

ROAD TRAFFIC ACCIDENT: RETROSPECTIVE STUDY**RAKESH KAKKAR^{a1}, PRADEEP AGGARWAL^b, MONICA KAKKAR^c,
KIRTI DESHPANDE^d AND DIVYA GUPTA^e**^{ab}Department of Community Medicine, Himalayan Institute of Medical Sciences, Swami Ram Nagar, Dehradun, Uttarakhand, India^cDepartment of Biochemistry, Himalayan Institute of Medical Sciences, Swami Ram Nagar, Dehradun, Uttarakhand, India^dDepartment of Community Medicine, RDGMC, Ujjain. M.P., India^eDepartment of Anaesthesiology, Himalayan Institute of Medical Sciences, Swami Ram Nagar, Dehradun, Uttarakhand, India**ABSTRACT**

Road traffic accidents are a major yet neglected public health problem in developing countries. It is due to multifactorial causes viz. human, vehicular and environmental factors play role before, during and after a Road Traffic Accidents (RTA). Modifiable & preventable factor can help in reducing burden up to some extent. Study was planned to study the major causes/risk factors as well as nature, type and mode of occurrence of road traffic accidents in Ujjain city. Descriptive study was planned using information from different sources like District Hospital, Private hospitals, Traffic Police record then filtering for duplicate cases was done and all the victims of road traffic accidents in last one month were the study subjects. Total accidents noticed during study period was 87 with 9 deaths. Most vulnerable age group for accident was 25-34year with males predominance. Most common cause of road traffic accident was driving above speed limit (47.1%) followed by consumption of alcohol by driver (32.1%), rash driving at turns (20.7%). It has been observed that Deaths and injury were mainly due to rash driving (68%) or due to consumption of liquor (32%) while driving vehicle. On the basis of results obtained major causes of road traffic accidents were pedestrians and animals sharing roadways with fast and slow moving vehicles, Increased driving speed of vehicles, widespread spread of disregard of traffic rules, unusual behaviour of men and animals and among all the above causes increase speed driving of vehicle cause maximum mortality.

KEYWORDS : Accidents, DALY, Injuries, RTA

Road Traffic Accident (RTA) is one of the varieties of transportation injuries (Road, Rail and Air). Accidents and injuries are rapidly on the increase and appear to emerge as the leading causes of morbidity and mortality in the age group of 15 to 34 years. India has a fatality rate in road accidents that is 20 times that of developed countries perhaps the highest accident rate in the world. According to the Registrar General of India, the recorded data for all injury related fatalities only reflect 20-30% of actual injury related deaths. Accidents and injuries account for 17% of DALY losses in the country (Gupte et. al., 2001). Official statistics regarding serious injuries are not reliable as they underestimate the actual number (Gururaj, 2008), but it is estimated that the number of people hospitalized may be 15-20 times the number killed (Mohan ; 2004). According to WHO predictions, if a concerted effort is not made to improve the services by 2020, there will be 14.7% increase in RTA deaths in India (Madan, 2006) . India has 1% of the world's vehicles, but 6% of the total global RTA deaths Economic loss amounts to 550 crores (12.5 billion dollars), an amount that equals our defence budget (Madan, 2006). Drivers were found at fault in 45% cases. Road accidents are largely preventable. Evidence shows that with an

established set of interventions, road traffic injuries have been reduced in many high-income countries since the 1960s and 1970s. However, this has not happened in many poor countries. The road traffic death rates in low-income and middle-income countries have increased substantially. Madhya Pradesh ranked among top ten states which are prone for RTA with 42.5% accidental deaths (Schopper ; 2006). In many cases, road accidents are caused by human errors. Road safety is a shared responsibility. Reducing the risk of road traffic systems requires commitment and informed decision-making by government, industry, NGOs, professionals and communities, through a broad range of cooperative activities and interventions including enforcement of legislation to control speed and alcohol consumption, mandating the use of seat-belts and crash helmets, safer design and use of roads and vehicles, and public education on road safety. Very few studies have attempted to understand the epidemiology of risk factors associated with RTA in Indian cities. Study was planned to study the major causes/risk factors as well as nature, type and mode of occurrence of road traffic accidents in Ujjain city (M. P.).

