

Profile of Nonfatal Injuries in Road Traffic Accidents Cases Treated at a Tertiary Level Trauma Centre

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Abstract

Background: Road traffic accidents (RTAs) are the major cause of preventable injury, consuming a large share of public health resources. A lack of trauma registry leads to ineffective predictive models.

Aims and Objectives: To study in detail parameters that describe nature and severity of injury along with demographic details for nonfatal RTA cases which can be used to develop the better prediction models to reduce morbidities and a more effective allocation of resources.

Methods and Materials: A retrospective study including all the nonfatal RTA cases presenting at our institute for 3 months duration, from January 2015 to March 2015. Information regarding name, age, gender, demography, time of occurrence, site of injury according to the injury severity score (ISS) mode of treatment given, clinical department which treated the patient, length of stay in hospital and the final outcome was recorded of all the eligible patients (1047). Patients were classified using ISS parameters.

Results: A total of 1047 patients were studied. A mean age was 34.4 years, 82% were males, maximum number of patients (28%) were young adults (20-29 years), head injury was present in more than half of the patients (575) followed by lower extremity (419), upper extremity (290), and face (250), 43% were admitted for indoor care, 52% of total admissions were in neurosurgery department and 37% were admitted in orthopedics, 45% of the admitted patients needed operative treatment, average length of stay was 8.7 days.

Conclusions: This study helped us in finding out certain characteristics which may be useful for planning preventive strategies and redirect public investment in preventive strategy and educational inputs for better safety measures.

Key words: Nonfatal road traffic accidents, Trauma registry, Epidemiology, Trauma prevention

INTRODUCTION

According to the recent WHO report, trauma would become the third largest killer in developing countries by 2020.^{1,2} About 20-50 million are injured every year in road

traffic accident (RTA) cases. Road crashes cost about USD \$518 billion globally. In India, RTAs and injuries account for 17% of disability-adjusted life years losses. It burdens the economy by 550 crores (12.5 billion dollars), an amount that is equal to our defense budget.³⁻⁷

When we look at the total burden of a busy trauma center, we can have an insight that majority of the cases which are nonfatal and can be diverted to the second level of care so that resuscitation facilities can be spared for more critical patients.

By doing this retrograde observational study, we want to derive exact data which can provide us useful information

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about the type, severity, nature, pattern of injury, and timings of RTAs. Simultaneously, we also want to study that with injuries related morbidity and its effect on the hospital stay and outcome of the patient.

Each region rather state has its peculiarities and behavior patterns which can affect nature of injuries. Even the economy and culture of the state can also affect driving pattern and traffic discipline.

Good quality, reliable, and representative information are a basis to make injury prevention programs. However, very little information is available from the centers that have been used many times in policy making.

Trauma registry is also very helpful in monitoring changing trends, identifying new problems, selecting interventions, and measuring the impact of interventions in an orderly timely manner.⁸

Hence, we decided to study the epidemiology and pattern of RTAs at our hospital.

MATERIALS AND METHODS

A retrospective study was planned using medicolegal case records department as the source of all required information as all the RTA cases presenting to trauma center of this institute are recorded and treated as medicolegal cases.

For the purpose of the study, RTA was defined as “an accident which took place on the road between two or more objects, one of which must be any kind of moving the vehicle.”⁹

Data of all RTA cases presenting from January 2015 to March 2015 was analyzed with respect to name, age, gender, demography, time of occurrence, site of injury according to the injury severity score (ISS) mode of treatment received, clinical department which treated the patient, length of stay in hospital and the final outcome.

In accordance to the ISS, the body parts were divided into head, face, neck, thorax, abdomen, spine, upper extremity, and lower extremity for better understanding and comparability with other studies.

Cases with incomplete or incomprehensible records were filtered out.

The information we analyzed from this study was disseminated to promote the awareness and participation among the concerned professionals on various aspects of the RTAs.

RESULTS

The data collected from January 2015 to March 2015 showed a total of 1047 patients. Males (82%) were more commonly involved than females (18%) (Figure 1).

Mean age was 34.4 years, young adults (20-29 years) were found to be more commonly involved in accident cases (Figure 2).

