

Original article**Injuries among Drivers in RTA**Ahmad M¹, Rahman FN², Haq MR³, Nargis N⁴, Karim MF⁵**Abstracts:**

Background: Road Traffic Accidents (RTA) are responsible for the greatest number of injuries and fatalities worldwide by killing around 1.2 million people each year and injuring another 50 million. **Objective:** To evaluate the present situation of Road Traffic Accidents (RTA) in Dhaka and to find out the pattern of injuries present in the bodies of drivers who were victims of fatal RTA. **Materials & Method:** This cross sectional descriptive study was conducted at the Dhaka Medical College (DMC) Morgue during the period January 2008 to December 2008. Specific findings regarding injury of drivers were noted during post mortem examinations. **Results:** A total of 2714 post mortems were conducted during the study period and out of which 813 were cases of RTA (29.95%). Maximum RTA occurred at daytime 282 (34.68%). Greater number of accidents occurred during September 90 (11.07%), followed by January 85 (10.45%). Maximum accidents took place on highways 650 (79.95%) and buses were the most dangerous vehicle causing highest number of casualties 307 (37.76%). Among the victims, 545 (67.03%) were male. Out of all victims 39 (4.80%) were drivers. Highest incidence of fatality in RTA (30.38%) was observed among the age group 21 to 30 years. Among the deceased drivers, 36 (92.30%) were literate. Considering injuries of the drivers 100% victims had multiple abrasions and bruises, lacerations were present in 35 (89.74%), and intracranial injury in 36 (90.31%) cases. Specific injuries of drivers like injury to lower limbs due to break pedal/clutch was found in 27 (69.23%) cases, steering wheel injury was present in 24 (61.53%) cases and whiplash injury was found in 15 (38.46%) cases. However, no seat belt injury was observed in any deceased driver. **Conclusion:** Strict enforcement of traffic law, using seat belts, maintaining fitness of vehicles, driving licenses, improving public awareness etc. can reduce this economical burden and protect vulnerable groups of people of our country.

Keywords: road traffic accidents; PM examination; driver's injury pattern

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Introduction

Road traffic accidents (RTA) are responsible for the greatest number of injuries and fatalities worldwide by killing around 1.2 million people each year and injuring another 50 million. These victims occupy 30-70% of orthopedic beds in hospitals of developing countries¹. The RTA is the most common causes of death below the age of 50 years in developed countries and predicted to be the third leading contributor to the global burden of disease, just behind clinical depression and heart disease by 2020². In developing

countries 90 percent of the disability-adjusted life years (DALYs) lost occur because of road traffic injury³. World Bank estimates that road traffic injuries cost 1 to 2 % of the gross national product (GNP) of developing countries, or twice the total amount of development aid received worldwide by developing countries⁴.

Materials and methods

The study was conducted among victims of Road Traffic Accidents (RTA) at the Dhaka Medical College (DMC) Morgue during the period January

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2008 to December 2008. Information regarding accidents and identification of drivers among the victims were noted with the help of accompanying inquest report, driving license and attendants of victims. Specific findings regarding injury of drivers were noted during post mortem examinations.

Results

A total of 2714 post mortems were conducted during the study period and out of which 813(29.95 %) were cases of RTA (Table-I).

Maximum accidents occurred at daytime 282 (34.68 %), followed by night 233 (28.66 %) (Fig-1).

Greater number of accidents occurred during the month of September 90 (11.07 %), followed by January 85 (10.45 %) and December 83 (10.20 %)

(Table-II).

Maximum accidents took place on highways 650 (79.95 %), followed by cross junction 73 (8.98%) (Fig-2).

Buses were the most dangerous vehicle causing highest number of fatalities 307 (37.76 %), followed by trucks 141 (17.34 %), micro buses 87 (10.70%) and mini buses 71 (8.73%) (Table-III).

Among the victims, 545 (67.03 %) were male and 268 (32.96 %) were female. Out of these victims 39 were drivers, all of whom were male. Rest of the victims were pedestrians 564 (69.37 %), followed by passengers 210 (25.83 %) (Fig-3).