¹Corresponding author

METHODOLOGY

Descriptive study was planned using different possible sources of information for Road traffic accident viz. Private hospitals, district hospital, Traffic Police (having collection of data from all police stations and other departments like transport, health, insurance and corporation officials record) and all the victims of road traffic accidents in last one month recorded from different sources were the study subjects and filtering of all cases was done for duplication of cases, all duplicate cases were removed. Data was collected for complete one month and all the cases in the month were included in the study, which thus constitute sample for the study. For the purpose of the study, an 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 vehicle (Jha et. al., 2004) . The current situation of road traffic system in Ujjain city was analyzed after gathering information for setting up a database on the causes, nature and magnitude of road traffic accident in the city. Using database, major accident prone areas have been identified and data pertaining to the time, Place, effectiveness of emergency medical services. Data analysis and report writing was done on the basis of obtained database.

The information generated from this study was disseminated to promote awareness and participation among the professional, public media, on various aspect of the road traffic accident.

RESULTS AND DISCUSSION

Total number of accident noticed during study period was 87 with 9 deaths, i.e. mortality rate is 10.3%. It was found that age group most prone for accident is 25-34 years with males predominance with 70:17, (i.e., 80.5% males: 19.5% females). Maximum mortality was noticed on Saturdays and time most prone for accident was between 10.00 AM-11.00AM but deaths were more in accidents occurred between 9.00 PM to 12.00 mid night.

Road traffic accident was more on state highway as compared to other urban roads.

Pedestrians were more prone for accidents as compared to two wheeler or four wheelers and most of them

were males and main cause of road traffic accident was due to driving above speed limit (47%) (i.e., limit mentioned for driving in particular areas). Pedestrian accident were followed by accidents of two-wheelers (26.4%) but injury was not serious with the involvement of four-wheelers (mainly trucks) injuries were found to be serious.

Maximum injuries were reported in vicinity of school, cinema, factory and bus stand i.e. overcrowded places but most of them were simple injuries however injuries near village highways were of serious type. More injuries were reported in roads without traffic signals (73.6%) and most of them were of serious nature in contrast to injuries occurring at chauraha (14.9%), tiraha (08%) or 'Y' type of road (3.4%) with proper signals. Most common cause of road traffic accident was driving above speed limit (47.1%) followed by consumption of alcohol by driver (32.1%), rash driving at turns (20.7%).

A total of 87 injuries were recorded including 9 deaths (table 1), resulted due to major injuries i.e death rate of 10.3%. Official statistics regarding serious injuries are not reliable as they underestimate the actual number (Gururaj, 2008), but it is estimated that the number of people hospitalized may be 15-20 times the number killed (Mohan ; 2004). The highest number of RTA victims (31%) was found between the age group of 25-34 years (table 4) ; whereas, some studies have found the age groups most commonly involved were 20-29 years (Jha et. al., 2004) . The people of the 3rd decade for age group were most commonly involved in RTAs. This study found that more than 53% of the victims were in the age group between 20-40 years (table 4). This shows that the people of the most active and productive age group are involved in RTAs, which adds a serious economic loss to their families and community as well. The present study shows that below and above the age of 20 and 49 years, the proportion of accidents was low. The reason may be that children were taken care of by elders and less use of vehicles in the adolescent age group. Lower proportion of RTAs in those aged 60 and above could be due to the generally less mobility of the people. According to this study, the accident rates were 4 times higher in males than in females (8:2). This was also observed in Delhi, whereas, another study from Delhi has

Table 1: Frequency of accidents on the basis of prone sites

S.No.	No Injury	Simple injury	Dangerous Injury	Total	Deaths
Road without sign	10	44	10	64	8
Chauraha	2	9	2	13	-
Tiraha	1	5	1	7	1
'Y' Type road	-	3	-	3	-

Table 2: Maximum Accident on the basis of vehicle used

Mode of travel	No injury	Simple injury	Dangerous Injury	Total	Deaths
Pedestrian	2	32	2	36	4
Bicycle	1	8	1	10	-
Motor cycle	1	7	2	10	1
Scooter	-	8	1	9	1
Auto/ tempo/ Car/truck	9	6	7	22	3

Table 3: Road traffic accident due to responsibility of driver

Cause	No injury	Simple injury	Dangerous Injury	Total	Deaths
Alcohol	5	20	3	28	3
Driving above speed limit	4	30	7	41	4
Rash driving at turns	4	11	3	18	2

Table 4 : Age wise distribution of Road traffic accident

Age	No Injury	Simple injury	Dangerous Injury	Death causing Injury
18 - 20	1	9	2	-
21 - 24	4	10	1	1
25 - 34	2	13	4	3
35 - 44	3	12	3	2
45 - 54	1	10	-	-
55 - 64	-	2	2	2
>65	2	5	1	1