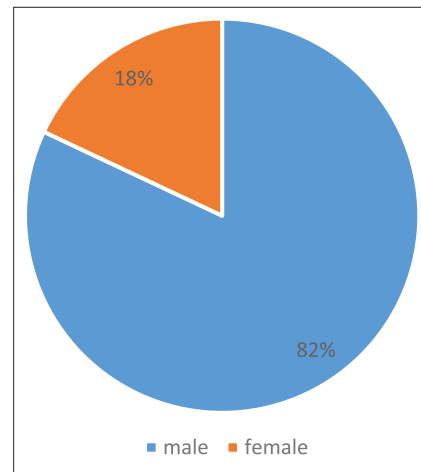


Figure1: Percentage distribution of Road Traffic Accident cases according to sex

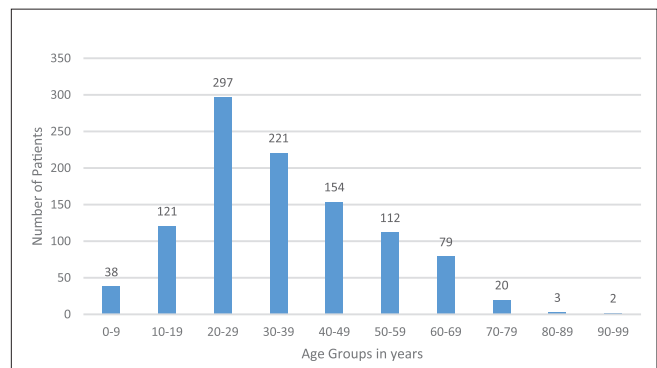


Figure 2: Age distribution of road traffic accident cases

Time most prone for accidents was 8:00 pm to 12:00 am midnight (Figure 3).

Head injury was the most common injury in RTA cases comprising more than 50% of the patients, followed by lower extremity, upper extremity and face in the decreasing order (Table 1).

About 43% of the RTA cases needed indoor care in various departments while 57% were treated on outdoor basis (Table 2).

Most of the indoor patients were admitted in neurosurgery (52%) and orthopedics (37%) department (Figure 4).

Table 1: Involvement of body parts in the road traffic accidents

Part of the body involved	Number of patients
Head	575
Face	250
Neck	11
Upper extremity	290
Spine	20
Thorax	36
Abdomen	36
Lower extremity	419
Perineum	1

Table 2: Distribution of RTA cases on basis of indoor and outdoor care

Total number of patients	1047
Indoor	452
Outdoor	595

RTA: Road traffic accident

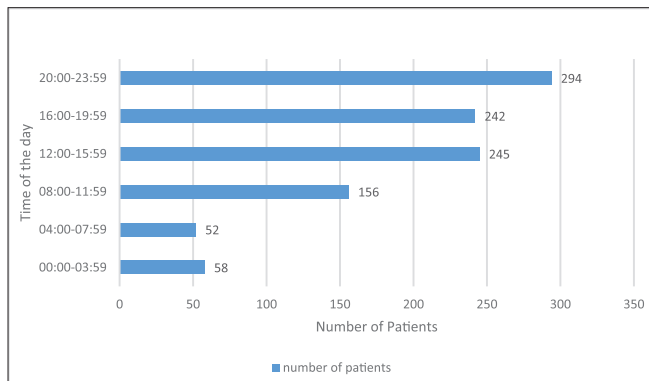


Figure 3: Time distribution of road traffic accident cases

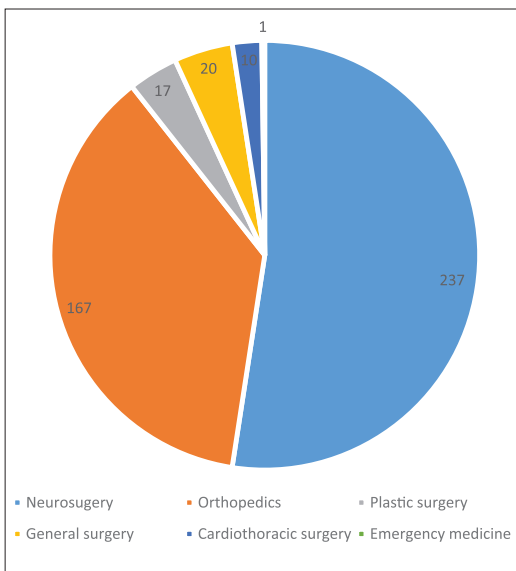


Figure 4: Department wise distribution of admitted cases of road traffic accident cases

About 45% of the admitted cases needed at least some kind of operative intervention (Table 3).

Around 20% of the patients admitted in neurosurgery needed operative intervention, while in orthopedics 80% of the patients were operated (Table 4).

The average duration of stay of indoor patients was 8.7 days.