Highest incidence of RTA (30.38 %) was observed

Table -I : Types of Postmortem Examinations performed during the year 2008 (n =2714)

Types of Postmortem Examinations	Number of victims	Percentage
Road Traffic Accidents	813	29.95%
Assault	322	11.86%
Hanging	298	10.98%
Poisoning	216	7.96%
Burn	205	7.55%
GRP cases	190	7.0%
Natural death	174	6.41%
Negative autopsy	108	3.98%
Fall from height	93	3.43%
Fire arm injury	82	3.02%
Strangulation	70	2.57%
Electrocution	67	2.47%
Still born	35	1.29%
Drowning	25	0.92%
Others	16	0.59%
Total	2714	

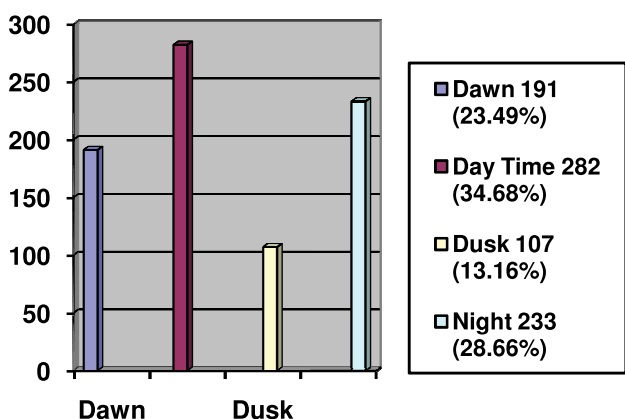


Fig-1: Time of RTAs ; (n=813)

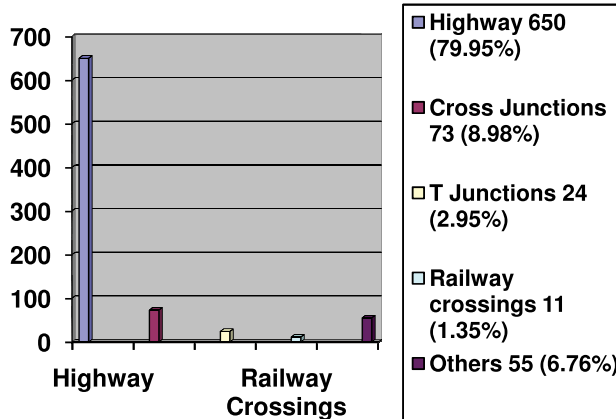


Fig-2 : Places of occurrences ; (n=813)

Table-II : Month wise distribution of RTAs ; (n=813)

Month	Number of victims	Percentage
January	85	10.45%
February	67	8.24%
March	69	8.49%
April	52	6.39%
May	45	5.53%
June	49	6.03%
July	79	9.72%
August	68	8.36%
September	90	11.07%
October	58	7.13%
November	68	8.36%
December	83	10.20%

Table-IV: Age distribution of fatal RTA victims ; (n=813)

Age in years	Number of victims	percentage
<10	05	0.61%
11-20	172	21.16%
21- 30	247	30.38%
31- 40	201	24.72%
41- 50	104	12.79%
51- 60	74	9.10%
60- 70	07	0.86%
>70	03	0.37%

Table-III : Types of vehicles involved in fatal RTA (n=813)

Type of vehicles	Number of victims	percentage
Bus	307	37.76%
Truck	141	17.34%
Micro bus	87	10.70%
Mini bus	71	8.73%
Covered van	69	8.49%
Pick up	57	7.01%
Oil tankers	22	2.70%
Private cars	20	2.46%
Others	39	4.79%

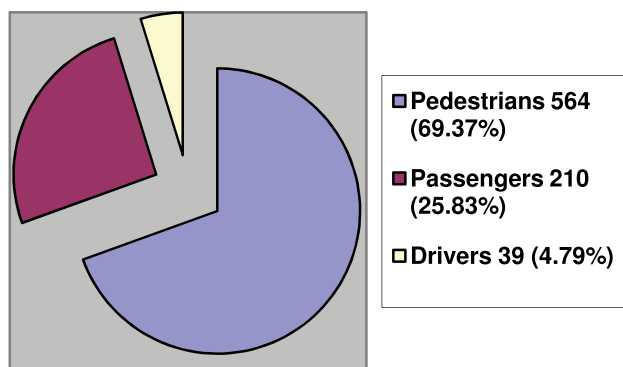


Fig-3 : Victims of Road Traffic Accidents among the age group 21 to 30 yrs (Table-IV). Among the drivers age group 30-40 years were more involved (Fig-4).

