



Pediatric Injury Presenting in Emergency Department of Tertiary Care Centre

Sneha Pradhananga¹, Trishna Shrestha¹, Kabita Hada Batajoo¹, Manjita Bajracharya¹

¹Department of Family Medicine and Emergency Medicine, KIST Medical College and Teaching Hospital, Imadol, Lalitpur, Nepal.

ABSTRACT

Introduction: Pediatric injury is one of the common emergencies encountered in the emergency department. It is emerging as leading cause of death and disabilities in children. This study aims to analyze the patterns of pediatric injury based on age group, gender, mode, type, place of injury and its outcome.

Methods: This is a descriptive cross sectional study conducted in Emergency Department of KIST Medical College and Teaching Hospital from 1st May 2019 to 30th July 2019. A total of 110 patients aged 15 years and below and with history of trauma were included in this study.

Results: A hundred and ten pediatric patients presented to emergency with injuries. Majority of pediatric trauma cases belonged to age group 1-5 years (38.2%, n=42) and more frequent in male children (66.4%, n=73). In both gender, male (45.5%, n=50) and female (17.3%, n=19); fall was most common mode of injury followed by accidental cut injury (7.3%, n=8) in male and road traffic accident (6.4%, n=7) in female. Most of the cases sustained soft tissue injury (32.7%, n=36) followed by cut injury (26.4%, n=29) and fracture (16.4%, n=18). Common place of injury was found to be at home (64.5%, n=71). Majority were discharged (n=100; 90.9%), Nine (8.2 %) were admitted and one expired (0.9 %) expired.

Conclusion: Fall injuries are the major mode of injury encountered in both male and female children. Injuries tend to occur more at home than school. Children should be adequately supervised at home and school.

Keywords: Emergency department, Pediatric injury.

Citation: Pradhananga S, Shrestha T, Batajoo KH, Bajracharya M. Pediatric Injury Presenting in Emergency Department of Tertiary Care Centre. JKISTMC 2020;2(2)4: 26-30.

Correspondence

Dr Sneha Pradhananga,

Lecturer, Department of Family Medicine and Emergency Medicine
KIST Medical College and Teaching Hospital, Imadol, Lalitpur, Nepal

Email: pradhanangasneha@gmail.com

Mobile: 9841401297

Conflict of interest: None

Source of support: None

Article info

Received: 20 May, 2020.

Accepted: 24 June, 2020.

Published: 31 July, 2020.

Copyright

JKISTMC applies the Creative Commons Attribution- Non Commercial 4.0 International License (CC BY) to all works we publish. Under the CC BY license, authors retain ownership of the copyright for their article, but authors allow anyone to download, reuse, reprint, distribute, and/or copy articles in JKISTMC, so long as the original authors and source are cited.



INTRODUCTION

Pediatric injury is one of the common emergencies and leading cause of death and disabilities in the children. According to World Health Organization (WHO), about 6, 30,000 children under the age of 15 years die from injuries annually and more than 95% of these deaths occur in low and middle income countries.^{1,2}

However there is not much stated evidence regarding the spectrum of pediatric injuries in Nepalese population where one third population are children. It is therefore essential to understand the characteristics of pediatric injury like age group, gender, type, mode and place of injury in our pediatric population to evaluate and implement injury prevention strategies.³

This study aims to determine the characteristics of pediatric injury, type of injury, mode of injury, place of injury, age group, gender and its outcome. The study finding will be helpful to sensitize people about their lifestyle, anticipatory counseling about trauma and common hazards in their surrounding for their children both in school and home to reduce burden of pediatric trauma.

METHODS

A descriptive cross sectional study was conducted among 110 patients from 1st May 2019 to 30th July 2019 after obtaining ethical clearance from Institutional Review Committee (IRC) of KIST Medical College (IRC No: 2075/76/81). Patients presented with history of trauma, aged 15 years and below and attending to Emergency Department of KIST Medical College and Teaching Hospital, Imadol, Lalitpur were included in this study. Cases presented with (i) Birth trauma, (ii) Psychiatric disorder with trauma, (iii) Poisoning, (iv) no signs of life at arrival to emergency following trauma (v) Sexual assault were excluded. Non-probability purposive sampling method was used to collect sample in which the respondents were selected in such a way that the objective of the study was met. Written informed consent was taken from the parents prior to the study. Details regarding age, gender, mode, type, place of injury and its outcome were filled in preset proforma sheet. Data were entered and analyzed in MS Excel Data was presented in the form of frequency and percentage.

RESULTS

A total of 110 patients presented in the Emergency Department with the history of trauma during the study period. In this study age of the patients were distributed into four categories : <1year, 1-5 years, 6-10 years, and 11-15 years. The majority pediatric trauma cases belonged to age group 1-5 years (38.2%, n=42) followed by 11-15 years (30.9%, n=34), 6-10 years (24.5%, n=27), <1 year (6.4%, n=7) respectively. This study revealed that in smaller children, gender predominance was same but as the age increases male predominance also increases (Table 1).