DISCUSSION

In India, just like in any other developing country, there has been an increase in motor vehicular accidents due to rapid urbanization and development of newer, faster, and heavier vehicles. This has resulted in increased amount of trauma. Our study provides comprehensive and useful insight into the epidemiology of trauma in Ahmadabad. Little literature is available for such issues in India, and a few international papers exist because of the difficulty in obtaining the reliable and detailed data and analyzing it.

Age group of 20-29 years was found to be the most commonly involved in RTAs highlighting the need for better safety education in this age group to reduce the incidence of RTAs. Other studies have found the similar outcomes 9, while some others found the age group of 25-34 to be the most common involved 4, this shows that the people in the most active and productive years of life are involved in RTAs, which amounts to a serious economic and emotional loss to their families and community as well. We found out that below and above the age of 20 and 49 years, the proportion of accidents was low. This may be because children are generally taken care of by elders and comparatively less use of vehicles in the adolescent age group. A lower incidence of RTAs in people aged 60 years and above may be due to generally less mobility of these people.

According to this study, accident rates were higher in males than in females in the ratio of 4.6:1, other studies also indicate the same 4, and there were 83% male and 17% female victims at JIPMER, Pondicherry.⁹

A number of accident cases was higher from 8:00 pm to 12:00 midnight due to increase in the traffic at this time compared to the rest of the day, indicating the need for better regulation of traffic in these hours. Late night accidents might be due to comparative less traffic leading to a tendency of over speeding by drivers and then leading to accidents. Hence, strict speed monitoring policies and educational policies should be implemented by the authorities.

Table 3: Distribution of admitted cases according to mode of treatment (operative/conservative)

Total admitted RTA cases	452
Conservative	248
Operative	204

RTA: Road traffic accident

Table 4: Inter-departmental variation in mode of treatment of RTA cases

Neurosurgery		Orthopedics	
Total patients 237		Total patients 167	
Operated	Conservatively managed	Operated	Conservatively managed
48	189	134	33

RTA: Road traffic accident

Head was the most commonly involved part of the body, highlighting the need for protective gear for head like helmets. Moreover, it again tells us to spread loud words of awareness for safety rules while driving.

Nearly 43% of the RTA cases needed admission highlighting the amount of burden RTA cases put on health resources of hospitals, further 45% of those admitted required some operative intervention.

Neurosurgery and orthopedic departments handled almost 90% of the RTA cases highlighting the need for better equipping and specialized training in these departments for more effective management of such cases. These departments require more manpower and skilled personnel to manage the workload.

The average duration of stay was found to be 8.7 days. For a tertiary care trauma center like us, the majority of patients are of poor or lower middle socioeconomic class, so these many days of loss of work, to the patient and the attendant creates additional burden on the family.

In our institute, only 20% of the patients admitted in neurosurgery needed operative intervention as we tend to have a low threshold for admission of patients with a head injury while in orthopedics 80% were treated operatively as only serious injuries requiring operation were mainly admitted while non-serious injuries were treated on outdoor basis. This highlights the need for distribution of resources accordingly.

In recent times, just like many other developing nations, road transport and health ministry of India are spending a lot of resources for developing trauma institutes, in such times, this kind of studies provide a very valuable source of information. Studies like this have been conducted in

some other cities such as Delhi, Mumbai, and Lucknow. They have helped dramatically in the development of more effective trauma centers.¹⁰ There is a lack of accurate and uniform data in developing countries like India as trauma registry is in very primitive state as of now.

CONCLUSION

The study of RTA cases at the emergency department of our hospital helped us find out some useful characteristics of this trauma epidemic, these characteristics may be useful for planning prevention strategies such as the development of protection mechanisms, stimulating the enforcement regarding the compliance of traffic rules by drivers and pedestrians, awareness of safety measures in an attempt to reduce the number and severity of accidents and redirect public investment in health for better facilities in trauma care.

In today's world of advanced technology, it is vital to set up trauma registry. Such registry is already available in high-income group countries while in low-income group countries trauma registry is virtually non-existent and in fact, more trauma victims are seen in these countries. A genuine initiative in this regard has been taken up by Government of India, Science and Technology Department in collaboration with Australian Government. Australia-India Trauma System collaboration-a research program has been started in 2014 at AIIMS, New Delhi, Sion Hospital, and Mumbai and at VS Hospital and NHL Medical College at Ahmedabad. A pilot project of trauma registry has been started in this year and once the results are verified, across the India in other major hospital trauma registry can be started which is very essential for optimum outcome in trauma cases. This will further reduce the load on economy by avoiding morbidity and dependency and wastage of resources.

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