

## Study of Fatal Road Traffic Accidents in North Karnataka

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### ABSTRACT

**Aims & Objectives:** The study had carried out to know the various epidemiological, medico legal aspects of vehicular accidents in Bidar district population, making an attempt to establish various causative factors, pattern and distribution of injuries and thereby to plan preventive measures against it. **Material & Method:** All the cases of road traffic accident brought to the department for medico legal postmortem examination during the period from 1<sup>st</sup> January 2008 to 31<sup>st</sup> December 2009 were the subjects of the study. Information regarding date, time and place of incident age and related information was gathered from detailed history taken from the relatives of deceased and from the Police inquest. **Results:** Total 860 postmortem had been conducted, out of which 120 cases of road traffic accidents. The maximum victims were male ( Male : female ratio 9:1 ) and were in age group of 30-44years. Among the presence of injuries abrasion were present in maximum number of victims 102 (85%) followed by the Palpable fractures in 82 (68.33%) victims. Maximum had injuries over head region i.e. 81(67.50%). The maximum number of deaths occurred during in winter season and were pedestrians.

**Key words:** Road traffic injuries, head injury, vehicular accident and pedestrians.

### INTRODUCTION

The term accident has been defined as an occurrence in the sequence of events which "Usually produces unintended injury or death or property damage" <sup>1</sup>. Accident is an event, occurring suddenly, unexpectedly and

inadvertently under unforeseen circumstances. In developed countries, RTA is the most common cause of death below the age of 50 years. Amongst all traffic accidents, RTA claims largest toll of human life and tend to be the most serious problem world over. Worldwide, the number of people killed in RTA is almost 1.2 million each year, while the number of injured could be as high as 50 million <sup>2</sup>. In India, over 80,000 persons die in the traffic crashes annually and over 1.2 million get injured seriously and about 300,000 get disabled permanently. In India, for individuals more than 4 years of age, more life years are lost due to RTA than due to cardiovascular diseases or neoplasm<sup>3,4</sup>. The problem appears to be increasing rapidly in developing countries<sup>5</sup>.

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Currently motor vehicle accidents rank 9<sup>th</sup> in order of disease burden and are projected to be ranked third in the year 2020. Injuries due to RTA depend upon a number of factors, whether the victim is a pedestrian, a motorcyclist, a pedal-cyclist or 3/4 wheelers. Vehicle and environmental factors play vital roles before, during and after a serious RTA. The important factors are human errors, driver fatigue, poor traffic sense, mechanical fault of vehicle, speeding and overtaking, violation of traffic rules, poor road conditions, traffic congestion, road encroachment etc out of which most of them are preventable. Studies done by WHO shows that road accidents accounts for 2.5% of total deaths in India and in age group of 5-44 years, it is as high as 10% and is among six leading causes of death<sup>2</sup>.

The present study has been carried out regarding the various epidemiological, medico legal aspects of vehicular accidents in Bidar district population, making an attempt to establish various causative factors, pattern and distribution of injuries and thereby to plan preventive measures against it.

## MATERIALS AND METHODS

The present prospective study was conducted in the department of Forensic Medicine, Bidar Institute of Medical Sciences and Teaching Hospital Bidar, during the period from 1<sup>st</sup> January 2008 to 31<sup>st</sup> December 2009. All the cases of road traffic accident brought to the department for medico legal postmortem examination were the subjects of the study. Information regarding date, time and place of incident age and related information was gathered from detailed history taken from the relatives of deceased and from the Police papers.

## OBSERVATION

It was observed that out of 860 cases received for postmortem examination at our department, and 120 (13.95%) cases were road traffic accident.

**Table 1: Sex wise distribution**

| Sex          | Number of cases | Percentage  |
|--------------|-----------------|-------------|
| Male         | 108             | 90%         |
| Female       | 12              | 10%         |
| <b>Total</b> | <b>120</b>      | <b>100%</b> |

The findings of study revealed that 108 (90%) subjects under the study were male and 12 (10%) were female. The male and female ratio was approximately a ratio of 9:1(table-1).

**Table 2: Age and sex wise distribution of the persons**

| Age group    | Female    | Male       | Total      | percentage  |
|--------------|-----------|------------|------------|-------------|
| 0-14 years   | 2         | 7          | 9          | 7.5%        |
| 15-29 years  | 3         | 34         | 37         | 30.83%      |
| 30-44 years  | 4         | 41         | 45         | 37.50%      |
| 45-59 years  | 2         | 20         | 22         | 18.33%      |
| 60-80 years  | 1         | 6          | 7          | 5.83%       |
| <b>Total</b> | <b>12</b> | <b>108</b> | <b>120</b> | <b>100%</b> |

Age wise distribution of the cases is divided into five groups as per WHO guidelines. It is observed that maximum number of cases is found in age group of 30-44years and minimum number of cases is found in the age group of 60-80 years, having more male victims in a age group (Table-2).

