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Trauma patients presenting to the emergency department of a tertiary care hospital

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Abstract

Introduction: Trauma is one of the major reasons for visiting the Emergency Department. Road Traffic Accidents, falls, occupational injuries and assaults are the most common causes. The incidence of trauma is increasing in Low and Middle Income Countries. This study aimed to find out the prevalence of trauma in patients visiting the emergency department in a tertiary care hospital in Western part of Kathmandu, Nepal.

Method: After the ethical approval from the National Health Research Council, a retrospective study was conducted in patients with a history of trauma presenting to the Emergency Department of Nepal Armed Police Force Hospital, Balambu, Kathmandu, Nepal from May 2021 to November 2021. Demographic variables, time of incident, time of presentation to the hospital, site of injury and outcomes were recorded in Microsoft EXCEL and analysed using Statistical Package for the Social Sciences version 16.

Result: Total of 153 patients with a history of trauma visited the Emergency Department during the study period. 66.66 % of patients were males. The mean age of the patients was 30.83 ± 17.55 years. Majority of the patients were from 20 to 40 years of age. Fall (59.47%) was the most common mechanism of injury followed by road traffic accidents (16.99%). 87.58% were from Kathmandu Valley. Most of the trauma occurred between 6 am to 6 pm, 83.66% patients were in this section. 43.80% of the patients presented within 30 minutes of incident. Extremity injuries (72.54%) were more common than other injuries. The length of stay in the majority of the patients was less than 6 hours.

Conclusion: Falls and road traffic accidents are the most common causes of physical trauma. Young males are the vulnerable populations.

Keywords: Emergency Department; Nepal; Road Traffic Accidents; Trauma

INTRODUCTION

Traumatic injury amounts to more than 4.4 million victims a year and 8% of the world's deaths.¹ Trauma is one of the major reasons for visiting the Emergency Department. The usual causes are road traffic accidents (RTAs), fall from height, occupational injuries, and assault.² Few decades ago, RTAs used to be the leading cause of permanent disability and mortality among those in productive age in developed countries but currently due to "epidemiology of transition" developing countries are facing similar challenges.³ Thus, the incidence of trauma is higher in Low and Middle Income Countries (LMIC) due to rapid modernization and urbanization, which has led to increased number of automobiles and constructions leading to accidents, falls, mishaps, etc.^{4,5}

Trauma deaths have trimodal distribution with majority occurring within first 60 minutes after trauma, considered as the "golden hour" of trauma.^{6,7} Understanding the epidemiology and demography of trauma patients helps prevention of trauma, identify risk factors, reduce disability, prevent mortality and develop a guide in determining the resources for better prevention and management of injuries. This retrospective study aimed to find out the prevalence of trauma in patients visiting the emergency department,

the most common type of trauma, its presentation and outcome.

METHOD

A retrospective study was conducted in patients with a history of trauma presenting to the Emergency Department of Nepal Armed Police Force from May 2021 to November 2021, a total of six-months duration. Ethical approval was taken from the National Health Research Council with reference number 1961. The study included emergency admission forms of all the patients with trauma presenting to the Emergency Department. Emergency admission forms of patients with status of dead on arrival were excluded.

Along with the demographic variables, mechanism of injury, site and time of injury were also recorded from the admission forms. Length of stay and outcome (admission, discharge or mortality) of those patients were the dependent variables. All the variables were recorded in Microsoft EXCEL and descriptive statistics were analysed using Statistical Package for the Social Sciences version 16.

Table 1. Baseline characteristics of trauma patients presenting emergency department (n=153)

Category	f (%)	Category	f (%)
Sex Distribution		Time of presentation	
Male	102 (66.66%)	Within 30 minutes of injury	67 (43.80%)
Female	51 (33.34%)	Within 1 hour of injury	30 (19.60%)
Time of incident		Within 3 hours of injury	13 (8.50%)
6 am to 9 am	37 (24.19%)	After 3 hours of injury	43 (28.10%)
9 am to 12 pm	37 (24.19%)	Length of stay	
12 pm to 3 pm	22 (14.37%)	Less than 1 hour	4 (2.61%)
3 pm to 6 pm	32 (20.91%)	1 to 3 hours	67 (43.80%)
6 pm to 9 pm	18 (11.76%)	3 to 6 hours	63 (41.18%)
9 pm to 12 am	4 (2.61%)	More than 6 hours	19 (12.41%)
12 am to 3 am	0 (0%)		
3 am to 6 am	3 (1.97%)		

