

A Hospital Based Observational Study Assessing Road Traffic Accidents with Respect to Road Users Type, Offending Vehicles and Type of Injuries Sustained Including Fatal Injuries

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Received: 11-05-2023 / Revised 19-06-2023 / Accepted 27-07-2023

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Conflict of interest: Nil

Abstract:

Aim: The aim of the present study was to assess the road traffic accidents with respect to road users ' type, offending vehicles and type of injuries sustained including fatal injuries.

Methods: The present study was conducted at Maa Vindhyawasini Autonomous State Medical College, Mirzapur, Uttar Pradesh, India. The study material comprised of victims of RTA who died in spot or died in Maa Vindhyawasini Autonomous State Medical College, Mirzapur, Uttar Pradesh, India during the 1-year period. During the present study a total of 500 medico legal autopsies were conducted out of which 100 cases were of RTA with skeletal injury.

Results: Deaths due to RTAs accounted for (26%) of the total medicolegal autopsies conducted. Out of 100 cases of fatal RTA, maximum 46 cases (46%) were motorcycle riders, followed by pedestrians 20 cases (20%) minimum were front seat passengers of four wheelers 5 cases (5%). Heavy motor vehicle topped the list of offending vehicles 38 cases (38%) followed by MMV 27 cases (27%), LMV 13 cases (11%), Motor cycle 9 cases (9%), Others 10 cases (10%), Unknown (Hit and Run) 5 cases (5%). In our study out of 100 cases of RTA, Spot death were observed in 34 cases (34%), 36 cases (36%) died on the way to hospital and in 30 cases (30%) died in the hospital. In our study, 36 victims (36%) died within 1 day (24 Hours) after the accident. The maximum number of deaths was observed between 1 day to 3 days (60 cases, 60%). 3 victims (3%) survived beyond 4 days but died within 1 week. Only 1 (1%) victim survived beyond 1 week but died within 2 weeks. 37 cases had cranial cause alone.

Conclusion: Increased motorization, rampant encroachment of roads, nasty tendency of violating traffic rules and anarchic traffic systems have greatly contributed to rapid increase in RTAs. Population explosion is a catalysing factor for a number of accidents. Good conditioned roads, following traffic rules and awareness about RTA in the people will definitely bring down the incidence of RTA.

Keywords: RTA, Road Users Type, Offending Vehicle.

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Introduction

Trauma in terms of road traffic accident (RTA) can be defined as, 'an event that occurs on a way or street open to public traffic; resulting in one or more persons being injured or killed, where at least one moving vehicle is involved. [1,2] The global burden of RTIs continues to grow and promises to overtake tropical diseases as a leading cause of death in the developing world. RTIs ranked ninth in the ten leading causes of the global burden of disease, with respiratory infections and varying diseases in the top rankings. [3] The World Health Organization (WHO) and the World Bank combined efforts to publish the World report on road traffic injury prevention, a result of a decade long discussion, to provide insight into the growing

public health, economic, and social burdens caused by RTIs. [4]

Without global action, the outlook for the next few decades is far from promising. It is estimated that, despite a decrease of 30% in deaths related to RTIs in high-income countries, road traffic fatalities will continue to increase dramatically in low- and middle-income countries.4 RTA is one of the major causes of morbidity and mortality in India. They not only disturb the economy of a household but the whole country. It affects all age groups including the economically productive population. Around 1.25 million people die every year from RTAs globally. Also, for each death there occur around 20 to 50 nonfatal injuries and 10 to 20

serious injuries. In India, in 2013, 1.66 lakh deaths due to RTAs were reported. [5]

Nearly 90% of world’s RTA fatalities are occurring in low and middle-income countries, whereas highly motorized countries contribute very little though they accommodate over 60% of world’s vehicles. [6] More than 25% of the global accidental deaths occur in the South East Asian region. [7] In India, over 80,000 persons die in traffic crashes annually and over 1.2 million get injured seriously and 300,000 get disabled permanently. [7] Road accidents account for 2.5% of total deaths in India and are among the six leading causes of death. [8] India has the highest incidence of death due to road traffic accidents in Uttar Pradesh (11.4%) followed by Tamil Nadu (11.3%), Andhra Pradesh (10.7%), and Maharashtra (9.6%). [9] Thus, different regions have different types of victims of RTA depending on the types of vehicle used, traffic safety rules and congestion, public awareness, and road condition.

