Original Article

A Study of Pattern and Distribution of Injuries in Fatal Road Traffic Accidents in Bidar

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Abstract

Present study was carried out from 1st June, 2010 to 31st December, 2011 at department of Forensic Medicine, Bidar Institute of Medical Sciences & Teaching Hospital Bidar; to study the distribution, nature and types of injuries sustained during road traffic accidents (RTA) and to suggest possible preventive measures. During the present study period 790 total postmortems were conducted, out of which 110 cases were of road traffic accidents.

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

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" [1]. 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 [2]. According to the national crime records bureau (ministry of home affair), the incidence of accidental of deaths has shown a mixed trends during the decade 1996-2006 with increase of 43% in the year 2006 as compared to 1996. The population growth during the corresponding period was20.2% where as the increase in the rate of accidental deaths during the same period was 19%.

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In India, over 80,000 persons die in the traffic accidents annually and over 1.2 million get injured seriously and about 300,000 become disabled permanently. In India, for individuals more than 40 years of age, more life years are lost due to RTA than due to cardiovascular diseases or neoplasm[3,4]. The problem appears to be increasing rapidly in developing countries[5]. Currently motor vehicle accidents rank 9th 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 and most of them are preventable. Studies conducted 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[2].

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 successful measures to prevent 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 1st June, 2010 to 31st December, 2011. 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 accident, type of vehicle, age and related information of the deceased was gathered from detailed history taken from the relatives of deceased and from the Police papers.

Observation:

It was observed that out of 790 cases received for postmortem examination at our department, 110 (13.92%) cases were of road traffic accident.

It was observed that 99 (90%) subjects under the study were male and 11(10%) were female. That is approximately 9:1 ratio for male: female (Table-1)

Table-1: Gender wise distribution

Gender	Number of cases	Percentage
Male	99	90%
Female	11	10%
Total	**110**	**100%**

As per WHO guidelines, cases were divided into five groups with respect to age wise distribution. It was observed that maximum numbers of cases were found in age group of 30-44years and minimum numbers of cases were found in the age group of 60-80 years, having more male victims in all age groups (Table-2).

Table-2: Age and Gender wise distribution of the persons

Age group (Years)	Female	Male	Total	%
0-14	2	7	9	8.18
15-29	3	30	33	30
30-44	4	38	42	38.18
45-59	1	17	19	17.27
60-80	1	6	7	6.36
Total	11	99	110	100

It was observed that the persons died due to RTA were of four types. Out of 110 persons 47(42.72%) were pedestrian, 9(8.18%) were cyclists, 44(40.00%) were motorcyclist, 10(9.10%) were 3 or 4 wheeler users (Table-3). Maximum numbers of deaths were seen in pedestrians and minimum numbers of deaths were seen in cyclist.

Table-3: Distribution as per road users

Type of Road users	No. of persons	Percentage
Pedestrian	47	42.72%
Cyclist	9	8.18%
Motorcyclist	44	40%
3 or 4 wheeler	10	9.10 %
Total	**110**	**100**

It was observed that external injuries such as abrasions, contusions, lacerations, incised wound and palpable fractures were present in persons died due to RTA. Amongst the type of injuries, abrasions were present in maximum number of victims 92(83.63%). Palpable fractures were present in 82(68.33%) victims. (Table- 4).

The distribution of injuries according to the presence on various body regions showed that the many persons had injuries over single, double or more body regions. Maximum number victims had injuries over head region i.e 75(68.18%) out of 110 victims. Only small number of victims had injuries over neck region 6(3.63%). Among the victims pedestrians had maximum number of injuries over head region that is 38(77.55%) out of 49 deceased (Table-5).

Table-4: Distribution of cases according to type of victim and injury

Type of victim	Type of injury					
	Abrasion	**Contusion**	**Laceration**	**Incised wound**	**Stab wound**	**fracture**
Pedestrian(47)	40	16	22	1	0	30
Cyclist(9)	6	5	6	0	0	6
Motorcyclist(44)	36	28	25	0	0	33
3or4wheeler(10)	10	7	7	1	0	8
Total (110)	**92 (83.63%)**	**56 (50.90%)**	**60 (54.54%)**	**2 (1.66%)**	**0**	**77 (70%)**

