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Assessment of Demography, Profile and Management of Acute Trauma in Emergency Department

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ABSTRACT
Background: To assess demography, profile and management of acute trauma in emergency department.
Material and Methods: One hundred twenty patients presented with trauma in emergency department of either gender were selected. Parameters such as mode of injury, education, marital status, injury severity score (ISS), Glasgow coma scale, reporting time to emergency, nature of injury, body region involved and management performed was recorded.
Results: Out of 120 patients, males were 70 (58.3%) and females were 50 (41.7%). Age group 0-10 years had 7, 11-20 years had 13, 21-30 years had 35, 31-40 years had 40, 41-50 years had 22 and >50 years had 3 patients. The difference was significant (P< 0.05). The mode of injury was RTA in 75, assault in 32 and domestic violence in 13 cases. Education was illiterate in 45, high school in 60 and secondary school and above in 15 cases. Marital status was married in 32 and unmarried in 88. Reporting time to emergency was <1 hour seen in 75 and >1 hour in 55. Nature of injury was abrasion seen in 22, contusion in 30, fracture in 48 and laceration in 20 cases. Body region involved was chest in 25, head in 40, face in 5, neck in 10, abdomen in 8, upper limb in 20 and lower limb in 12 cases. Injury severity score >15 was seen in 92 and <15 in 28 cases. The difference was significant (P< 0.05). Management of cases done was fluid resuscitation in 34, inotropic infusion in 41 and surgery in 45 cases. The difference was non- significant (P> 0.05).
Conclusion: Maximum cases were seen in age group 31-40, male predominance, ISS >15, with head injury and managed with surgery.
Keywords: acute trauma, emergency department, injury severity score.

INTRODUCTION

Trauma is a major cause of death and social problem. In low- and middle-income countries, trauma accounts to 11% of all disability-adjusted life years. Accidents are the leading cause of death in India. Due to recent technology enhancement, industrialization, rapid motorization, and unsafe driving, the risk of accidents has increased leading to significant financial loss.[1]

Many factors have resulted in the rise of this problem, chief amongst them being- urbanization, motorization, industrialization and change in the socioeconomic values. Road traffic accidents (RTAs) represent a major threat to human lives and have become the number one public hazard worldwide. Each year more than 8 million people suffer injuries and more than 500,000 people die due to RTA.[2]

Trauma registries are facility-based and are not able to provide a burden of disease for the country; however they can provide rapid, and sentinel surveillance at locations where people access trauma care.[3] In addition, they provide data to support systematic approaches to trauma care and prevention, quality improvement in trauma care, as well as opportunities to identify priority targets for public health interventions in the community. Intersectoral efforts and activities are essential for injury prevention strategies.[4] It requires cooperation of various departments including hospitals, police, road transport, engineering, media, health education, and others. A trauma care system encompassing prehospital (emergency), hospital (acute care), and posthospital (rehabilitation services) care is an essential component of preventive and control strategies.[5] We performed this study to assess demography, profile and management of acute trauma in emergency department.

MATERIAL & METHODS

A sum total of one hundred twenty patients presented with trauma in emergency department of either gender were selected in this prospective, observational study. Ethical approval from ethical review committee was obtained. A written consent was obtained from relative of patients before starting the study.

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Data such as name, age, gender etc. was recorded. Parameters such as mode of injury, education, marital status, injury severity score (ISS), Glasgow coma scale, reporting time to emergency, nature of injury, body region involved and management performed was recorded. The results were compiled and subjected for statistical analysis using Mann Whitney U test. P value less than 0.05 was set significant.

RESULTS

Table I Patients distribution

Total- 120		
Gender	**Males**	**Females**
Number (%)	70 (58.3%)	50 (41.7%)

Out of 120 patients, males were 70 (58.3%) and females were 50 (41.7%) (Table I).

Table II Age group wise distribution

Age group (years)	Number	P value
0-10	7	0.05
11-20	13	
21-30	35	
31-40	40	
41-50	22	
>50	3	

Age group 0-10 years had 7, 11-20 years had 13, 21-30 years had 35, 31-40 years had 40, 41-50 years had 22 and >50 years had 3 patients. The difference was significant (P< 0.05) (Table II).

Table III Assessment of parameters

Parameters	Variables	Number	P value
Mode of injury	RTA	75	0.01
	Assault	32	
	Domestic violence	13	
Education	Illiterate	45	0.05
	High school	60	
	Secondary school and above	15	
Marital status	Married	32	0.01
	Unmarried	88	
Reporting time to emergency	<1 hour	75	0.05
	>1 hour	55	
nature of injury	Abrasion	22	0.82
	Contusion	30	
	Fracture	48	
	Laceration	20	
Body region	Chest	25	0.04
	Head	40	
	face	5	
	Neck	10	
	Abdomen	8	
	Upper limb	20	
	Lower limb	12	
ISS	>15	92	0.01
	<15	28	

The mode of injury was RTA in 75, assault in 32 and domestic violence in 13 cases. Education was illiterate in 45, high school in 60 and secondary school and above in 15 cases. Marital status was married in 32 and unmarried in 88. Reporting time to emergency was <1 hour seen in 75 and >1 hour in 55. Nature of injury was abrasion seen in 22, contusion in 30, fracture in 48 and laceration in 20 cases. Body region involved was

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chest in 25, head in 40, face in 5, neck in 10, abdomen in 8, upper limb in 20 and lower limb in 12 cases. Injury severity score >15 was seen in 92 and <15 in 28 cases. The difference was significant (P< 0.05) (Table III).

