Research Article

Epidemiology and injury pattern of road traffic accident cases

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Abstract

Injury and deaths due to road traffic accidents are a major but neglected public health problem in developing countries. This ever expanding epidemic targeting the young and productive generation is likely to take heavy burden on quality of life and economy of the nation. The present study was conducted in Rajiv Gandhi Institute of Medical Sciences, Adilabad to study epidemiology and injury pattern of Road Traffic Accident (RTA) cases. The present study was a retrospective record based study and data was collected using questionnaire method. A total of 504 RTA cases were studied from the case records of the medical records section of Rajiv Gandhi Institute of Medical Sciences, Adilabad during the period of October 2010 to September 2011. The results revealed that (i) out of total 504 RTA cases, 395 (77.3%) of the victims were males and the rest 109 (22.7%) were females. (ii) The highest number of victims 186(36.90%) were from 21-30 years of age group.(iii) The highest number of Accidents took place in February (11.71%) and on Sunday (18.06%) during 6 p.m. to 9 p.m. (27.58 %) (iv) Head, neck and face was involved in 219 (32.93%) cases while out of total 161cases of fractures, the commonest site of fracture was lower limb in 75 (46.58%) cases.
Keywords: Road traffic Accident, Epidemiology, Injury pattern.

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INTRODUCTION

An accident is "occurrence in a sequence of events which usually produces unintended injury, death or property damage". Accidents represent a major epidemic of non-communicable disease in the present century. They are part of the price we pay for technological progress[1]. Road traffic injuries and fatalities are major social, economic, health and development problem[2]**.** According to WHO's global burden of disease project for 2004, road traffic crashes caused over 1.27 million deaths each year and injuries about four times this number. Road traffic injuries affect all age group, but there impact is more striking among the young[3]. Road traffic injuries are consistently one of the top three causes of death for people aged between 5 and 44. In fact, road traffic injuries alone ranked as the number one cause of the burden of disease among those in the age group 15 to 29 years and as the number two cause in children between 5-14 years. This heavy burden at such an early age has long-term implications on the quality of life and economy of the nations[4]. The road traffic injury problem began before the introduction of the car. However, it was with the car – and subsequently buses, trucks and other vehicles –which the problem escalated rapidly. By various accounts, the first injury crash was supposedly suffered by a cyclist in New York City on 30 May 1896, followed a few months later by the first fatality, a pedestrian in London[5]. The World Health Organization has reported in its first ever Global Status Report on Road Safety that more people die in road accidents in India than anywhere else in the world. It said 90% of deaths on the world's roads occur in low and middle-income countries (21.5 and 19.5 per lakh of population, respectively) though they have just 48% of all registered vehicles[6]. The morbidity and mortality burden in **developing countries** is rising due to various factors like

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growth in the numbers of motor vehicles; poor enforcement of traffic safety regulations; inadequacy of health infrastructure, and poor access to health care[7]. The 2010 report of the National Crime Records Bureau reveals that total of 4,61,757 'Traffic Accidents' were reported during the year comprising 4,30,654 'Road Accidents'and 1,33,938 people in India lost their lives in road mishaps. Deaths in 'Road Accidents' in the country have increased by 5.5% during 2010 compared to 2009. These numbers translate into one road accident every minute and one road accident death every four minutes. However, this is an underestimate, as not all injuries are reported to the police[8]. India accounts for only 1% of the world vehicle population but accounts for 6% of accidents and 10% of fatalities due to road traffic injuries. Nearly 3% of our GDP is spent on the hospitalization of the accident victims[9]. Adilabad is a tribal district located in the Telangana. The present study was planned to understand epidemiology and injury pattern of road traffic accident cases admitted at RIMS, Adilabad.

OBJECTIVES

The present study has been carried out to study-

1. Some epidemiological features of road traffic accident cases admitted at RIMS, Adilabad
2. Injury pattern in road traffic accident cases

MATERIALS AND METHODS

This study was conducted at Rajiv Gandhi Institute of Medical Sciences, Adilabad. The study includes road traffic accident cases reported and recorded from October 2010 to September 2011. Data was collected from the medical records section of the hospital, based on the prepared questionnaire (for collecting relevant information) after due permission from the responsible authorities and confidentiality was maintained in obtaining information related to accident events.

Study Design: Retrospective record based study

Sampling Method

Case papers of Road traffic accidents from the medical records section were read and the necessary details were sought in terms of age, sex, religion, place of accident, time of accident, day and month of accident and injury pattern. The statistical analysis was done and the results were interpreted in terms of %, mean, S.D,

Sample size

A total of 504 RTA cases were studied from the case records of the medical records section during the period of 1st October 2010 - 30 September 2011. All the road traffic accident cases coming in the particular specified time period were taken. All the 504 cases were studied and analyzed for the different variables.