Regarding literacy rate, 36 (92.30%) was literate. All the deceased drivers had multiple abrasions and bruises, lacerations were present in 35 (89.74 %), and intracranial injury in 36 (90.31 %) cases. Specific injuries of drivers like injury to lower limbs due to

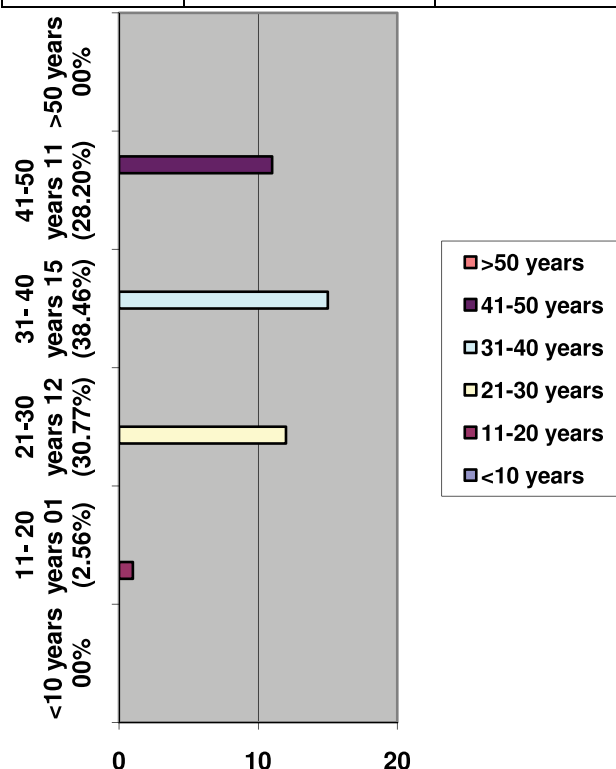


Fig-4: Age distribution of victim Drivers ; (n=39)

break pedal/ clutch was found in 27 (69.23%) cases, steering wheel injury was present in 24 (61.53%) cases and whiplash injury was found in 15 (38.46%) cases (Table-V),

However no seat belt injury was observed.

Discussion

In Bangladesh unplanned roads and highways, incompetent traffic system, violation of traffic laws by the drivers and pedestrians, overcrowding, reckless driving etc all are the possible explanations for highest figure of road traffic accidents in the city areas. The total number of accidents in Bangladesh 2000 was 3,419 and casualties were 3050 . The number injured was 1,988 in 1987, which rose to 2,653 in 2000, a rise of 33 %. The available data

Table- V : Pattern of injury in deceased drivers ; (n=39)**N.B:** same victim had multiple types of injuries

Pattern of injury in drivers	Number of victims	Percentage
Multiple abrasions	39	100%
Multiple bruise	39	100%
Intracranial injury	36	90.31%
Laceration	35	89.74%
Injury to liver	34	87.18%
Injury to spleen	30	76.92%
Fracture of lower limbs bones	27	69.23%
Fracture of ribs	26	66.66%
Steering wheel injury	24	61.53%
Whiplash injury	15	38.46%
Fracture of skull	11	28.20%
Injury to Kidney	05	12.82%
Fracture of pelvis	03	7.69%

covering a period of 13 years indicate that the total number of RTA were 38,464 and the number killed was 26,363⁵. The estimated national cost of road accident is Tk. 38 billion or US\$ 644 million. This is said to be 1.5 percent of GDP and three times annual expenditure of the RHD⁶.

In developing countries, exposure to potential road traffic injury has increased largely because of rapid motorization, coupled with rapid population growth, lack of safety features in vehicles, crowded roads, and lack of law enforcement. For example, in Vietnam, the number of motorcycles grew by 29 percent in 2001, with an associated increase of 37 percent in the number of road traffic deaths⁷. In the present study among the victims, male female ratio was about 2:1 (67.03%: 32.96%) This ratio is in conformity with previous studies performed in India⁸⁻¹². Men are at higher risk of injuries than women because in our country they are predominantly the earning member of the family. They also have greater exposure to traffic and more risky behavior than females such as running to catch a bus, hanging on the side of bus, impatience, lack of attention and drinking alcohol (in case of drivers) prior to driving etc¹³⁻¹⁵. Among the drivers all the victims (39) were male, which indicates males are predominantly engaged in the jobs of driving in our country.

