



# To correlate subjective Morbidity and Mortality in road traffic accidents

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## Abstract

**Background:** The development of science in various aspects of human life has evolved far more superior, sophisticated, and lethal weapons of assault like household items, atomic energy etc. Due to the effect of urban civilization, Road traffic accidents are going to be increased and it takes approx. 1.2 million people's life. Greatest difficulty in their management and in the timely diagnosis. Hence, aim of study is to get knowledge and to assess the pattern of the blunt chest injuries among accident victims travelling in different modes of road transportation.

**Material and Methods:** Data was collected from 100 cases of death by road traffic accident that were brought for medico-legal autopsy at the mortuary of Forensic Medicine Department, Rajajeswari Medical College and Hospital Bengaluru, during the period from December 2013 to May 2015.

**Results:** Out of 100 cases studied, majority of the victims were aged between 21-40 years (66%). Males comprised the majority of victims as compared to females in the ratio 4.5:1. Study revealed that 80% victims of blunt chest injury had died within 6 hours and 6% cases survived for more than 24 hours. Majority of the accidents occurred in the morning and evening hours between 06.00am to 12.00 noon and 6.00pm to 12.00 midnight respectively (36% each). Most of the RTA occurred in highway roads (78%). Maximum cases had injuries in combination of different parts of body (50%). Most of the incidence occurred in summer (50%). Most of the cases had combination of injury to more than one organ (50%).

**Conclusion:** All blunt thoracic traumas constitute potential factor in increasing the amount of morbidity and mortality and therefore proper attention towards their accurate diagnosis and satisfactory management is mandatory. This study also shows that initial six hours are very crucial from the time of the accident to get the extra medical care which may help to save productive age of victim.

**KeyWords:** Road Traffic Accident, Blunt trauma, Thoraco injury

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## Introduction

Road traffic accidents (RTAs) have been considered as main leading and progressive factor for global disease burden. Globally every year approximately 1.3 million people lose their life as a result of a road traffic collision. Due to RTAs approx. twenty to fifty million people are living with nonfatal injuries from a collision, and these injuries are going to become main cause of disability worldwide<sup>1</sup>. Road traffic

accidents are expected 3rd leading cause of global disease burden<sup>2</sup>. WHO reported 1.24 million deaths worldwide due to road traffic injuries<sup>3,4</sup>.

Trauma is also leading cause of death in developing countries and has become major health and social problem. Trauma due to RTAs generally affects young people and takes more years of life.

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Accidents are epidemic in civilized world; and our country is not an exception to this universal trend, and has witnessed a steady increase in accidental trauma, at present ranking fourth among chief causes of death. In urban life 75% of thoracic trauma follows blunt chest injury. It is a significant cause of morbidity and mortality in India. Due to masking of thoracic trauma with associated injuries like head injury, abdominal trauma and bony injury, it becomes difficult in diagnosis. In Bangalore, vehicular accidents are one of the most common contributory factors to the chest trauma because of multiplicity of vehicles. Due to size and anatomical position of chest cavity, it is a major site of trauma in road accidents. Early recognition and instant treatment are must to save the lives of many of these patients. Repeated clinical examinations and observations for the appearance of clinical signs and symptoms in persons with chest injuries are more important than any other investigation. Very few reliable epidemiological data are available for trauma caused by blunt mechanisms in India. Hence, we in the Department of Forensic Medicine, Rajarajeswari Medical College and Hospital, Bangalore have undertaken this prospective study of pattern of chest injuries due to blunt trauma among road traffic accident victims autopsied at Rajarajeswari Medical College and Hospital, Bangalore. In this study we tried to establish the relationship of survival period with age, organ involved and pattern of injury of victims of chest trauma due to RTAs.

### Materials & Method

Present study is based on purposive sampling

method. 100 death cases of blunt thoracic trauma by road traffic accident, brought for medico-legal autopsy at the mortuary of Forensic Medicine Department, Rajarajeswari Medical College and Hospital Bangalore, during the period from December 2013 to May 2015. Decomposed bodies and those cases where the nature of sustenance of injury was not known were excluded from this study.

The epidemiological and sociodemographic characters linked with victim's accidents were collected from the papers sent by the police namely Inquest report of Karnataka police and details from concerned police constables, investigation officers and authorities, witnesses of the incident, relatives, attendants, friends and others accompanying the dead body. A detailed proforma for the pathological features of the victim such as the nature of wound, site of injury, pattern and distribution of injury, survival period of victim by doing actual autopsy examination, environmental conditions (type of road, season, time of incidence), and other relevant data related to victim was prepared for the present study.

### Statistical Analysis

Data were prepared in Excel and coded with specific key words to maintain confidentiality of the victim. Statistical evaluations were performed by using Statistical Package of Social Sciences (SPSS) system 20.0. Statistical tests done are in percentage and proportion.

