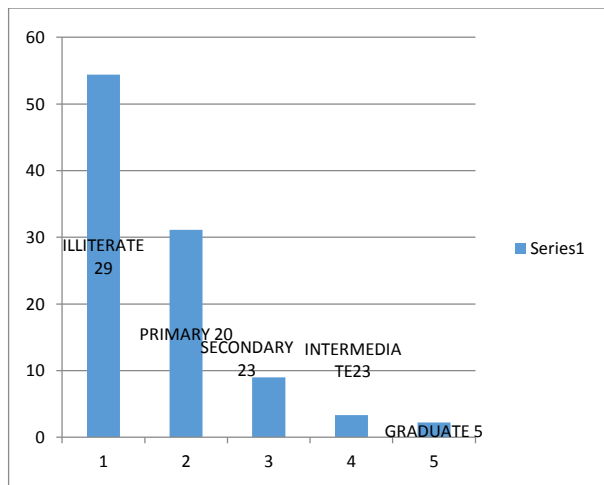


Figure 2: Education of Mother of the Patients n=90

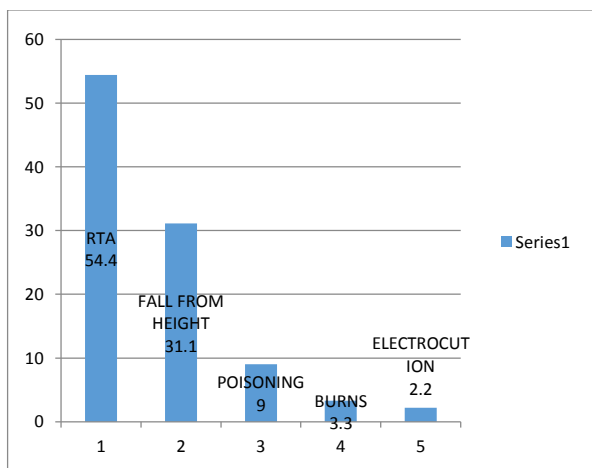


Figure 3: Patterns of Pediatric Injuries in Children Presenting in Accident and Emergency

DISCUSSION

Injuries are major cause of mortality and morbidity with 5million deaths per year^{3,4,5}. Due to its long life disability it is a major public health issue. According to WHO more than 6 million children with age less than 15years die from injuries per year. More than 95%

injuries occur in third world countries^{6,7}. These childhood injuries results from drowning, burns, road traffic accidents, falls and poisoning⁷. Our country falls in high risk state of injuries related mortality and morbidity of pediatric age with a mortality of thirty per year in 100000 people⁸. In a national survey of Pakistan in 1990-1994, the incidence rate of non fatal injuries in children was 49/1000 children in a year with age less then 5years⁹. In this study to determine the patterns of pediatric injuries in children presenting in accident and emergency department were included. 200 children of both gender with age between 1-15years were included. The average age was 4.81+/- 3.12 years and major bulk is between 1_5years of age. This observation is supported by many authors. Pant et al. from Nepal found major part of injuries occur between 2-3years old children¹⁰. Children with age 2-3 years have many developmental risk that predisposes them to injury.⁷

Our study revealed higher incidence of injuries among males compared to females 77% vs 23%. Sane results were reported in previous studies of several countries like India ,Nepal, Bangladesh, Saudi arabia, and Colombia^{11,12}. Boys are more prone due to patriarchal nature and more autonomous to discover their environment at younger age¹³. Patterns of pediatric injuries in children presenting in accident and emergency includes fall from height (35%) as leading cause followed by road traffic injuries (33.5%), poisoning (21.5%) and burns(10%). The report of UNICEF Innocenti research centre shows similar results with injuries incidence in asia¹⁴. The Household survey of Asian countries showed a higher morbidity and mortality due to fall and causes social and financial burden on families¹⁵. The annual incidence of fall related injuries in a National survey of Pakistan is 8.8/1000 people per year. 87% affected children are less than 15years of age¹⁶.

Out of total 10% burn injuries in our study, 13% females have burn injuries. This is not in accordance with other studies from south asia¹⁷. A review of burn injuries showed being girls more affected then boys >1year of age. Mohen et al. reported in his study females have increased risk of burn injuries in cooking area because cooling pots and articles are not handled by children and they are not designed for children¹⁸.

The incidence of poisoning is also higher than other studies¹⁹.The higher incidence may be due to mix population and poisoning is more in rural areas as compared to urban area.²⁰ The major causes of poisoning are insect bites and pesticides usage. In our study boy are more prone to poisoning as reported by other studies.^{20,21}

CONCLUSION

We conclude that the patterns of pediatric injuries in children presenting in accident and emergency department shows road traffic accidents as the leading cause followed by fall from height , poisoning and burns. We advocate the establishment of an ED-based injury surveillance that may lead to a national injury surveillance database. Injury prevention strategies have been suggested and it is hoped these may contribute to addressing preventable childhood injuries in Pakistan, and other similar countries.

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