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# Original ARTICLE

## Evaluation of profile of patients with road traffic accidents: A forensic study

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### ABSTRACT

**Background:** Globally, road traffic accident is the leading cause of injury-related deaths. Hence, the present study was undertaken for assessing profile of patients with road traffic accidents. **Materials & Methods:** A total of 200 patients who were admitted to emergency department due to road traffic accident were enrolled in the present study. Complete demographic details of all the patients were obtained. Pattern and extent of injury in all the patients was also recorded. The detailed evaluation of the patients was based on the situation, emergency medical officer's accounts, medical records and evaluation of radiological findings. All the results were recorded in Microsoft excel sheet and were assessed by SPSS software. **Results:** Mean age of the patients of the present study was 52.5 years. 60.5 percent of the patients were males while the remaining 39.5 percent were females. Skull fracture occurred in 80 patients. Among these 80 patients, depressed fracture was found to be present in 18 patients, while comminuted fractures and linear fractures were found to be present in 12 patients and 14 patients respectively. Fractures of the base of the skull were found to be present in 19 patients. Head was involved in 27.5 percent of the patients. **Conclusion:** Road traffic accident is a common reason of mortality and morbidity affecting significant proportion of world population.

**Key Words:** Accident, Road, Traffic

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### INTRODUCTION

Road traffic injury (RTI) 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". The major causes of accidents are drunk driving, driving over the speed limit, not using helmets and seat belts, rash and negligence driving, failure to maintain lanes, brake failures, due to bad road conditions and rash driving in curvy roads.<sup>1-3</sup> According to data recently released by the World Health Organization (WHO), an estimated 55 million people died worldwide in the year 2011. Of these, 1.3 million were due to road injuries, equating to roughly 3500 each day from road traffic injuries. By these statistics road traffic accidents (RTA) ranked among the top 10 leading causes in 2011, a reality that was not existent a decade ago almost at par with chronic diseases such as HIV/AIDS and diabetes mellitus. By 2030, car accidents will be the fifth leading cause of death in the world, if this trend were to continue. Globally, RTA is the leading cause of injury-related deaths.<sup>4,6</sup> Hence; under the light of above

mentioned data, the present study was undertaken for assessing profile of patients with road traffic accidents.

### MATERIALS & METHODS

The present study was conducted in the department of forensic medicine of the medical institute and it included assessment of profile of patients with road traffic accidents. Ethical approval was obtained from institutional ethical committee and written consent from all the patients after explaining in detail the entire research protocol. A total of 200 patients who were admitted to emergency department due to road traffic accident were enrolled in the present study. Complete demographic details of all the patients were obtained. Pattern and extent of injury in all the patients was also recorded. The detailed evaluation of the patients was based on the situation, emergency medical officer's accounts, medical records and evaluation of radiological findings. All the results were recorded in Microsoft excel sheet and were assessed by SPSS software. Chi-square test was used for assessment of

level of significance. P- value of less than 0.05 was taken as significant.

**RESULTS**

In the present study, a total of 200 patients who were admitted due to RTA were enrolled. Mean age of the patients of the present study was 52.5 years. 25.5 percent of the patients belonged to the age group of more than 50 years. 19.5 percent of the patients belonged to the age group of 41 to 50 years. 16 percent of the patients belonged to the age group of 31 to 40 years. 60.5 percent of the patients were males while the remaining 39.5 percent were females.

In the present study, skull fracture occurred in 80 patients. Among these 80 patients, depressed fracture was found to be present in 18 patients, while comminuted fractures and linear fractures were found to be present in 12 patients and 14 patients respectively. Fractures of the base of the skull were found to be present in 19 patients. In the present study, head was involved in 27.5 percent of the patients. Vertebral involvement occurred in 18 percent of the patients. Multiple organ injuries were detected in 14.5 percent of the patients. Abdominal injuries were seen in 15 percent of the patients.

