



## PATTERNS OF INJURIES IN CASES OF FATAL ROAD TRAFFIC ACCIDENT IN CENTRAL REGION OF INDIA.

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**ABSTRACT** The present study was carried out in department of forensic medicine and toxicology in which 129 cases were analyzed. All the cases were analyzed for age, sex, nature and distribution of injuries sustained as a result of road traffic collisions. The major age group affected was 21-30 years (31.51%) and the least age group affected was between 0-10 (0.7%). The males constituted to the majority of the collisions (88.4%) and the ratio of male: female was 7.6:1. In this study motor cyclist accident constituted to the majority of the traffic collisions (51.2%), which was followed by pedestrian (24.5%), the least affected were the bicyclist who constituted to only 0.7% percent of the collisions. Injury to head was responsible for most number of deaths.

**KEYWORDS :** Road traffic accident (RTA), Motor cyclist, pedestrian, Head injury.

### Introduction

Road traffic accident (RTA) is any vehicular accident occurring on the roadway that is originating on, terminating on, or involving a vehicle partially on the roadway. This includes collision of an automobile with a pedestrian, or another automobile or with a non-automobile on the roadway or fall from a moving vehicle causing injuries or death of the involved individuals.<sup>1</sup> Road traffic injuries are expected to take third place in the rank order of disease burden by the year 2020.<sup>2</sup>

The Global status report on road safety 2013 indicates that worldwide the total number of road traffic deaths remain unacceptably high at 1.24 million per year. India is no exception and data showed that more than 1.3 lakh people died on Indian roads, giving India the dubious honour of topping the global list of fatalities from road crashes. Rapid urbanization, motorization, lack of appropriate road engineering, poor awareness levels, nonexistent injury prevention programmes, and poor enforcement of traffic laws has exacerbated the situation.<sup>3</sup>

### Material and method

The study material comprised cases of RTA who sustained injuries and subsequently brought to department of forensic medicine for medico legal autopsy. Total 129 cases were analyzed. The pertinent information regarding age, sex, time of incidence, profile of victim and offending vehicle, survival period was recorded from inquest report, hospital records, other relevant papers and interviewing the relatives, friend or other accompanying person. Detailed autopsy done and patterns of external injuries, internal injuries, cause of death were noted.

### Result

Individuals in the age group 21-30 years were the most affected [Table 1; 31.8%] and the least affected were those belonging to the age group 0-10 (Table 1; 0.7%). The males constituted to the majority of the collisions (88.4%) and the ratio of male: female was 7.6:1.

Maximum number of cases of road traffic accident died on the spot or brought in dead condition to the hospital (54.3%). After admission also most of victim die within 24 hours of admission.

It is observed that maximum number of incidences of RTA occur in between 6 pm to 12 am (48.9%) followed by 12 pm to 6.00 pm. (26.4%)

As far as victim of RTA is concerned motor cycle user are highest among all (51.2%) followed by the pedestrian (24.5%) and among motor cycle user the offending vehicle was found mostly to be high motor vehicle like truck, tempo or trailer.

Most of the victim died due to head injury (45%) followed by haemorrhage and shock in 21 % of cases, injuries to vital organs in 14.5% of cases. Perforation of intestine was the cause of death in only

one case.

Head was the most common region involved in all types of victim but it was maximum in motor cycle user (85.7%) followed by LMV user (73.5%). Extremities were the second most involved parts in all incidences which was seen mostly in LMV user (86.3%) followed by motor cyclist (46.5%). Spine was last affected part in all circumstances.

In head injury case intracranial haemorrhages seen in most number of cases (68.6%) followed by injury to brain (43.5%) in the form of contusion and laceration, and fracture of skull in 35.6% of cases. Crush injury seen in 12.5% of cases that to in collision with high motor vehicle. Amongst fracture linear fracture was the commonest 36.7% of cases followed by the comminuted fracture in 24.3 %.

In victims of chest injuries fracture of ribs and sternum found in 37.5 % of cases followed by injury to lung in 32.3% of cases, injury to heart was noted in least number of cases i.e. in 10.5%

In abdominal injury cases liver was the most commonly affected organ in 46.5% followed by injury to spleen in 23.5 %, and intestinal injury seen only in 05.3 % of cases. Pelvis was fractured only in 05 cases (3.9%).

Fracture of lower limb seen in 18.3% of cases followed by fracture of upper limb in 12.8% of cases.