The aim of the present study was to assess the road traffic accidents with respect to road users ' type, offending vehicles and type of injuries sustained including fatal injuries.

Materials and Methods

The present study was conducted at Maa Vindhyawasini Autonomous State Medical College, Mirzapur, Uttar Pradesh, India. The study material comprised of victims of RTA who died in spot or died in Maa Vindhyawasini Autonomous State Medical College, Mirzapur, Uttar Pradesh, India during the 1-year period. During the present study a total of 500 medico legal autopsies were conducted out of which 100 cases were of RTA with skeletal injury.

In the present study information regarding the bio-data of the deceased and various characters regarding the circumstances of the accident like type of victim / road user, type of offending vehicle, time of death were gathered from all possible sources like police records, hospital records and also by direct interrogation with investigating officer, eye witnesses (if available), relatives and friends of the deceased accompanying dead bodies. In each case, a thorough external and internal examination was done for fractures and other injuries and opinion as to the cause of death was made after the examination. The data thus obtained was recorded in the predesigned and pretested Proforma, and analysed.

Results

Table 1: Profile of Medico Legal Autopsies

Type of Case	Number	Percentage
RTA with Skeletal injury	130	26
Poisoning	100	20
Burns	75	15
Drowning	20	4
Railways	50	10
Snake bite	10	2
Electrocution	10	2
Assault	7	1.4
Hanging	20	4
Natural Death	40	8
Others	38	7.6

Deaths due to RTAs accounted for (26%) of the total medico legal autopsies conducted.

Table 2: Accident Victims / Road User Type and offending vehicles

Accident Victim Type	N	%
Rider	46	46
Pillion	10	10
Pedestrian	20	20
Driver	10	10
Front Seat Passenger	5	5
Rear Seat Passenger	9	9
Offending vehicles		
Motorcycle	9	9
LMV	11	11
MMV	27	27
HMV	38	38
Unknown	5	5
Others	10	10

Out of 100 cases of fatal RTA, maximum 46 cases (46%) were motorcycle riders, followed by pedestrians 20 cases (20%) minimum were front seat passengers of four wheelers 5 cases (5%). Heavy motor vehicle topped

the list of offending vehicles 38 cases (38%) followed by MMV 27 cases (27%), LMV 13 cases (11%), Motor cycle 9 cases (9%), Others 10 cases (10%), Unknown (Hit and Run) 5 cases (5%).

Table 3: Place of death of victims

Place	N	%
On the spot	34	34
On the way to hospital	36	36
In the hospital	30	30

In our study out of 100 cases of RTA, Spot death were observed in 34 cases (34%), 36 cases (36%) died on the way to hospital and in 30 cases (30%) died in the hospital.

Table 4: Period of survival following accident

Site	N	%
< 24 Hours	36	36
1 day-3 day	60	60
4 days- 7 days	3	3
10 days- 14 days	1	1

In our study, 36 victims (36%) died within 1 day (24 Hours) after the accident. The maximum number of deaths was observed between 1 day to 3 days (60 cases, 60%). 3 victims (3%) survived beyond 4 days but died within 1 week. Only 1 (1%) victim survived beyond 1 week but died within 2 weeks.

Table 5: Relations between Fracture and Cause of Death

Cause of Death	N	%
Cranial cause alone	37	37
Multiple Injuries	33	33
Haemorrhagic Shock	29	29
Septicaemia	1	1

37 cases had cranial cause alone. Death due to multiple injuries were accounted for 33 cases (33%) where in injury to lungs, pelvic bone fractures, thigh and leg bone fractures, abdominal and pelvic visceral injuries were observed in varying combinations. Death due to haemorrhagic shock was associated with 29 cases (29%). One person died due to Septicaemia.