**Table 1:** Age-wise and gender-wise distribution of patients

Parameter		Number of patients	Percentage of patients
Age group (years)	Less than 10	22	11
	10 to 20	29	14.5
	21 to 30	27	13.5
	31 to 40	32	16
	41 to 50	39	19.5
	More than 50	51	25.5
Gender	Males	121	60.5
	Females	69	39.5

**Table 2:** Distribution of patients according to type of skull fractures (n = 70)

Type of fractures	Number of patients	Percentage of patients
Depressed	18	22.5
Comminuted	12	15
Diastatic	14	17.5
Linear	12	15
Base of the skull	19	23.7
Others	5	6.3
<b>Total</b>	<b>80</b>	<b>100</b>

**Table 3:** Distribution of patients according to body regions involved in injury

Body region involved	Number of patients	Percentage of patients
Head	55	27.5
Vertebral	36	18
Thoracic	39	19.5
Abdominal	30	15
Multiple injuries	29	14.5
Others	11	5.5

**DISCUSSION**

There are only 28 countries that have ample laws that tackle all five behavioural risk factors like speed, drunk-driving, helmets, seat belts and child restraints. The World Health Organization (WHO) has been concerned with road safety for four decades and has discussed the severity of the problems. Indian roads are unsafe even for pedestrian's i.e. 15,796 deaths in 2016. The number of pedestrian deaths has increased from 2015 to 2016 in India. There are punishments mentioned under the Indian Motor Vehicle Act, 1988 and Indian Penal Code for various motor vehicle related offenses.<sup>7-9</sup> Hence; the present study was undertaken for assessing profile of patients with road traffic accidents.

In the present study, a total of 200 patients who were admitted due to RTA were enrolled. Mean age of the patients of the present study was 52.5 years. 25.5 percent of the patients belonged to the age group of more than 50 years. 19.5 percent of the patients belonged to the age group of 41 to 50 years. 16 percent of the patients belonged to the age group of 31 to 40 years. 60.5 percent of the patients were males while the remaining 39.5 percent were females. Mitra S et al assessed the outcome and severity of RTI in a district of West Bengal, India. The study was conducted for 1 year interviewing 295 RTI selected through scheduled sampling. Information pertaining to demographic and correlates of RTI was collected by face to face and over telephone using semi-structured questionnaire. Nine-item Simplified Injury Severity Scale (SISS) was used to assess injury severity. Fatal outcome in terms of death and permanent disability was 34.24% and they had higher marginally significant SISS score.<sup>10</sup>

In the present study, skull fracture occurred in 80 patients. Among these 80 patients, depressed fracture was found to be present in 18 patients, while comminuted fractures and linear fractures were found to be present in 12 patients and 14 patients respectively. Fractures of the base of the skull were found to be present in 19 patients. In the present study, head was involved in 27.5 percent of the patients. Vertebral involvement occurred in 18 percent of the patients. Multiple organ injuries were detected in 14.5 percent of the patients. Abdominal injuries were seen in 15 percent of the patients. Kalougivaki JJVP et al described the demographic profile and distribution of injuries from autopsy cases due to fatal Road Traffic Accidents (RTA) in Fiji. This is a retrospective autopsy based study consisting of 102 medico-legal autopsies performed by the Fiji Institute of Forensic Science, Fiji Police Force during the period of two calendar years from January 1st 2011 to December 31st 2012. Out of the 1454 medico-legal autopsies performed during the study period, 102 (7%) were due to fatal RTA. There were 72 (70.5%) males and 30 (29.5%) female fatalities with an overall male and female ratio of 2.3:1 and the 30 to 44 years age group showed highest number of victims of 30 (29.4%). The months of October in 2011 and August in 2012 took the maximum toll of road traffic deaths of 9 (8.8%) and 12 (11.6%) respectively. The highest number within the road user group were the passengers of 53 (51.9%) followed by the pedestrians and drivers of 32 (31.2%) and 16 (15.6%) respectively. Human behavioural errors or factors by all the road users of 95 (93.1%) was the highest contributing factor and pre-hospital mortality was most common, particularly road traffic death at the scene (51.9%) and those whilst en route to hospital (29.4%). Highest number of injuries were head injuries of 67 (65.7%), followed by multiple injuries of 57 (55.6%), thoracic injuries of 56 (54.9%), abdominal injuries of 31 (30.3%),

vertebral injuries 21 (20.5%) and major vessel injuries of 12 (11.7%). The most common mechanism of death was haemorrhagic shock of 90 (88.2%) followed by asphyxia of 7 (6.8%), arrhythmias of 3 (2.9%) and finally septic shock of 2 (1.9%). This study emphasized the need for better pre-hospital and hospital trauma management, improved traffic law enforcement, effective traffic related and health policy creation, and the establishment of a national traffic traumatic injury surveillance registry.<sup>11</sup>

## CONCLUSION

Under the light of above obtained results, the authors conclude that road traffic accident is a common reason of mortality and morbidity affecting significant proportion of world population. Traffic officials should be strictly instructed to monitor the system so that frequency and incidence of road traffic accidents could be decreased. However; further studies are recommended.

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