RESULTS

Socio-demographic profile of Road Traffic Accident Cases

Out of total 504 RTA cases, 395 (78.37%) of the victims were males and the rest 109 (21.63%) were females with the ratio of 3.62: 1. The highest number of victims 186 (36.9 %) were from 21-30 years of age group followed by 86 (17.06%) in the age group of 31-40 years. If we considered age group 21-40 years, it shows more than half of total RTA victims (55.96%). The mean age of the RTA victim came out to be 32.4 yrs with standard deviation 15.03 (Table 1) Most (82.94%) of the victims were Hindus.

Table 1: Age and sex wise distribution of RTA cases

Age	Male	Female	Total
0-10	17	09	26
11-20	57	20	77
21-30	158	28	186
31-40	74	12	86
41-50	48	20	68
51-60	32	15	47
>60	09	05	14
Total	**395**	**109**	**504**

Place and Time factor in Road Traffic Accidents cases

Table 2 shows the place of occurrence of RTA. It shows that frequency of RTA was more (64.88%) in the rural areas than urban areas (35.12%). Table 3 shows that the highest number 139 (27.58 %) of RTA cases were reported during 6 p.m. to 9 p.m. followed by 3 p.m. to 6 p.m. (94) and 9 pm to 12 midnight (79). The highest number 91 (18.06%) of cases were reported on Sundays followed by Monday (Table 4). The maximum number (59, 11.71%) of RTA cases reported in the month of February followed by December (Figure. 1).

Table 2: Place of Road Traffic Accident

Place of Accident	No	%
Rural	327	64.88
Urban	177	35.12
Total	**504**	**100**

Table 3: Time of accident

Time	No.	%
12 midnight to 3 am	20	3.97
3 am to 6 am	11	2.18
6 am to 9 am	27	5.36
9 am to 12 noon	69	13.69
12 noon to 3 pm	65	12.90
3 pm to 6 pm	94	18.65
6 pm to 9 pm	139	27.58
9 pm to 12 midnight	79	15.67
Total	**504**	**100**

Table 4: Week Day wise distribution of RTA cases

Week Day	No.	%
Monday	84	16.67
Tuesday	81	16.07
Wednesday	60	11.90
Thursday	76	15.08
Friday	58	11.51
Saturday	54	10.71
Sunday	91	18.06
Total	**504**	**100**

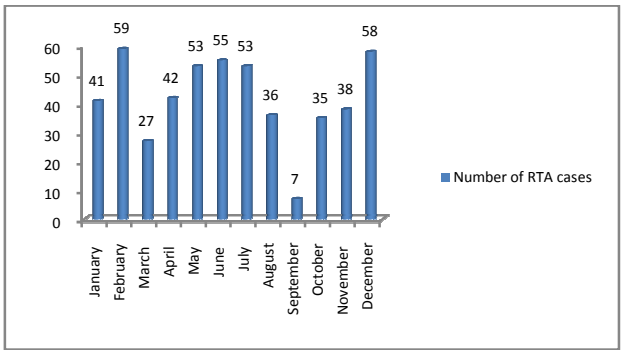

Figure 1: Month wise distribution of RTA cases

Pattern of injuries

Regarding injuries, 299 cases (59.32%) attending hospital had simple, while 190 cases (37.70%) had grievous and 15 cases (2.98%) had dangerous injuries (Figure 2). A maximum number of 219 cases (32.93%) were observed to be involving head, neck and face followed by lower limbs 121 cases (18.20%), chest 56 cases (8.42%), upper limbs 45 cases (6.77%) while in 195 cases (29.32%) there was involvement of multiple sites (Table 5). Table 6 shows that total 161 RTA cases had fractures at different sites. The commonest site of fracture was lower limb 75 cases (46.58%) followed by upper limb 29 cases (18.01) and skull 17 (10.56%).

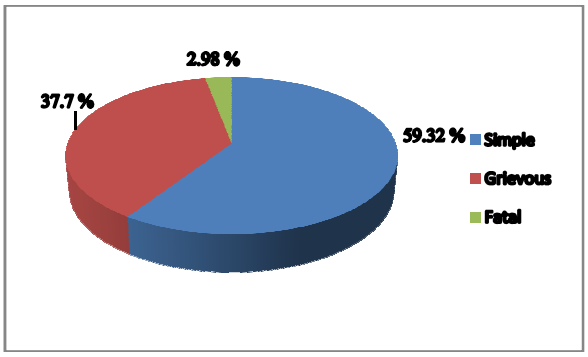

Figure 2: Type of injury

Table 5: Site of injury

Site of injury	No	%
Head, Neck and Face	219	32.93
Upper extremity	45	6.77
Lower extremity	121	18.20
Abdomen	6	0.90
Chest	56	8.42
Back	11	1.66
Pelvis	12	1.80
Multiple sites	195	29.32
Total	**665**	**100**

Table 6: Site of fracture

Site	No	%
Skull	17	10.56
Face	6	3.73
Upper limb	29	18.01
Clavicle	13	8.08
Scapula	3	1.86
Ribs	8	4.97
Pelvis	8	4.97
Lower limb	75	46.58
Spine	2	1.24
Total	**161**	**100**

Break up cases as per Outcome from RTA (at hospital discharge)

There was only 2.98 % mortality (15 cases) while 45.63 % cases (230 cases) recovered and discharged. Outcome in 51.19 % cases who were LAMA/absconded/Referred to higher centre was not known.