**Table 1: Age and gender wise distribution of cases**

Age group	Male	Female	Total
0-10	0	1	01 (0.7%)
11-20	12	0	12 (9.3%)
21-30	37	04	41(31.8%)
31-40	29	02	31 (24.03%)
41-50	14	4	18 (13.9%)
51-60	13	3	16 (12.4%)
>60	9	1	10 (7.8%)
<b>Total</b>	<b>114 (88.4%)</b>	<b>15 (11.6%)</b>	<b>129</b>

**Table 2: distribution of cases according to Survival Period of victim**

Survival Time	Male	Female	Total
<b>Brought dead</b>	62	8	70 (54.3%)
<b>less than 1 day</b>	11	03	14 (10.9%)
<b>1-2 days</b>	05	00	05 (3.9%)
<b>2-4 days</b>	12	00	12 (9.3%)
<b>4-6 days</b>	09	01	10 (7.8%)
<b>More than 6 days</b>	15	03	18 (13.4%)

**Table 3: Distribution of cases according Time of incidence of RTA**

12.01 am to 6.00 am	09 (7%)
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6.01 am to 12.00 pm	23 (17.9%)
12.01 pm to 06.00 pm	34 (26.4%)
06.01 pm to 12.00 am	63 (48.9%)

**Table 4: Distribution of cases according to victim category and its corresponding offending vehicle**

Type of victim	Offending agent or vehicle						Total
	Skid	Motor cycle	LMV (low motor vehicle)	HMV (High motor vehicle)	Unkno wn vehicle	Other	
Pedestrian	00	13	06	09	04	00	32(24.5%)
Bicycle	00	02	04	02	00	00	08 (0.7%)
Motor cycle	09	03	14	28	06	06	66(51.2%)
LMV	00	00	06	14	00	03	23(17.9%)
	09 (6.9%)	18 (13.9%)	30 (23.3%)	53 (41.1%)	10 (7.8%)	09 (6.9%)	

**Table 5: tion of cases as per the cause of death**

Cause of death	No of deaths
Head Injury	58 (45%)
Head injury with injury to spine	05 (3.9%)
Injuries to spine	08 (6.2%)
Haemorrhage and shock	27 (21%)
Injuries to vital organs	19 (14.5%)
Blunt trauma to trunk	07 (5.4%)
Septicaemia due to injuries sustained	04 (3.1%)
Perforation peritonitis	01 (0.8%)

**Table 6: Comparison between percentages of body part injuries in different type's victim**

Type of victim	Body part involved				
	Head (%)	Spine (%)	Chest (%)	Abdomen & pelvis (%)	Limbs (%)
Pedestrian	65.3	03.1	15.6	22.3	18.5
Bicycle	79.9	05.2	28.8	23.4	19.5
Motor cycle	85.7	11.7	32.6	23.8	46.5
LMV	73.5	08.2	86.3	56.4	86.3

**Discussion**

Over the years incidences of road traffic accident are increasing with increasing number of vehicles. The incidences depends upon the traffic conditions, condition of road and time period of travelling

In our study male constitute 114 cases (88.4%) as compared to female in 15 cases ( 11.6%) , most vulnerable group was found to be 21-30 years in 41 cases (31.8%) followed by 31-40 years in 31 cases (24.03%). Similar observation were noted in other studies [1,2,4,5,9]. It is directly related to regular usage of vehicle by the male than female. This age group of people are constantly travelling for different purposes like education, work and other daily activities.

We observed that most of victims of road traffic accident died at the spot or brought to hospital in dead condition as seen in 54.3 % of cases. This is due to lack of first aid services, lack of transport facility, presence of serious injuries.

Highest rate of road traffic accidents took place between 06.00pm to 12.00 am followed by 12.00 pm to 06.00pm. Reason behind this may be unfavourable travelling conditions like low light, heavy traffic on the road in this period. Similar finding was noted by Kumar NB [5] and Bairagi et al[6], however Siddramanna TC and Dileep KR noted higher rates of RTA cases in between 12.00pm to 06.00 pm followed by 06.00pm to 12.00 am.

Amongst the categories of victim of road traffic accident, motor cyclist accounted for the highest share (51.2%) followed by pedestrian (24.5%), then low motor vehicle [LMV] users (17.9%). Heavy motor vehicle like truck, tractor, trailer being the commonest offending vehicle in majority of cases (41.1%) followed by the low motor vehicle

in 23.3% of cases. Other stationary objects like divider, electric poll also contributing to road traffic accidents in 6.9% of cases. Collision with heavy motor vehicle has greater fatality due to their heavy weight combined with speed. This findings is in accordance with the study of Kumar NB [5], Surender J [7].

Maximum number deaths were due to head injuries (45%) followed by haemorrhage and shock due to injuries sustained (21%). This is similar with other studies (5, 6, 7).

In present study we observed intracranial haemorrhage in 68.6% followed by injury to brain (43.5%) in the form of contusion and laceration, and fracture of skull in 35.6% of cases amongst head injury cases. This is similar to the observation of [5, 8].

In victims of chest injuries, fracture of ribs and sternum found in 37.5 % of cases and injury to lungs in 32.3% of cases. This findings are in accordance with [5, 8,9]. In abdominal injury, liver was the most commonly affected organ in 46.5% followed by injury to spleen in 23.5 %. This was the findings of other studies also [5, 8]

**Conclusion**

Road traffic accidents are increasing day by day with alarming rise. Rapid urbanization and industrialization resulted in continuous flow of vehicles on the roads .High speed vehicles, disobeying the traffic rules, old vehicles, poor condition of roads, inexperienced driving are responsible for increase number of fatality due to road traffic accident. There should be proper implantation of traffic rules and laws ,control and proper punishment to the careless drivers and offenders, improvements in roads and vehicles.

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