Epidemiology of patients admitted to a major trauma centre in northern India

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【**Abstract**】 **Objective:** Trauma in India is an increasingly significant problem, particularly in light of rapid development and increasing motorization. Social changes are resulting in alterations in the epidemiology of trauma. The aim of the study was to assess the various epidemiological parameters that influence the cause of injury in the patients admitted to a major trauma centre in northern India.

Methods: An observational study of 748 patients chosen by random assortment was carried out over a period of 1 year (August 2008 to July 2009). Age, sex, injury type and pattern were noted. Injury mode of upper and lower limbs was also noted.

Results: Injuries occur predominately in the age group of 15-30 years. Males incurred more injury with male to female ratio of 6:1. The most vulnerable group was motorcycle users. Among the injured, farmers were the most commonly involved. Blunt injuries (94.92%) were much more common than penetrating injuries. Among patients with head injury, two wheelers related accidents were the most common (40.3%). Most spinal cord injuries were caused by falls from height (51.09%). Most lower limb fractures were simple type. Compound fractures of the lower limb were more common than upper limb fractures.

Conclusion: Strict enforcement of traffic rules, combined with improved infrastructure and behavior change can decrease the burden of road traffic accidents in India and other developing countries. This study could assist in raising the profile of road traffic accidents as a public health problem which needs to be addressed as a preventable cause of mortality and morbidity, and planning appropriate interventions for this major challenge. Preventive strategies should be made on the basis of these epidemiological trends.

Key words: ***Wounds and injuries; Epidemiology; Accidents, traffic; India***

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Countries are passing through significant urbanization, motorization, industrialization and a change in the socioeconomic values. India is no different to this change. Due to these changes, road traffic accidents (RTAs) have become the first public hazard in the world, which results in one of the largest threat against human lives and safety.[1] Injury is now a leading cause of mortality and morbidity worldwide. Injuries on roads, at home and in work place have increased due to lack of safety-related policies and programs. Each year 300 000 people die of RTA and more than 8 million people suffer injuries. India is the leading country in the number of deaths due to RTA.[2] In 2007, 114 590 people died of RTA in India alone.

The epidemiology of injuries sustained due to trauma is poorly understood. There are few studies from developing countries discussing the epidemiology of trauma.[3-6] This study aims to assess the epidemiology of injury in patients admitted to a major trauma centre in northern India.

METHODS

This was an observational study conducted at the trauma centre attached to King George Medical College. Over a 1-year period (August 2008 to July 2009), a total of 748 patients were chosen by random assortment during this period.

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A detailed history and examination of all patients was done with regards to age, sex, injury type (blunt/penetrating) and mode. Apart from these injury patterns, causes of head and spinal cord injury were also noted. The types of injury were divided into subgroups: head injuries, chest fracture, pelvis fracture, hip fracture, and lower/upper limb fracture, abdominal injuries and so on.

RESULTS

Table 1 shows the various injury patterns sustained by the population under study. The majority of victims were males (638, 85.3%).

Table 1. Demographic and injury variables

Variables	*n* (%)
Age	
<15	161 (21.5)
15-30	255 (34.1)
31-50	234 (31.3)
>50	98 (13.1)
Sex	
Male	638 (85.3)
Female	110 (14.7)
Mode of injury	
Motorcycle accidents	240 (32.1)
Falls	217 (28.8)
Pedestrian	72 (9.6)
Bicycle accidents	62 (8.2)
Car accidents	72 (9.6)
Heavy motor vehicle accidents	31 (4.1)
Animal hurt	12 (1.6)
Firearm injury	10 (1.3)
Train accidents	6 (0.8)
Others	26 (3.4)
Pattern of injury	
Head injury	428 (57.2)
Abdominal injury	232 (31.0)
Upper limb fractures	222 (29.7)
Lower limb fractures	211 (28.2)
Torso injury	602 (80.5)
Chest injury	181 (24.2)
Spinal cord injury	137 (18.3)
Pelvis injury	52 (7.0)

Young adults aged 15-30 years (34.1%) constituted the most unintentional accidental injuries followed by the age group of 31-50 years (31.3%).

The most vulnerable group was motorcycle users. Almost half of the admissions were contributed by motorcyclists, pedestrians and cyclists. Among the injured patients, farmers (32%) were the most common group affected, followed by laborers (28%), students (18%) and office goers (7%). Of the victims, 10.65% had alcohol in their blood at the time of accident.

Blunt injuries (94.92%) were much more common than penetrating injuries. Among the injured patients of RTA, two-wheeler vehicle collision (12.30%) constituted the maximum percentage. Pedestrians represented the majority of victims sustaining injury as a result of being knocked by a vehicle, motorbike or cycle.

Among the injured patients, the majority of accidents took place on concrete road (62.18%) followed by temporary sand road (31.92%) and rumbled roads (5.90%). The admissions due to accident in rural areas were almost twice (65.31%) as many as those in urban areas (34.69%). Poor visibility of vehicle or road contributed to the injuries in 29.94% of cases in which pedestrians were most commonly involved.

Among the patients of head injury, two wheelers-related accidents were the most common cause (40.3%). Most spinal cord injuries were caused by fall from height (51.09%, Table 2).

Table 2. Relation between mode of injury and spinal cord injury

Mode of injury	Spinal cord injury (*n*, %)
Falls	111 (51.09)
Motorcycle accidents	43 (19.71)
Cars/Trucks accidents	22 (10.22)
Bicycle accidents	8 (3.65)
Pedestrian	8 (3.65)
Animal hurt	8 (3.65)
Train accidents	5 (2.19)
Gunshot	3 (1.46)
Occupational hazard	2 (0.73)
Others	6 (2.92)