About the time of incidence, most accidents occurred during daytime 282 (34.68%), which corresponds with increase traffic load on road at daytime due to rush of passengers towards offices, educational institutes and industries and the result coincides

with similar studies in other countries¹⁶. Sleeping tendency among drivers at night, poor visibility, lack of luminescence marking on road, over taking of vehicles, increase number of cargo vehicles on road are the possible explanations of accidents at night. Regarding various months of the year, most accidents occurred at September 90 (11.07%). September is the rainy season in Bangladesh, when the road becomes muddy and slippery causing more accidents. Also rain causes visual obstruction to drivers. Again during winter poor visibility occurs due to heavy fog and mist, hampering driving.

Maximum accidents took place on highways 650 (79.95%) where heavy vehicles run throughout the day and night. Regarding vehicles; buses were the most dangerous vehicle causing highest number of fatalities 307 (37.76%), followed by trucks 141 (17.34%), Micro buses 87 (10.70%) and mini buses 71 (8.73%). This could be attributed to the fact that victims in this study are from city area, where this types of public vehicles are numerous. Studies showed that in developing countries, buses and trucks are involved in a much greater proportion of crashes; yet lack relevant safety standards¹⁷⁻¹⁹.

In this study, highest incidence of RTA 247 (30.38%) was observed among the age group 21 to 30 years. This coincides with other study reports, which explains that more than one-half of all road traffic deaths globally occur among people aged 15 to 44 years; which is their most productive earning years. Similar age distribution of RTA victims has also been reported in other studies from developing countries

²⁰⁻²⁴ Lower proportion of RTA in age group below 10 years and above 60 years could be explained by the fact that children are usually taken care of by elders during travel and lesser mobility of geriatric people. Among the drivers highest number of victims were from age group 31 - 40 years 15 (38.46%) . These middle aged persons are more involved in driving professions. Only one case was found at the age group 11-20 year, the victim was a helper driving a minibus in absence of the driver. However no driver was found beyond 50 years of age, probably at this age no one bothers to hold the steering of a public vehicle which is a very tiring job giving tremendous mental and physical pressure on a person.

Considering educational qualification, 36 (92.30 %) drivers were literate, and 3 (7.69%) were illiterate. Since all the accidents took place within city area, so the number of literate persons were more among the victims. More over it is a requirement to be literate for receiving driving license.

There are several special pattern of injuries found in the drivers, mostly due to frontal impact. When an accident occurs, the driver first slides forward and his leg strikes the parcel self/ dash board. At the same time due to desperate breaking and clutching reflex pressure on feet causes fractures and injuries to leg bones. Abdomen and lower chest hits the steering wheel, inflicting steering wheel injury. The head also strikes the windshield, causing scalp injury and fracture to skull bones. Even the driver may be thrown out of the vehicle and hit the ground ²⁵. In this

study out of 39 drivers, 100% victims had multiple abrasions and bruises, lacerations were present in 35 (89.74 %), and intracranial injury in 36 (90.31 %). Specific injuries of drivers like injury to lower limbs due to break pedal/ clutch was found in 27 (69.23%) cases, steering wheel injury was present in 24 (61.53%) cases and whiplash injury was found in 15 (38.46%) cases , however no seat belt injury was observed. Most victims of RTA died mainly due to hypovolumic shock following haemorrhage or due to neurogenic shock ²⁶. This pattern of injury has similarity with other studies done before. In Mant's series of 100 driver fatalities. 70% drivers had broken ribs, 50% had liver rupture, 36% had injury to spleen, 31 had injury to lower limbs, and 19% had arm injury. Both Mant and Eckert's study showed that drivers had more incidences of head injury than passengers. If the driver is ejected out from the vehicle there is five times more injury than remaining in seat²⁷⁻²⁸. This indicates the importance of using seat belt, which is not regularly practiced in our country

Conclusion

Strict enforcement of traffic law, promoting efficient patterns of land use and providing shorter, safer routes for vulnerable pedestrians to reduce their exposure to high ways, using seat belts, maintaining fitness of vehicles, driving licenses, improving public awareness etc. can reduce this economical burden and protect vulnerable groups of people of our country.

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