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Original Research Article.

Pattern of Injuries in Road Traffic Accidents in Ranchi, Jharkhand: An Autopsy Based Study

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ABSTRACT

Introduction: Road traffic accidents (RTA) are increasing at an alarming rate throughout the world. No age group is immune from the RTA. In recent years the incidence of road traffic accidents are one of the major causes of morbidity and mortality in developing countries including India. The objective of the present study was to analyze the pattern of injuries in road traffic accidents and find out the measures for prevention.

Materials and Methods: The present study comprised of 1020 victims with an alleged history of RTA, which were brought in the mortuary of the Department of Forensic Medicine and Toxicology, RIMS, Ranchi, Jharkhand for medico-legal autopsy during the period of August 2012 to July 2013. The data were analyzed in tabular form and percentage method.

Results: The study revealed that most of the accidents cases were pedestrian, male and were of productive age group 21 to 40 years. Majority of the accidents took place on National highways and majority of victims died on spot. Heavy motor vehicles were the commonest offending vehicles. Shock and haemorrhage was the major cause of death.

Conclusion: The increase in road transportation has caused an Increase in road traffic accidents especially in South-east Asian countries like India that has serious negative social, economic and health sequel. The present study highlighted the demographic and pattern of injuries in RTA victims.

Key words: Road Traffic Accidents, Autopsy, Victims, Pattern of Injuries.

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INTRODUCTION

Accident is an event, occurring suddenly, unexpectedly and inadvertently under unforeseen circumstances. In developed countries, in spite of recent advancement of technology and medical sciences death and deformities following road-traffic accident is yet to be controlled successfully rather incidences of RTA has been increasing at an alarming rate throughout the world. The world's first road traffic car fatality occurred on 31st August 1869 in Ireland killing a renowned scientist Mary Ward.[1] The road traffic mortality rates in low and middle income countries (21.5 and 19.5 per 100,000 population, respectively) are twice than that of high income countries 10.3 per 100,000 population.[2] No age group is immune from the RTA, but the most vulnerable victims are the younger people between 21 to 45 years of age, in whom they are consistently one of the top three causes of mortality.[3] As road traffic injury epidemic is an important cause of disability.[3] It has been estimated that without immediate effective intervention, Road Traffic Accident will become the fifth leading cause of death by 2030 resulting in an estimated 2.4 million fatalities annually.[4] The transport network and road system can't meet the increasing demands of a developing country like India with population overgrowth, industrialization and urbanization. In India, the fatality rate of RTA is 24.1 per 100,000 population.[2] The aim of present study was to assess distribution and analyzing the various factors related to RTA in Ranchi.

MATERIALS AND METHODS

Present study comprised of 1020 victims with an alleged history of RTA, which were brought in the mortuary of the Department of Forensic Medicine and Toxicology RIMS Ranchi, Jharkhand for medico-legal autopsy during the period of August 2012 to July 2013. These cases were from various police stations of Ranchi districts. The data sources were date, time and place of occurrence, police investigation reports, types of offending vehicles and history from relatives and friends of victims. Data related to injuries, damage to internal organs and cause of death were collected during the autopsy. All the data was thus collected, compiled and presented in tabulated form. Decomposed bodies were excluded from the study.

OBSERVATION AND RESULTS

Out of 2392 medico-legal autopsies conducted during the study period, 1020 cases (42.64%) were of RTA. In the present study, the highest number of victims belonged to age group 21 to 40 years (48.53%) followed by 41 to 60 years (29.41%). Most the victims were males (34.11%). Males outnumbered the females (2.36:1) (Table 1). Maximum number of cases (41.76%) occurred in rainy season. (Table 2) Among the various types of road user, the pedestrian ranks maximum number of victims (33.23%) followed by pillion (19.70%) and motor cyclist (15.59%). (Table 3)

In present study, heavy motor vehicles (60.88%) were the commonest offending vehicles followed by light motor vehicles and train (24.41%) and (14.71%) respectively. (Table 4) Following the accidents most of the victims died on spot or within two hrs (59.71%) and (26.47%) victims died within 24 hrs. (Table 5) The commonest cause of death were due to shock and haemorrhage (35.89%) followed by injuries to visceral organs (27.06%) and brain (19.11%). (Table 6) It was noted that majority of the accidents happened in the national highway (59.12%) followed by state (21.77%) and connecting roads (19.11%). (Table 7)

Table 1: Showing distribution of RTA victims according to Age and Sex.