Table IV Management of cases

Management	Number	P value
Fluid resuscitation	34	0.76
Inotropic infusion	41	
Surgery	45	

Management of cases done was fluid resuscitation in 34, inotropic infusion in 41 and surgery in 45 cases. The difference was non- significant (P> 0.05) (Table IV).

DISCUSSION

There is growing burden of trauma related injuries worldwide. Disparity exists in trauma care facilities between developing countries and developed countries.[6] In developed countries a multi-tiered system approach to injury prevention and trauma care has led to considerable reductions in morbidity and mortality.[7] Hospital-based trauma registries have been an integral part of these systems, allowing rigorous evaluations of public health and hospital-based strategies towards decreasing the burden of trauma and improved outcomes.[8,9] We performed this study to assess demography, profile and management of acute trauma in emergency department.

In our study, out of 120 patients, males were 70 (58.3%) and females were 50 (41.7%). Manwatkar et al[10] in their study 105 patients presented with trauma in surgical emergency centre were included. Out of 105, 76 (72.38%) were male and 29 (27.61%) were female with 21 (20%) in the 31-40 age group. The average age of cases was 40.2 years. RTA was the major cause of trauma i.e. (77.14%) followed by accidental fall and slips (18.09%) and assaults (4.76%). Contusion was the common injury sustained (45.71%) followed by laceration (38.09%), abrasion (35.23%) and fracture (17.14%).

In our study age group 0-10 years had 7, 11-20 years had 13, 21-30 years had 35, 31-40 years had 40, 41-50 years had 22 and >50 years had 3 patients. Khan et al[11] in their study found that males were 155 (77.5%) and females were 45 (22.5%). M: F ratio of (3.4:1). Educational status of the victims showed that 64(34%) of injured belonged to formally un-educated class. Commonest mode of injuries, 93(46.5%) were due to fall from height, 2nd being 62 (31%) road traffic accidents (RTAs). Mode of injury had no statistical significance to injury severity or severity of neuro-trauma. Family members accompanied 119 out of 200 (59.5%). 183 (91.5%) were transported by common means of local non-ambulance transportation. Time interval from pack and go of the victim from its place near the incident to arrival in our emergency room was considered care delay. Care delay of the study patients showed that only 65(32.5%) patients reported to our hospital within one (Golden) hour and about two third, 135(62.50%) reported after one (Golden) hour. Study of the pre-hospital life support-stabilization showed that only 53 (26.5%) out of 200 patients received some elementary first aid before arriving. Incidence of accidents was slightly more in country side 77(38.5%). Higher scores were associated with worse outcome. Brain injury and neuro-trauma severity scaled by (3–15 point) Glasgow coma scale with severity score (0–4) showed that only 3 (1.5%) study patients had severe brain trauma while 30 (15%) had moderate brain trauma and 167 (83.5%) had only mild to no neuro-trauma.

We observed that mode of injury was RTA in 75, assault in 32 and domestic violence in 13 cases. Education was illiterate in 45, high school in 60 and secondary school and above in 15 cases. Marital status was married in 32 and unmarried in 88. Reporting time to emergency was <1 hour seen in 75 and >1 hour in 55. Nature of injury was abrasion seen in 22, contusion in 30, fracture in 48 and laceration in 20 cases. Body region involved was chest in 25, head in 40, face in 5, neck in 10, abdomen in 8, upper limb in 20 and lower limb in 12 cases. Injury severity score >15 was seen in 92 and <15 in 28 cases. Harna et al[12] in their study depicted the RTAs as the most common cause affecting adults between 20 years and 40 years. The study reports other risk factors like alcohol intoxication and motorcycle riders. Mostly, the patients present in a semiconscious and disoriented state requiring fluid resuscitation. Abrasions and bruises in the extremities stand out as the most common injury pattern. The fractures suffered were the most common injury suffered by the patients.

Management of cases done was fluid resuscitation in 34, inotropic infusion in 41 and surgery in 45 cases. Watson et al[13] found that the most frequent mechanisms of injury were falls (58.3%), motor vehicle crashes (22.3%), and motorcycle crashes (5.7%). Fall patients were more likely to be female (59.6%) and were the oldest age group (72.1 ± 17.2) compared to motor vehicle and motorcycle crash patients. Severe head (22.1%) and extremity (35.7%) injuries were most frequent among fall patients, however, more motorcycle crash patients required mechanical ventilation (16.1%, $p < 0.001$) and experienced the longest intensive care unit length of stay (5.3 ± 6.8 days, $p < 0.001$) and mechanical ventilation days (6.6 ± 8.5, $p < 0.036$). Motorcycle crash

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patients also had the greatest number of deaths (7.5%, $p < 0.001$). The generated maps of all traumas suggested that most injuries occur near our hospital and are located in several of the most population-dense zip codes.
DiMaggio et al[14] found that there were 181,194,431 traumatic injury discharges from US emergency departments. The all-age, all-cause case-fatality rate for traumatic injuries across US emergency departments during the study period was 0.17%. The case-fatality rate for the most severely injured averaged 4.8% and severely injured patients were nearly four times as likely to be seen in Level 1 or 2 trauma centers. There were notable changes at the extremes of age in types and causes of emergency department discharges for traumatic injury between 2009 and 2012. Age-stratified rates of diagnoses of traumatic brain injury increased 29.5% for adults older than 85, and increased 44.9% for children younger than 18. Firearm related injuries increased 31.7% in children five years and younger.

CONCLUSION

Maximum cases were seen in age group 31-40, male predominance, ISS >15, with head injury and managed with surgery.

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