### Results

**Table 1: Age & Sex distribution of cases (N=100)**

Age	Male N (%)	Female N (%)	Total N
0-10	0	1 (5%)	1
11-20	2 (2%)	2 (11%)	4
21-30	36 (43.9%)	8 (44%)	44
31-40	21 (25.6)	2 (11%)	23
41-50	10 (12%)	5 (27%)	15
51-60	8 (9%)	0	8
>60	5 (6%)	0	5
Total	82	18	100



**Table 2: Distribution of accidental cases according to type of roads (N=100)**

Type of Road	No of Cases N (%)
Highway Road	78 (78)
City Road	16 (16)
Village Road	06 (6)
Total	100

**Table 3: Distribution of accidental cases according to the time of incidence (N=100)**

Time of incidence	No of Cases N (%)
06.00- 12.00	36 (36)
12.00- 18.00	26 (26)
18.00- 00.00	36 (36)
00.00- 06.00	02 (02)
Total	100

**Table 4: Distribution of accidental cases according to the Season (N=100)**

Time of incidence	No of Cases N (%)
Summer (March-June)	50 (50)
Rainy (July-October)	16 (16)
Winter (November-February)	34 (34)
Total	100

**Table 5: Distribution of cases according to the age and period of survival (N=100)**

Age/ Survival period in hours	<6 hours N (%)	6-12 hours N (%)	13-18 hours N (%)	19-24 hours N (%)	>24 hours N (%)	Total N
0-10	1					1
11-20	4					4
21-30	34	6			4	44
31-40	19	1	1		2	23
41-50	12	2	1			15
51-60	6	2				8
>60	4	1				5
Total	80	12	2		6	100

2243

**Table 6: Distribution of cases according to the types of the organ involved and period of survival (N=100)**

Types of organ/ Survival period in hours	<6 hours N (%)	6-12 hours N (%)	13-18 hours N (%)	19-24 hours N (%)	>24 hours N (%)	Total N
Lung	36	6	1		1	44
Heart	4					4
Major blood vessels	1	1				2
Combined	39	5	1	0	5	50
Total	80	12	2		6	100

**Table 7: Distribution of cases according to the pattern of injuries over body and period of survival**



(N=100)

Pattern of injury/ Survival period in hours	<6 hours N (%)	6-12 hours N (%)	13-18 hours N (%)	19-24 hours N (%)	>24 hours N (%)	Total N
Chest alone	4					
Chest and adjacent part of head & neck	26	4				30
Chest and adjacent parts of abdomen	13	2	1			16
Combined	37	6	1	0	6	50
Total	80	12	2		6	100

**Discussion**

Death due to road traffic accident is one of the main causes of morbidity and mortality in India. This study has shown the factors accountable for road traffic accidents and the patterns of the injuries among RTAs victims and also tried to show the association of age and pattern of injury that expose to accidents with survival period of victims. Our study revealed that maximum number of blunt chest injuries in RTAs were associated with young age. Majority of victims were male, between 21 to 30 years of age, which were followed by 31 to 40 years of age. In our study male female ratio was 4.5:1. Similar results were revealed in previous studies conducted at several places<sup>5-9</sup>. It shows that most active and productive age group of people are involved in RTAs. This may be due to generally in home, children are taken care of by elders people. Less proportions of RTAs in late age group maybe they are less mobile or remain high alert in driving as compared to young generation. Young age group people are more responsible for their family earning and comparatively males are more exposed to hazards of road, as they are only the working and earning members in majority of families, while females usually stay in and look after the household work in India.

In present study It was seen that maximum number of chest injuries occur in RTAs in highway road 78 cases (78%) (Table No 2). It was supported by other studies also<sup>9,10</sup>. It was also seen that time of 6.00 am to 12.00 noon and 6.00 pm to 12.00 mid night is on high risk of RTAs (Table No 3). Movement of people and vehicles are common during these time periods. Maximum number of accidents in the morning hours is probably due to high rush hour traffic urgency to reach work place and inadequate traffic control. Accidents in the evening hours are probably due to tiredness, fatigue of drivers and poor visibility due to lack of street lights and also intoxication. Similar results were observed in the studies conducted at different

places<sup>10-12</sup>. In the present study we observed that 50 cases (50%) were occurred in summer followed by 34 cases (34%) in winter (Table No 4). Our study is in contrast to other studies<sup>10,11,12,13</sup> due to two wheeler rider are maximum in our study, most of two wheeler rider prefer public transports during rainy season and during summer they are exposed to hazards of road.

Our study revealed that 80% victims of blunt chest injury succumbed to death within 6 hours and 6% cases survived for more than 24 hours (Table No 5). The period of survival has not shown any improvement despite the advancement of medical facilities. Similar results were observed in previous case studies<sup>10,12,14-16</sup>. Combination of injury to more than one organ were common (50% cases) followed by the injury of lung (44 %) (Table No 6). Similar results were observed in studies of Dr. Hamam Singh<sup>10</sup>, Pathak Manoj<sup>17</sup> and Zarza<sup>19</sup>. This could be due to mobility of lung and heart in chest cavity which could under acceleration and deceleration impact. Study reveals involvement of multiple body parts in 50 % victims of blunt chest injuries, followed by Chest and adjacent parts of head and neck (30%), and chest alone is involved in 4 % victims. Other studies also supported it<sup>10,15,18,20,21</sup>

The study data reveals that the survival rate from the time of accident till death is an average of 6 hours, irrespective of the age of the victims and irrelevant of the type of injury or organ involved in the accident. Accordingly, the agencies and health care facilitators must consider these first 6 hours as very crucial in the life expectancy of the victims.

**Conclusion**

The vehicular accidents usually involve young people between the age group 20-40 years. Fatal accidents in this group not only represents the tragic loss to the family but also severe economic loss to the community as it encompasses wastage of educational training and loss of productive years of



life. We tried to establish the association of age and pattern of injury that expose to accidents with survival period of victims to get the knowledge that would help in early diagnosis and management of such injuries. This study also reveals that initial 6 hours are very crucial from the time of the accident to get the extra medical care which may help to save productive age of victim.

### Ethical clearance

Taken from institutional Ethics committee

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Nil

### Conflicts of interest

There are no conflicts of interest.

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