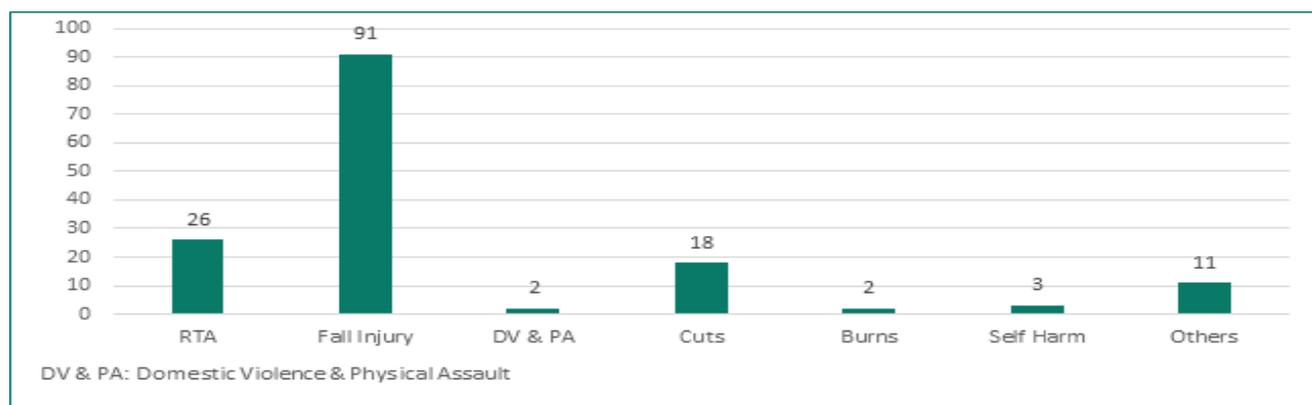


Figure 1. Mechanism of injury of trauma patients presenting emergency department (n=153)

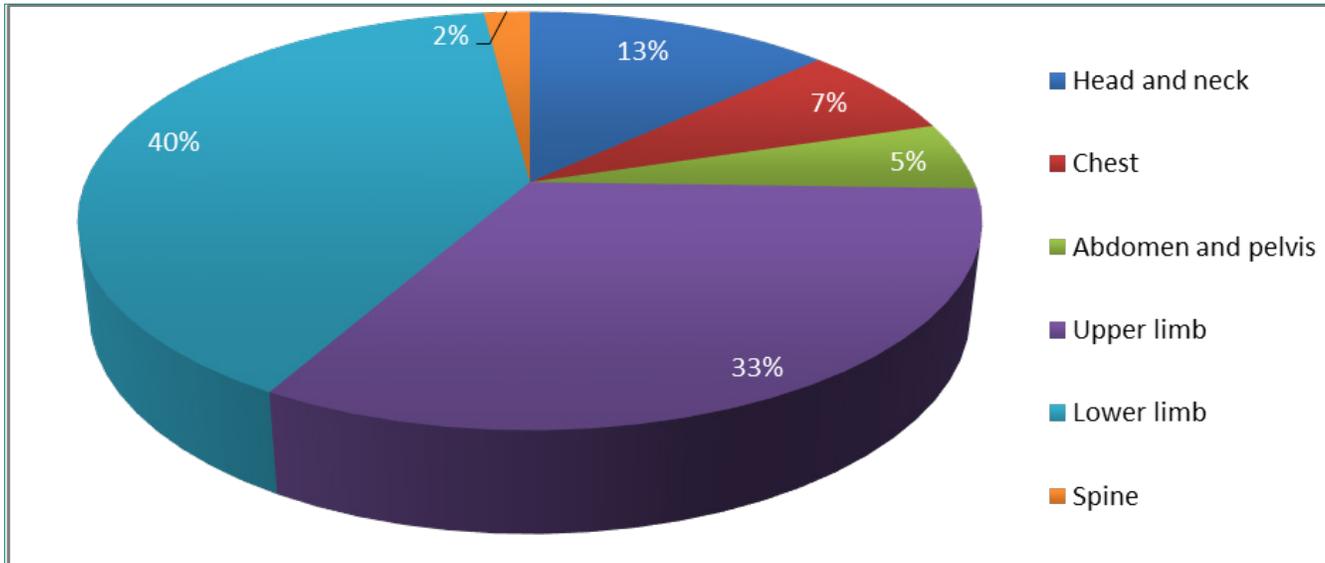


Figure 2. Site of injury of trauma patients presenting emergency department (n=153)

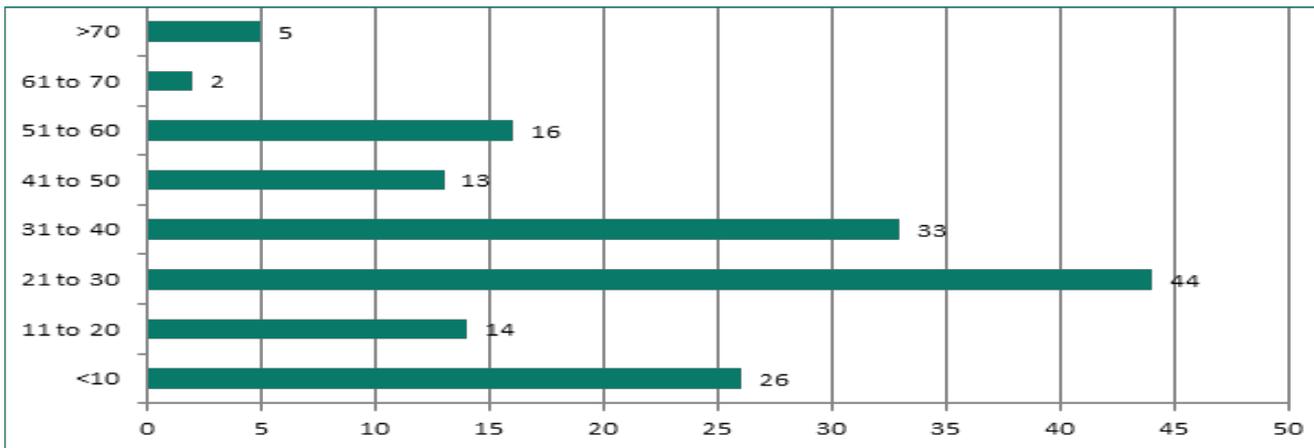


Figure 3. Age group of trauma patients presenting emergency department (n=153)