Table-5: 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 (47)	36	7	1	12	5	7	14
Cyclist (9)	6	3	1	3	2	4	3
Motorcyclist (44)	30	9	1	16	7	16	14
3 or 4 wheeler (10)	3	1	1	5	2	3	2
Total (110)	**75 (68.18%)**	**20 (18.8%)**	**4 (3.63%)**	**36 (32.72%)**	**16 (14.54%)**	**30 (27.27%)**	**33 (30%)**

Table-6: Distribution according to visceral injuries

Visceral injuries	No.	Percentage
Brain	88	54.32
Heart	4	2.46
Lungs	42	25.92
Liver	9	5.55
Spleen	10	6.17
Kidney	3	1.85
Mesentery	4	2.46
Intestine	2	1.23
Others	-	-
Total	**162**	**100**

It was observed that many had injuries involving more than one visceral organ. Comparing the visceral injuries maximum number of persons had injuries involving brain that is 54.32% of visceral injuries and other visceral injuries were 45.68% (Table-6).

Table-7: Seasonal distribution of cases

Season	No. of death	Percentage
Winter	46	41.81
Monsoon	41	37.27
Summer	23	20.92
Total	**110**	**100**

It was observed that in winter season (from November to February months) there were 46(41.81%) deaths, in Monsoon season (from July to October) 41(37.27%) deaths and in summer season (from March to June) 23(20.92%) deaths occurred. That is the maximum number of deaths occurred were in winter season (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 sluiset. al[7] has reported that traffic accidents are the most important

cause of severe injuries and the 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 deaths 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 110 cases of fatal road traffic accidents (RTA) have been studied with in respect to distribution, nature and type of injuries. A majority of victims of fatal RTA had sustained multiple injuries. EKe N et. al. [8] have also reported occurrence of multiple injuries in 93.5% of the victims. Singh &Dhattarwal[9] have also recorded involvement of multiple body parts in all cases, where abrasions, lacerations, fractures, dislocation, head and visceral injuries were more commonly observed in fatal RTAs. In the present study, a male to female ratio was 9:1. This is similar to ratio of 9:1 that has been observed by Singh and Dhattarwal[9] and by Sharma [10] et al. in northern India. Highest incidence of fatalities have occurred in the age group of 30-44 years (38.18%) followed by the age group 15-29 years (30%). Kochar et al.[10] have reported that maximal fatal accidents have occurred in the age group of 31-40 years with preponderance of males (85%). Whereas Singh and Dhattarwal[9] have observed that the commonest age group involved is 21-30 years (27.3%) followed by 31-40 years (20.6%). Pedestrians have been mostly involved followed by motorized 2 wheelers. Pedestrians being the common victims can be explained by the fact that there is a lack of proper footpath and encroachment because presence of vendors and other commercial installations by the side of the roads. Moreover majority of road users are pedestrians, thus they are comparatively more exposed to the risk of accidents, and are of lower middle socioeconomic status, illiterate and lacks traffic sense. Our findings are in general agreement with these observations [7, 8 & 9]. Multiple visceral injuries (internal injuries) are quite common following fatal RTA. Table-6 depicts various visceral organs involved in the RTA. In majority of cases, brain has been mainly injured followed by lungs, liver and spleen respectively. This may be due to the fact that many two wheeler riders & pillion riders were not wearing helmets, as use of helmets was not compulsory in the study period. A higher incidence of brain injury has also been reported by other authors[7, 8, & 9]. Singh &Dhattarwal[9] had reported the incidence of head injuries as 50.4%. Severe brain injury is the most important cause of death, was observed by Vander sluisa[7].

Conclusion:

A total 790 postmortems were conducted, out of them in 110 deaths were due to road traffic accident (13.92%). It was observed in the present study that deaths due to RTA were more in males than in Females (9:1 ratio), & is more in younger age groups in Bidar district. From the data it was observed that maximum no of victims were pedestrians, maximum number of persons had injuries on head region. Maximum number of motorcyclist had injuries over the head and maximum number of deaths occurred in winter season.

In most of cases, fatal RTAs are due to human errors and are therefore 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 confirming 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 for all riders & pillion riders of motorcycles is already made compulsory in accordance with judgment of Honorable Supreme court of India to prevent head injuries which are the most likely to result in death or disability of riders and pillion riders. Seat belts are also made compulsory for all drivers and passengers of cars and other four wheelers[11]. Hopefully this progressive judgment of the Honorable Supreme court is strictly enforced all over India there by reducing morbidity and mortality due o road traffic accidents. 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[12].

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