Age group (in years)	Male (%)	Female (%)	Total (%)	Sex Ratio
0-20	108 (10.48%)	72 (7.05%)	180 (17.64%)	1.5:1
21-40	348 (34.11%)	147(14.41%)	495 (48.53%)	2.36:1
41-60	180 (17.64%)	120 (11.76%)	300 (29.41%)	1.5:1
>61	33 (3.23%)	12 (1.17%)	45 (4.41%)	2.75:1
Total	669 (65.59%)	351 (34.41)	1020 (100%)	1.9:1

Table 2: Showing seasonal variation.

Season	Numbers of victims	Percentage of victims
Rainy (July to October)	426	41.76%
Winter (November to February)	339	33.24%
Summer (March to June)	255	25%
Total	1020	100%

Table 3: Showing types of road user

Types of road users	Number of victims	Percentage of victims
Pedestrians	339	33.23%
Pillion	201	19.70 %
Motor cyclist	159	15.59%
Not known	129	12.65%
Driver of automobiles	114	11.18%
Cyclist	78	7.65%
Total	1020	100%

Table 4: Showing types of Offending Vehicles.

Name of offending agents	Number of cases	Percentage of cases
Heavy vehicles (Truck, Bus and Lorries)	621	60.88%
Light vehicles (Car, Taxy, Jeep, Tempo, Auto-rickshaw)	249	24.41%
Train	150	14.71%
Total	1020	100%

Table 5: Showing period of Survival of Victims.

Period of survival	Cases	Percentage
Spot death or within two hrs.	609	59.71 %
Death within 24 hrs	270	26.47 %
Death after 24 hrs	141	13.82 %
Total	1020	100 %

Table 6: Showing cause of death

Cause of death	Cases	Percentage
Shock and haemorrhage	366	35.89%
Injury to vital organs (Liver, Spleen, kidney etc.)	276	27.06%
Injury to brain	195	19.11%
Intracranial haemorrhage	183	17.94%
Total	1020	100%

Table 7: Showing types of road

Types of Road	Cases	Percentage
National Highways	603	59.12%
State Highways	222	21.77%
Connecting Roads	195	19.11%
Total	1020	100%

DISCUSSION

The increase in road transportation has caused an Increase in road traffic accidents especially in South-east Asian countries like India that has serious negative social, economic and health sequel.[1] In the present study, the highest number of RTA victims belonged to younger age group 21 to 40 years (48.53%).[3] Most of the victims were male.[5,6] Maximum number of cases were recorded in rainy season.[7-9] Our observation were contradicted by Dhillon S, Kapila P and Sekhon HS; his study found that maximum number of cases recorded in the winter months, who reported (32%).[7] Pedestrians were the commonest victims (33.23%) followed by pillions (19.70%) and motor cyclist (15.59%). Similarly, Singh H and Dhattarwal SK observed that pedestrians were the commonest victims (28.7%) followed by vehicular occupants (25.8%) and motorcyclist (23%).[9,10] In this study heavy motor vehicles were offending vehicles in (60.88%) of the cases followed by light motor vehicles (24.41%) and trains (14.71%).[5,9,11,12]

The period of survival after accident, majority of victims (59.71%) died on spot or within two hours of accident followed by (26.41%) victims survive within 24 hours and (13.82%) after 24 hours.[9,13,14] This study was slightly higher compared to Singh H and Dhattawal SK who reported (39.5%) deaths within one hour.[9] In this study, the commonest cause of death was shock and haemorrhage (35.89%) followed by injury to the vital organs (27.06%), injury to brain (19.11%) and intracranial haemorrhage (17.94%).[9,10,15] Majority of the accidents occurred in the National Highways (59.12%) followed by State Highways and Connecting Road (21.77%) and (19.11%) respectively.[7,8,10]

CONCLUSION

The present study highlighted the demography and pattern of injuries in RTA. The all India road data showed that 83.5% of the accidents were due to the drivers fault. Males are predominant gender than females. Most of the self falls and hits by another vehicles resulted in head injuries, multiple injuries, blunt injuries to chest and abdomen and injuries to the limbs which are proven to be fatal.

As evident from the study undertaken, majority of the accidents happened in the National Highways. This study may help the planner to take safety measures, to implement strict traffic rules and the study of nature of offending agents in RTA can help the authorities to plan better availability of health care on roads.

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