

Original article:

Study of medico legal aspects of road traffic accidents

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Abstract:

Introduction: India experienced very rapid population growth from 48 million to 1.2 billion in a span of five decades. In India rapid urbanization, industrialization, population explosion and migration of people in past two decades results in enormous growth in the field of road transportation.

Material and methods: The study was conducted in mortuary of forensic medicine and toxicological department of tertiary care center. Victims of road traffic accident brought to the mortuary of forensic medicine and toxicological department of tertiary care center for autopsy/ medico-legal evaluation.

Results: The most common offending agent causes for the accidents were truck (36%) followed by car (25%) and two wheelers (25%) have been found to be mostly responsible. Same results showed in the study conducted by Binod Kumar Ravi et al i.e heavy vehicles such as truck and Lorries are mostly responsible (51.72%) cases followed by light vehicles such as car, Taxi and auto- Rickshaw (25.86%) and motor cyclist (12.93%).

Conclusion: Road traffic accidents are increasing at an alarming rate, causing the loss of valuable work force and resources. Most of them caused by human errors and they can be prevented by providing road safety education to all. Improvement of roads, streetlights and displaying of traffic signs needed.

Introduction:

India experienced very rapid population growth from 48 million to 1.2 billion in a span of five decades. In India rapid urbanization, industrialization, population explosion and migration of people in past two decades results in enormous growth in the field of road transportation. This resulted in increasing amount of the road traffic leading to increased risk for occurrence of road traffic accidents. In India road traffic injuries will be third leading cause of death by 2020 with the increase in the use of two wheelers and congestion and environmental pollution this mortality rate will continue to rise.¹

Evidence indicates that although India has one percent of the world's vehicles, it accounts for as high as six percent of world's RTAs (Fitzgerald et al, 2006). Seventy three percent of deaths due to RTAs from the South-East Asia Region are in India ((WHO, 2009). RTAs account for 16.8 deaths per 100,000 population (WHO, 2009: p 253) and around 2 million people in India are disabled due to RTAs (WHO, 2009). The RTA rate of 35 per 1000 vehicles in India is one of the highest in the world and so is the associated RTA fatality rate of 25.3 per 10,000 vehicles (Fitzgerald et al, 2006). Estimated cost of RTAs in India is three percent of the GDP, which is much higher than that

in high-income countries (Sundar Committee Report, date Unspecified).²

India is no exception and data showed that more than 1.3 lakh people died on Indian roads, giving India the dubious honor 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 rules has exacerbated the situation.³

Material and methods:

The study was conducted in mortuary of forensic medicine and toxicological department of tertiary care center.

The setting was selected on the basis of:

- Availability of the sample
- Feasibility of conducting study
- Geographical proximity

Victims of road traffic accident brought to the mortuary of forensic medicine and toxicological department of tertiary care center for autopsy/ medico-legal evaluation.

Sample and sample size-

The sample consists of 200 autopsy cases.

Sampling technique-

Sampling techniques refers to the process of selecting a portion of the population to represent the entire population.

A purposive sampling technique was adopted for the selection of sample.

Inclusion criteria-

Thoraco-abdominal injuries due to road traffic accidents during study period between September 2016 and September 2018 that are brought to mortuary of tertiary care centre.

Exclusion criteria-

1. Head injury of any cause
2. Cases with injuries sustained over other body parts except thorax and abdomen.
3. Thoraco-abdominal injuries sustained by any other cause other than road traffic accident like railway accident, fall from height, assault.

The data from the autopsy form and questionnaire was fed into coded Performa sheets that were entered onto a computer database.

Results:

TABLE: -1 BONY FRACTURES AMONG DIFFERENT TYPES OF ROAD USERS IN ROAD TRAFFIC ACCIDENTS

Victims	Ribs	Sternum	Clavicle	Combined	Thoracic spine	Abdominal spine
Pedestrians	18	11	2	6	3	2
Pillion	9	0	0	5	6	1
Motor cyclist	11	7	4	14	3	2
Cyclist	3	0	0	1	0	0
Driver of automobiles	10	6	4	17	5	3
Not known	3	2	2	5	2	0
Total	54	26	12	48	19	8

TABLE:-2 TYPES OF INTERNAL INJURIES AMONG DIFFERENT GENDER

GENDER	LACERATIONAS	CONTUSIONS	CRUSH
MALE	119 (59.5%)	100 (50%)	31 (15.5%)
FEMALE	46 (23%)	41 (20.5%)	15 (7.5%)

TABLE: - 3 DISTRIBUTION OF TYPES OF EXTERNAL INJURIES

Regions	Abrasions		Contusions		Lacerations	
	Freq.	%	Freq.	%	Freq.	%
Abdominal wall	49	24.5	41	20.5	22	11
Thoracic wall	68	34	54	27	64	32
Abdomino-thoracic wall	62	31	53	26.5	39	19.5

Discussion:

The most common offending agent causes for the accidents were truck (36%) followed by car (25%) and two wheelers (25%) have been found to be mostly responsible. Same results showed in the study conducted by Binod Kumar Ravi et al i.e heavy vehicles such as truck and Lorries are mostly responsible (51.72%) cases followed by light vehicles such as car, Taxi and auto- Rickshaw (25.86%) and motor cyclist (12.93%).

Present study showed that Maximum number of cases were reported between 6pm- 12mn i.e. 78 (39%) and followed by 6am-12noon 44 (22%) and 12mn-6am 36 (18%). Maximum number of accidents occurred in the evening hours and minimum in morning hours. Our study is similar to the observation made in study conducted by N. Bayapareddy at Bangalore. Maximum number of accident in evening may be due to high rush hour traffic (people return home from work), tiredness after a day work, urgency to reach home, poor visibility due to insufficient street lightning, evening is the time to go and come from entertainment etc. Minimum number of accident in the night can be explained by the fact that it is the quietest period of the day and most of the people remain indoors or go to sleep.

Most of deceased 130 (65%) in this study met with accident at highways followed by state roads (29%). High number of road traffic accidents on highways could be attributed to high speed, rash driving and more number of heavy vehicles.

In present study, Majority of victims were died within 6 hours of accident (42%) followed by death on spot (36%) and least after 12 hours (8%). The well known explanation could be that most of major vital organs of the body are located in these two cavities and injuries to these organs causes severe blood loss leading to hemorrhagic shock which is the mode of death in these cases. ⁴Thoraco- abdominal involvement in the RTA can be related to anatomical location of the region that makes it easily susceptible to impact in any form of blunt force trauma. In our study, significant number of victims had combined thoraco- abdominal injuries followed by thoracic injuries and abdominal injuries alone.^{5,6}

In modern day civilian trauma centers, thoracic injury directly accounts for 20-25% of deaths due to trauma and thoracic injury or its complication are a contributing factor in a further 25% of trauma deaths.⁶

Conclusion:

Road traffic accidents are increasing at an alarming rate, causing the loss of valuable work force and resources. Most of them caused by human errors and they can be prevented by providing road safety education to all. Improvement of roads, streetlights and displaying of traffic signs needed.

References:

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