Maximum accidents and death reported in 25-34 age group

reported very high male and female ratio (9:1). There were 83% male and 17% female victims at PGIMER, Pondicherry (Jha et. al., 2004)

Road crash injury is largely preventable and predictable, there are some of common prone areas for injury like Roads without traffic sign (73.6%), Chauraha (14.9%) (table 1) and prone modes like pedestrian (46.3%) followed by two wheelers (28%) and Four wheelers (25.6%) (table 2) . While most common transport used was two wheeler motorized vehicle in other studies (Amir et. al., 2013) (Suryanarayana et. al., 2010). Maximum accidents were reported between 10.00 AM-11.00AM, while maximum deaths causing accidents 9.00PM to 12.00 mid night. This could be due to maximum load of vehicles in day time due to schools, officials and shopkeepers so though

accidents were maximum but injuries were not of serious nature, while rash driving at night could lead to serious injuries and deaths when the roads are not overcrowded and there is hurry to reach home.

It has been observed that deaths and injury were mainly due to rash driving (68%) or due to consumption of liquor (32%) while driving vehicle (table 3). Though it can also be said that road safety is a multifactorial public health issue as many factors are involved in road traffic injuries like human Factors (over speeding, overtaking, not wearing helmet, driving under the influence of alcohol , sudden road crossing without observation) or vehicle Factors (Poor visibility , loss of balance, brake failure, problem with head and back lights, overloaded vehicles) or environmental factors (Absence of reliable and efficient public transport,

poor street lighting conditions, obstacle on existing roads ,poorly designed roads, absence of traffic signals or poorly maintained traffic system). Similar observation were observed by Singh et al., 2012 & while Clarke et al., 2010 found high speed vehicle as predisposing factor in 65% of accidents.

On the basis of results obtained major causes of road traffic accidents were identified viz., pedestrians and animals sharing roadways with fast and slow moving vehicles, Increased driving speed of vehicles, widespread disregard of traffic rules, unusual behavior of men and animals and among all the above causes increase speed driving of vehicle cause maximum mortality.

ACKNOWLEDGEMENT

The authors are thankful to Traffic police headquarters and other departments-transport, health, insurance and corporation officials for providing the data used in this study. Authors would also like to give special acknowledgement & thanks to all students involved in collection of data.

REFERENCES

- Amir A., Hoda M. F., Khalil S., and Kirmani S., 2013. "Pattern of head injuries among victims of road traffic accidents in a tertiary care teaching hospital." *Indian Journal of Community Health*, **25(2)**: 126-133.
- Clarke D. D., Ward P., Bartle C., Truman W. Killer, 2010. crashes: fatal road traffic accidents in the UK. *Accid Anal Prev*. 2010 Mar; **42(2)**:764-70.
- Gupte M. D., Ramachandran V. and Mutatkar R.K., 2001. Epidemiological profile of India: historical and contemporary perspectives. *J Biosci*. 2001 Nov;26 (4 Suppl): 437-64.
- Gururaj G., 2008. Road traffic deaths, injuries and disabilities in India: current scenario. *Natl Med J India*. **21(1)**:14-20.
- Jha Nilambar, Srinivasa D. K., Roy Gautam and S. Jagdish., 2004. Epidemiological study of road traffic accident cases: A study from south India. *Indian Journal of Community Medicine* **24(1)**:20-24
- Mohan D. The road ahead: Traffic injuries and fatalities in India. New Delhi: Transportation Research and Injury Prevention Programme, Indian Institute of Technology; 2004 :1-30.
- Madan V. S., 2006. Road Traffic Accidents: Emerging Epidemic; *Indian Journal of Neurotrauma.*, **3(1)**:1-3
- Schopper, Doris, and World Health Organization, eds. Developing policies to prevent injuries and violence. World Health Organization, 2006. (http://cdrwww.who.int/violence_injury_prevention/publications/39919_oms_br_2.pdf)
- Singh Abhishek, Anu Bhardwaj, Rambha Pathak, and S. K. Ahluwalia., 2012. "An epidemiological study of road traffic accident cases at a tertiary care hospital in rural Haryana." *Indian Journal of Community Health* **23, 2** : 53-55.
- Suryanarayana S., Gautham M., Manjunath M., Narendranath V., 2010. Surveillance of injuries in a tertiary care hospital. *Indian J Community Med*. 2010 Jan; **35(1)**:191-2.