The present study revealed that males were more prone to trauma (66.4%, n=73) than females (33.6%, n=37). Among 110 patients, most common mode of injury was fall (62.7%, n=69) followed by road traffic accident (RTA) (10%, n=11) and accidental cut injury (7.3%, n=8). In both genders male (45.5%, n=50) and female (17.3%, n=19), fall was most common mode of injury followed by accidental cut injury (7.3%, n=8) in male and RTA (6.4%, n=7) in female (Table 2).

Among RTA patients, hit by bike (54.5%, n=6) while walking back home from school was most common in which (66.7%, n=4) were female and (33.3%, n=2) were male. Pillion rider injury happened equally both in female and male (36.4%, n=4). Hit by taxi was found to be least common (9.1%, n=1) (Table 3). Among patients who sustained fall, fall at the level of ground (72.5%, n=50) was common in which males were 78% (n=39) and females were 22 % (n=11) respectively. Fall injury on ground level commonly occurred while playing at home or school. Second common cause was found to be fall from roof (11.6%, n=8) which was mostly seen in females (62.5%, n=5) (Table3). All burn injury were sustained due to spillage of hot liquid and common hot liquid was found to be cereal, milk and tea. Foreign body insertion injury in two cases were due to objects inserted in nose ;objects were green peas and eraser (Table 3).

Regarding the type of injury, most of the cases sustained soft tissue injury (32.7%, n=36) followed by cut injury (26.4%, n=29) and fracture (16.4%, n=18) (Table 4). Common place of injury was found to be at home (64.5%, n=71) followed by school (19.1%, n=21) then road (16.4%, n=18). Regarding outcome of patients, 100 were discharged (90.9%), Nine (8.2 %) were admitted and one expired (0.9 %) expired.

Table 1 Gender and age-wise distribution of injury

Gender	Age Group				Total	Percent
	< 1 Year	1-5 Years	6-10 Years	11-15 Years		
Female	3	20	5	9	37	33.6
Male	4	22	22	25	73	66.4
Total	7	42	27	34	110	100

Table 2 Gender wise distribution of modes of trauma

Injury	Female		Male		Total	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Fall	19	17.3	50	45.5	69	62.7
Road traffic accident	7	6.4	4	3.6	11	10.0
Accidental cut	0	0.0	8	7.3	8	7.3
Crush injury	5	4.5	2	1.8	7	6.4
Burn	1	0.9	3	2.7	4	3.6
Pulled by parent	3	2.7	1	0.9	4	3.6
Fight with friend	1	0.9	2	1.8	3	2.7
Foreign body	1	0.9	1	0.9	2	1.8
Dog bite	0	0.0	2	1.8	2	1.8
Total	37	33.6	73	66.4	110	100.0

Table 3. Different modes of injury

Mode of injury	Female		Male		Total	Percent
	Frequency	Percent	Frequency	Percent		
1.RTA						
Hit by bike	4	66.7	2	33.3	6	54.5
Pillion rider	2	50	2	50	4	36.4
Hit by taxi	1	100	0	0	1	9.1
Total	7	63.6	4	36.4	11	100
2.Fall						
Ground	11	22	39	78	50	72.5
Roof	5	62.5	3	37.5	8	11.6
Bed	1	25	3	75	4	5.8
Stairs	1	25	3	75	4	5.8
Chair	1	33.3	2	66.7	3	4.3
Total	19	27.5	50	72.5	69	100
3.Burn						
Hot liquid	1	25.0	3	75.0	4	100
4.Foreign body						
Nose	1	50	1	50	2	100

Table 4. Types of injuries among study population

Type of injury	Frequency	Percent
Soft Tissue Injury	36	32.7
Cut	29	26.4
Fracture	18	16.4
Abrasion	6	5.5
Head injury	6	5.5
Laceration	5	4.5
Poly trauma	4	3.6
Foreign body insertion	2	1.8
Total	110	100

DISCUSSION

Pediatric injuries are preventable yet we see more cases in the emergency department. Each year more than 9.2 million unintentional pediatric injuries cases are treated in the emergency department.⁴ Pattern of pediatric injury varies in different part of the world. Thus it is very important to analyze the risk factors and take action accordingly.

In this study injuries were observed more in age group 1-5 years; similar to study done in rural background of central India.⁵ At this age they start to move around independently, their curiosity and wish to experiment by themselves may explain the fact of being injured more at this age group.

Male children were found to suffer more from trauma than female children and there was increased incidence of injury with increasing age. This result was consistent with the findings of previous studies.^{3, 4, 6, 7} Possible explanation for this finding could be male children being more careless, given more freedom, opportunities and gender related differences related to risk taking activities.

Fall related injuries were found to be common mode of injury. Reason for fall was different at home and school. In the home environment injuries were due to fall on ground while playing, fall from roof, stairs, bed and chair. In the school environment injuries were mainly due to sports activities. Similar findings were observed in other studies.^{2, 8, 9} Circumstances of fall were different depending on different age group and developmental changes of children at these ages

which are consistent with our study.¹⁰

, home was found to be most common place of injury. This result was similar to the results reported by other studies from similar environment.^{9, 11-13} Children are usually believed to be well supervised at home still significant number of unintentional injuries in and around home are observed.¹¹ Children spend significant amount of time at home after school, so the chances of exposure to several injury hazards is high. Simple measures like children friendly homes, adequate supervision by care taker and awareness program for parents and children helps to minimize incidence at home.¹⁴

Among injury sustained, soft tissue injury was revealed as leading type of injury followed by cut injury and fracture. This result was not consistent with other studies in which fracture was more common followed by soft tissue injury.^{12, 15, 16} The reason for this is unclear but may be injury sustained by most of the patients in our study was fall and on ground level.