**Table 3: Seasonal distribution of cases**

| Season       | No. of Cases | Percentage |
|--------------|--------------|------------|
| Winter       | 48           | 40.00      |
| Monsoon      | 43           | 35.83      |
| Summer       | 29           | 24.17      |
| <b>Total</b> | <b>120</b>   | <b>100</b> |

It is observed that in winter season (from November to February months) there were 48 (40.00%) deaths, in Monsoon season (from July to October months) 43 (35.83%) deaths and in summer season (from March to June) 29 (24.17%) deaths occurred. That is the maximum number of deaths occurred are in winter season (Table-3).

**Table 4: Distribution as per road users**

| Type of Road users | No. of persons | Percentage |
|--------------------|----------------|------------|
| Pedestrian         | 49             | 40.83      |
| Cyclist            | 9              | 7.50       |
| Motorcyclist       | 48             | 40.00      |
| 3 or 4 wheeler     | 14             | 11.66      |
| <b>Total</b>       | <b>120</b>     | <b>100</b> |

We have observed that the persons died due to RTA were of four types. Out of 120 persons maximum 49(40.83%) were pedestrian, followed by motorcyclist 48 (40.00%) and only 9(7.50%) were cyclist (Table-4).

**Table 5: Distribution of cases according to type of victims and injuries**

| Type of victim         | Type of injury       |                        |                        |                      |            |                        |
|------------------------|----------------------|------------------------|------------------------|----------------------|------------|------------------------|
|                        | Abrasion             | Contusion              | Laceration             | Incised wound        | Stab wound | fracture               |
| Pedestrian(49)         | 42                   | 17                     | 23                     | 1                    | 0          | 33                     |
| Cyclist(9)             | 6                    | 5                      | 6                      | 0                    | 0          | 6                      |
| Motorcyclist(48)       | 40                   | 29                     | 26                     | 0                    | 0          | 35                     |
| 3or4wheeler(14)        | 14                   | 8                      | 7                      | 1                    | 0          | 8                      |
| <b>Total<br/>(120)</b> | <b>102<br/>(85%)</b> | <b>59<br/>(49.16%)</b> | <b>62<br/>(51.66%)</b> | <b>2<br/>(1.66%)</b> | <b>0</b>   | <b>82<br/>(68.33%)</b> |

We have distributed the presence of external injuries according to type of victims. The external injuries were seen abrasions, contusions, lacerations, incised wound, palpable fractures in persons died due to RTA. Among the presence of injuries abrasion were present in maximum number of victims 102 (85%) and the Palpable fractures were present in 82 (68.33%) victims (Table-5).

**Table 6: Type of victim and body region injured**

| Type of victim         | Injuries present over body region |                     |                   |                        |                        |                        |                        |
|------------------------|-----------------------------------|---------------------|-------------------|------------------------|------------------------|------------------------|------------------------|
|                        | Head                              | Face                | Neck              | Chest                  | Abdomen                | Upper limb             | Lower limb             |
| Pedestrian<br>(49)     | 38                                | 9                   | 2                 | 14                     | 6                      | 8                      | 16                     |
| Cyclist<br>(9)         | 6                                 | 4                   | 1                 | 3                      | 2                      | 4                      | 3                      |
| Motorcyclist<br>(48)   | 34                                | 10                  | 2                 | 18                     | 9                      | 18                     | 16                     |
| 3 or 4<br>wheeler(14)  | 3                                 | 1                   | 1                 | 5                      | 2                      | 3                      | 2                      |
| <b>Total<br/>(120)</b> | <b>81<br/>(67.5%)</b>             | <b>24<br/>(20%)</b> | <b>6<br/>(5%)</b> | <b>40<br/>(33.33%)</b> | <b>19<br/>(15.83%)</b> | <b>33<br/>(27.50%)</b> | <b>37<br/>(30.83%)</b> |

We have distributed the injuries according to the involvement of various body regions in relation to type of victim. Many persons had injuries over single, double or many body regions. Maximum number of victims had injuries over head region i.e. 81(67.50%). Only small number of victims had injuries over neck region 6(5%). Among the total victims, the motorcyclist had maximum injuries over head region that is 34(70.83%) out of 48 persons (Table-6).