Table 7: Outcome at Hospital Discharge

Outcome	No	%
Discharge	230	45.63
absconded	121	24.01
LAMA	16	3.17
Referred to higher institute	121	24.01
Expired	15	2.98
Total	**504**	**100**

DISCUSSION

The results of the present study revealed highest (36.9%) percentage of RTA cases were in the age group of 21-30 years. Similar findings were observed in other studies[10,11,12]. A higher number of cases in this age group can probably be explained on the basis that this is the most active period of life during which there is a tendency to take risk. It was observed that 67.46% of victims were in the age group of 20 to 49 years. This results in the serious economical loss to the community being the most productive age group, it results in huge productive man-days lost and also expenditure on treatment. Similar observations were also made in other studies[11,12,13,14]. The mean age of the RTA victim came out to be 32.4. The male: female ratio observed in this

study was 3.62:1. The predominance of males was also observed by many authors[11, 12,13,14,15]. This may be due to the fact that in our society as males are the bread earners for the family and therefore involved usually in outdoor activities exposing themselves to accidents while females lead a less active life and mostly remain indoors. Regarding time of occurrence of injury, findings of our study mimics the findings presented by a latest report of National Crime Records Bureau [8]. Maximum 139 (27.58%) of RTA cases were reported during 6 p.m. to 9 p.m. followed by 3 p.m. to 6 p.m. (18.65%) and 9 pm to 12 midnight (15.67%) In the present study, the highest number of reported accident cases occurred on Sundays - 91 (18.06%) cases and Monday - 84 (16.67%) cases. Sundays is the holiday and Monday is the first working days of the week: this could be the possible reason for the large number of accidents on these days. People celebrate Sunday as holiday and possibly are in a hurry to go to various places to join their working places on the following Monday. Jha N[10] also observed the highest number of RTAs on Sunday. In the present study, the higher number of reported accident cases occurred on week days (Monday-Fridays) 71.23%, when compared to weekends (Saturdays and Sundays) 28.77%. Another study[14] also noted similar finding while others studies have observed more accident cases on weekends.[16] In our study 299 cases (59.32%) attending hospital had simple injuries, while 190 cases (37.70%) had grievous and 15 cases (2.98%) had dangerous injuries. In other study[9] 66% cases attending hospital had simple, while 32% grievous and 2% had dangerous injuries. It was observed in this study that the maximum numbers of injuries were seen in the head, neck and face (32.93%) followed by lower limbs (18.20%), chest (8.42%) upper limbs (6.77%) while in 195 cases (29.32%) there was involvement of multiple sites. In Feasibility study for injury surveillance at Dr. Ram Manohar Lohia Hospital, New Delhi[9] A maximum no of 503 cases (25%) were observed to be involving head in the body region followed by lower limbs 499 cases (25%) upper limbs 370 cases (18%). Gangveer and Tiwari from Medical College, Nagpur[17], reported that lower extremity (45.39%) mostly affected by injury and multiple sites in (26.95%) cases. Out of total 161cases of fractures, the commonest site of fracture was lower limb (46.58%) followed by upper limb (18.01%) and skull (10.56%). Gangveer and Tiwari from Medical College, Nagpur[17], reported that fracture of long bones in lower limb was the commonest injury (46%) among RTI patients. Jha *et al*[18] also reported the similar finding stating lower limb as commonest site of fracture followed by upper limb and facial bone. There was 2.98 % mortality (15 cases) while 45.63 % cases (230 cases) recovered and discharged. Outcome in 51.19 % cases who were LAMA/absconded/Referred to higher centre was not known. Other study[9] reported 2% mortality while 83% cases recovered. Outcome in 14% cases who were LAMA/absconded is not known.

CONCLUSION

In our study we found that out of total 504 cases, 77.3% of the victims were males with highest (36.9%) percentage of RTA cases were in the age group of 21-30 years. The most of the accidents took place on Sunday and Monday and most common time of accident was between 6 p.m. to 9 p.m. Most of the injuries were simple and commonest part of involvement noted was head, neck and face while commonest site of fracture was lower limb.

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