RESULT

Total of 153(1493) patients with a history of trauma visited the Emergency Department during the study period. 102 (66.66%) patients were males and 51 (33.34%) females (Table 1). The mean age of the patients was 30.83 ± 17.55 years. As shown in figure 1, road traffic accidents (n=26/153, 16.99%) and fall injury (n=91/153, 59.47%) were the most common mechanism of injury followed by domestic violence, physical abuse, cuts, burns and self-harm. 134 patients (87.58%) were from Kathmandu Valley.

Most of the common timing of incident was 6 am to 6 pm, 83.66% patients sustained trauma in between 6 am to 6 pm; 67 (43.80%) of the patients presented within 30 minutes of the incident as shown in Table 1. Extremity injuries (111/153, 72.54%) were more common than other injuries. Figure 2 shows the site of injury.

The length of stay in the majority of the patients was less

than 6 hours. Disposition of 134 (87.58%) patients was done within 6 hours (Table 1). In descriptive analysis of age group, majority of the patients were from 20 to 40 years of age as depicted in Figure 3.

DISCUSSION

Trauma is one of the commonest conditions for which a patient will visit the Emergency Department. Among the 153 patients with the history of trauma that visited the Emergency Department during the study period, there was male preponderance. There were 102 males and 51 females. Various researchers observed similar findings. A meta-analysis of studies on the injuries in South Asia has concluded that around 80% of the injuries occur in males.⁹ Recent observational study done in one of the busiest hospitals of Nepal has found 1932 (68.4%) of the patients were males.⁸ This shows, in comparison to females, males are two times more likely to sustain physical trauma. The mean age of the patients was 30.83 ± 17.55 years.

Majority of the patients were from 20 to 40 years of age. Similar findings were noted in various other national and international studies.^{8,10,11} This can be due to the nature of the work in the young age group, who are more prone to toil outside.

Among the different causes of trauma, falls and road traffic accidents were the common mechanism of injury. They comprised 76% of the total cases. Individually road traffic accidents caused 16.99% of injuries and falls 59.47%. The cumulative causation is consistent with other studies.^{10,11} However, while analyzing individually, most of the studies reported road traffic accidents being the most common cause.¹⁰⁻¹² In this study, falls comprised the majority of the cases. This may be due to the comparative better condition of the roads in Kathmandu Valley, because most of the patients were from within the valley itself.

Incidents of trauma were more common in daytime than in night. About 83% of the patients sustained injury between 6 am to 6 pm. This can be due to the movement of people, which is more in daytime compared to night. Pant R. et al noticed more than 50% of the cases occurred between 12pm to 6 pm, and the least number of the cases of the injury occurred between midnight and early morning.⁸ More than 1/3rd of the patients presented within 30 minutes of incident. In a descriptive study done in Western Nepal, the majority of cases (48.33 %) were admitted beyond 6 hours of accident.¹³ The time of hospitalization or medical intervention and mortality and morbidity are directly related. For better outcomes, early medical intervention is emphasized.

Most of the patients (73%) had extremity injuries. Among them, 50 had upper limb injuries and 61 had lower limb injuries. This finding is consistent with other similar studies.^{14,15} More than 80% of the patients were disposed within 6 hours of arrival. This can be due to majority of injuries being minor and timely consultations. This highlights, timely intervention and disposal of the patients can be a great factor in reducing the overcrowding in the Emergency Department, so that breathing Emergency Department can be maintained.

This study had few limitations. First, being a retrospective study, selection bias cannot be omitted. Second, this was a single-centre study. Obtaining data from various other institutions and analysing the data could have provided more comprehensive conclusions.

CONCLUSION

This study shows that falls and RTA are the most common causes of physical trauma that present in the Emergency Department. Young males predominantly sustain trauma in comparison to females. Extremity traumas are more common compared to other trauma. Timely intervention

and disposal of the patients can be one of the important factors to neutralize the overcrowding.

Time of incident and time of medical intervention are very crucial to determine the outcome of the victim. Equipping the emergency department with infrastructure and proper human resources can save lives. Appropriate preventive measures and legislations can reduce the morbidity and mortality. Further multicentre and prospective studies involving the above-mentioned points would be our recommendations for the researchers.

DECLARATIONS

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Conflict of Interest

None

Funding

None

Ethical Clearance

Taken from the National Health Research Council of Nepal.

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