**Table 7: Distribution according to visceral Injuries**

| Visceral injuries | No.        | Percentage |
|-------------------|------------|------------|
| Brain             | 90         | 52.94      |
| Heart             | 5          | 2.94       |
| Lungs             | 44         | 25.88      |
| Liver             | 10         | 5.88       |
| Spleen            | 11         | 6.47       |
| Kidney            | 3          | 1.76       |
| Mesentery         | 5          | 2.94       |
| Intestine         | 2          | 1.19       |
| Others            | -          | -          |
| <b>Total</b>      | <b>170</b> | <b>100</b> |

It is observed that many had injuries involving more than one visceral organ. Comparing the visceral injuries maximum had injuries involving brain that is 52.94% out of total visceral injuries and in relation to number of victims it is 47.06% (Table-7).

## DISCUSSION

Road traffic accidents (RTAs) are increasing with rapid pace and presently these are one of the leading causes of death in developing countries. Vander sluis *et al.*<sup>7</sup> has reported that traffic is the most important cause of severe injuries and that three quarters of the severely injured cases, who died during hospitalization are victims of traffic accidents. The incidence of accidental death in India has shown a mixed trend during the decade 1996-2006 with an increase of 43 per cent in the year 2006 as compared to 1996. A total of 3,14,704 accidental death were reported in the country during 2006 (20,529 more than such deaths reported in 2005) showing an increase of 7.0 per cent as compared to previous year.

In the present study, a total of 120 cases of fatal road traffic accidents (RTAs) had been studied in respect to distribution, nature and type of injuries.

A majority of victims of fatal RTAs had sustained multiple injuries. E. Ke N *et al.*<sup>8</sup> had also reported the occurrence of multiple injuries in 93.5% of the victims. Singh & Dhatarwal<sup>9</sup> had also recorded involvement of multiple body parts in all cases. Abrasion, laceration, fractures, dislocation, head and visceral injuries were more commonly observed in fatal RTAs. In the present study, males to female ratio was 9:1. This is near to ratio of 9:1 as has been observed by Singh and Dhatarwal<sup>9</sup> and by B.R.Sharma *et al.* in northern India who has observed majority of male victims (90%). Highest incidence of fatalities had occurred in the age group of 30-44 year (38.3%) followed by the age group 15-29 year(30%). Kochar *et al.*<sup>10</sup> had reported that maximal fatal accidents had occurred in the age group of 31-40 years and a preponderance of males (85%) were seen. Whereas Singh and Dhatarwal<sup>9</sup> had observed that the commonest age group involved was 21-30 years (27.3%) followed by 31-40 years (20.6%). Pedestrians were mostly involved followed by

motorized 2 wheelers. Pedestrians being the common victims can be explained by the fact that there were a lack of proper footpath and presence of vendors and other commercial installations by the side of the roads. Moreover majority of road users were pedestrians, thus they were comparatively more exposed to the risk of accidents, and were of lower middle socioeconomic status, illiterate and lack traffic sense. Our findings are in general agreement with these observers<sup>7, 8 & 9</sup>. Multiple visceral injuries (internal injuries) were quite common following fatal RTA. Table-7 has depicted various visceral organs involved in the RTA. In majority of cases, brain had been chiefly injured followed by lungs, liver and spleen respectively. A higher incidence of brain injury had also been reported by other workers<sup>7, 8, & 9</sup>. Singh & Dhatarwal<sup>9</sup> who had reported the incidence of head injuries as 50.4%. Severe brain injury was the most important cause of death, was held by Vander sluis<sup>7</sup>.

### CONCLUSION

We have done total 860 postmortems, out of them 120 were due to road traffic accident (13.95%). It was observed that deaths due to RTAs were more in males than in females (9:1 ratio), & was more in younger age groups in Bidar district. From the data it was observed that maximum victims were pedestrians, and maximum had injuries on head region. Maximum no. of motorcyclist had injuries over head. Maximum deaths occurred in winter season.

In most of the cases, fatal RTAs were due to human errors and therefore it was preventable. Strict licensing policy especially for four wheelers, a greater awareness about traffic rules, cultivation of road traffic sense, curbing drug abuse, and a proper road network conforming to the volume of traffic will go a long way in curbing the incidence of fatal RTAs. Providing safe crossings and sidewalks or separate paths and lanes for pedestrians and cyclists, providing convenient and affordable and frequent public transportation, operating in safe conditions will reduce the occurrence of road traffic accidents. Helmets on

all riders of bicycles, motorcycles and mopeds are to be made compulsory to prevent head injuries which are the one of the most likely to result in death or disability of riders<sup>11</sup>. Seat belts are to be made compulsory for all drivers and passengers of cars and other four wheelers. Providing appropriate and immediate first aid at the scene of accidents, appropriate medical care in emergency rooms and appropriate post emergency medical care and rehabilitation shall also reduce the death and disabilities.

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