Most of the cases in our study were discharged after treatment from emergency department and few cases were admitted in hospital in ICU and ward. The mortality in our study was 0.9% which was comparatively lower than other studies. Expired case was a case of polytrauma due to fall from three storied height.

The limitations of our study are, this study was done in one center in limited sample with selection bias hence may not represent entire population. This study does not include injury patients which are not reported to the hospital.

CONCLUSION

Fall injury is the major mode of injury encountered in both male and female children. Injuries tend to occur more at home than school. Thus this study arouses awareness among parents and caregivers for the safety measures as most of the injuries are preventable.

ACKNOWLEDGEMENT

The authors would like to acknowledge all the patients and parents of this study.

REFERENCES

1. Batte A, Siu GE, Tibingana B, et al. Incidence, patterns and risk factors for injuries among

- Ugandan children. *Int J Inj Contr Saf Promot.* 2018;25(2):207-211.
2. Kiser MM, Samuel JC, Mclean SE, Muyco AP, Cairns BA, Charles AG. Epidemiology of pediatric injury in Malawi: burden of disease and implications for prevention. *Int J Surg.* 2012;10(10):611-617.
 3. Kundal VK, Debnath PR, Sen A. Epidemiology of Pediatric Trauma and its Pattern in Urban India: A Tertiary Care Hospital-Based Experience. *J Indian Assoc Pediatr Surg.* 2017;22(1):33-37.
 4. Alqahtani MAA, Alshahrani MMA, Alfayi NA, Alshahrani MMA, Alqahtani AM, Alqahtani AMAA, et al. Pattern of Accidents in Children Less than 14 Years in Abha City, Kingdom of Saudi Arabia. *Int J Med Res Health Sci.* 2018;7(3):73-7.
 5. Sharma S, Nayak A, Gupta R, Gaharwar A. Pattern of Pediatric Trauma in Rural Background of Central India. *IJSS Journal Surg.* 2016.2(1):30-5.
 6. Alnasser A, Othman A, Mobaireek O, Alharthy N, Algerian N, Al Zamel H, Qureshi S, Al-Mutairi M. Epidemiology of pediatric trauma at a tertiary hospital in Riyadh, Saudi Arabia. *J Nat Sc Biol Med* 2018;9:247-51
 7. Aoki, M., Abe, T., Saitoh, D. et al. Epidemiology, Patterns of treatment, and Mortality of Pediatric Trauma Patients in Japan. *Scientific Reports* 2019(1):917.
 8. Ganji SME, Baghianimoghadam B, Ahangar SK, Rikhtegar M, Roshan ZY, Hanife ZD, et al. Epidemiology and Patterns of Trauma in Children. *Trauma Monthly.* 2017;22(4).
 9. Jones S, Tyson S, Young M, Gittins M, Davis N. Patterns of moderate and severe injury in children after the introduction of major trauma networks. *Arch Dis Child.* 2019;104(4):366-371. doi:10.1136/archdischild-2018-315636
 10. Tracy ET, Englum BR, Barbas AS, Foley C, Rice HE, Shapiro ML. Pediatric injury patterns by year of age. *J Pediatr Surg.* 2013;48(6):1384-8.
 11. Zia N, Khan UR, Razzak JA, Puvanachandra P, Hyder AA. Understanding unintentional childhood home injuries: pilot surveillance data from Karachi, Pakistan. *BMC research notes.* 2012;5(1):37.
 12. Gupta PP, Malla GB, Bhandari R, Kalawar RPS, Mandal M. Patterns of Injury and Mortality in Pediatric Patients Attending Emergency Department in a Tertiary Care Center in Eastern Nepal. *JNMA J Nepal Med Assoc.* 2017;56(207):331-4.
 13. Sharma M, Lahoti B K, Khandelwal G, Mathur R K, Sharma S S, Laddha A. Epidemiological trends of pediatric trauma: A single-center study of 791 patients. *J Indian Assoc Pediatr Surg* 2011;16:88-92
 14. Tandon T, Shaik M, Modi N. Paediatric trauma epidemiology in an urban scenario in India. *J Orthop Surg (Hong Kong).* 2007;15(1):41-45. doi:10.1177/230949900701500110
 15. Martinez TML, Rocha CJ, Clavel-Arcas C, Mack KA. Nonfatal unintentional injuries in children aged <15 years in Nicaragua. *Int J Inj Contr Saf Promot.* 2010;17(1):3-11.
 16. Ndung'u A, Sun J, Musau J, Ndirangu E. Patterns and outcomes of paediatric trauma at a tertiary teaching hospital in Kenya. *African Journal of Emergency Medicine.* 2019;9:S47-S51.