Discussion

The Global status report on road safety by the World Health Organization (WHO) published in 2013, is the second broad assessment of the status of road safety in 182 countries, building on the first Global status report on road safety published in 2009, the latter of which used data drawn from a standardized survey conducted in 2008. Young adults (between 15 and 44 years) account for almost 60 per cent of all traffic deaths, and half of the world's road traffic deaths occur among pedestrians (22 per cent), cyclists (5 per cent) and motorcyclists (23 per cent). Proportion of deaths among different road user types show, however, considerable inter- and intraregional variation. [10,11]

Males drive the vehicle more often and show more risk-taking behavior than females. Moreover, pedestrians are at equal risk of injury in a likely event of an accident. This precipitates in absence of zebra crossing at various places, crossing from anywhere, overcrowding on roads, unavailability of footpaths and if available then nonuse of footpaths,

presence of vendors on the footpath, high speed of vehicles, violation of traffic rules, and so on. A study conducted at Pondicherry found that pedestrians and drivers were involved in around 57% of RTAs. [12] Deaths due to RTAs accounted for (26%) of the total medico legal autopsies conducted. The results are more when compared with the results of studies conducted at RM College, Loni (24.1%) [13] Office of Judicial Medical Officer, Colombo (22.6%) [14]; P.D.U. Medical College and Associated Hospital, Rajkot (13.8%). [15] The difference in the number of RTA related deaths observed in different studies can be explained by the fact that RTA depends upon various epidemiological factors like geographical area, conditions prevailing in that region, category of road users, condition of road etc. Out of 100 cases of fatal RTA, maximum 46 cases (46%) were motorcycle riders, followed by pedestrians 20 cases (20%) minimum were front seat passengers of four wheelers 5 cases (5%). Each house hold is having minimum of two to three vehicle this increase in vehicles creates congestion on roads, rash speed driving by youngster all lead to increase of casualty in this group. Our study is similar to the results of study done at KMC Manipal, Karnataka were motor cyclists were involved in maximum number of cases (39.6%). [15]

Heavy motor vehicle topped the list of offending vehicles 38 cases (38%) followed by MMV 27 cases (27%), LMV 13 cases (11%), Motor cycle 9 cases (9%), Others 10 cases (10%), Unknown (Hit

and Run) 5 cases (5%). In our study out of 100 cases of RTA, Spot death were observed in 34 cases (34%), 36 cases (36%) died on the way to hospital and in 30 cases (30%) died in the hospital. In our study, 36 victims (36%) died within 1 day (24 Hours) after the accident. In a study conducted by Singh YN et.al considering the place of death of the RTA victims, it is found that deaths in hospitals are highest (54.86%) which is more than the half of the total victims. [16] The maximum number of deaths was observed between 1 day to 3 days (60 cases, 60%). 3 victims (3%) survived beyond 4 days but died within 1 week. Only 1 (1%) victim survived beyond 1 week but died within 2 weeks. In the study conducted at GTB Hospital, Shahadra, New Delhi [17], 66% of victims died on the spot. Of the remaining victims, majority (45.44%) died within 24 hours, which is significantly higher than our result.

37 cases had cranial cause alone. Death due to multiple injuries were accounted for 33 cases (33%) where in injury to lungs, pelvic bone fractures, thigh and leg bone fractures, abdominal and pelvic visceral injuries were observed in varying combinations. Death due to haemorrhagic shock was associated with 29 cases (29%). One person died due to Septicaemia. Deaths due to multiple injuries are injuries which are difficult to decide which was the most serious and mortal injury which lead to death of the victim, as in the crushed head with extrusion of brain or rupture of the aorta etc but in such cases it is quite acceptable to use the term 'multiple injuries', preferably listing several of the most lethal. [18]

Conclusion

Increased motorization, rampant encroachment of roads, nasty tendency of violating traffic rules and anarchic traffic systems have greatly contributed to rapid increase in RTAs. Population explosion is a catalysing factor for a number of accidents. Good conditioned roads, following traffic rules and awareness about RTA in the people will definitely bring down the incidence of RTA.

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