# Retrospective Study on Magnitude and Pattern of Deaths due to Road Traffic Accidents in Sylhet

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**Abstract**

**Background:** Road Traffic Accident (RTA) is a neglected global health problem as well as medico-legal problem, but it constitutes one of the leading causes of morbidity & mortality in the Bangladesh.

**Methods:** A retrospective autopsy reports based study conducted to find out the magnitude and pattern of deaths due to road traffic accident (RTA) in the Department of Forensic Medicine of Sylhet MAG Osmani Medical Collegeduring the study period January 2016 to December 2018. After reviewing all postmortem reports, 301 cases of death were found due to RTA including railway accidents during the study period.

**Results:** Age incidence among the RTA victims washigh (19.60%) in ≥60 year age group and sex distribution representing a male: female ratio of nearly 2:1. More than half (54.82%) of the postmortem done under the Kotwali police station in Sylhet district. Injuries in the skull and scalp region were observed as a more common site in majority (85.38%) of cases. Regarding the types of injury, bruise (92.36%) and abrasion (86.71%) were found within majorities in the cases. The majority (91.36%) of the cases was observed died due to hemorrhage and shock. Injuries on skull (77.41%) and injuries to the brain (62.79%) also found as leading causes of deaths.

**Conclusion:** Strict enforcement of traffic law and promotingefficient preventive measures can reduce the incidence of RTA fatality and disabilities.

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**Keywords:** Pattern, Magnitude, RTA Deaths, Sylhet, Bangladesh

## Introduction

Road traffic injuries constitute a major public health burden with significant consequenceson mortality and morbidity and significant health and socioeconomic costs.[1] Globally, nearly1.35 million people are killed and 50 million injured every year in road traffic crashes.[2] Low- income and middle-income countries have higher road traffic fatality rates (21.5 and 19.5 per 100 000 population, respectively) than high-income countries (10.3 per 100 000). Over 90% of the world's fatalities on the roads occur in low-income and middle-income countries, which have only 48% of the world's registered vehicles.[3] In South-East Asian countries, 60–80% of road traffic injuries occurs in urban and semi-urban regions.[4] If appropriate steps are not taken, road traffic crashes are predicted to become the seventh leading cause of death by 2030 globally.[1]

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RTA causemechanical trauma, resulting in morbidity, disability and even mortality.[5,6] The fatality rate is also higher and still growing in Bangladesh wherepedestrians, motorcyclists, cyclists andpassengers are especially vulnerable.[7,8] RTA is the fourth leading cause of permanent disability for childrenin Bangladesh.[9,10] World Bank estimates that road traffic injuries cost 1-2% of the gross national product (GNP) of developing countries, or twice the total amount of development aid received worldwide by developing countries like Bangladesh.[11]

RTAs areincredibly increase due to the number of vehicles, high-speed technology along with other contributing factors like, poor roads, intoxicating influence of alcohol or drugs, inexperienceddrivers without having proper driving license, ignorance or intentional violation of traffic rulesetc. Victims in RTAs sustain varieties of injuries; external as well as internal injuries, may beabrasions, lacerations, contusions etc.[12] Internal injuries may be fractures, rupture of viscera, destruction of major arteries etc. Fatality in RTAs can be due to immediate causes like haemorrhage, injury to vital organs, vagal inhibition, neurogenic shock, embolismetc. and late causes like infection, complications of injuries, etc.[13] Early detection of the injuryand prompt treatment are necessary in saving the lives of many of these victims.[14]

**Methods**

*Study deign*

This is a retrospective study based on autopsy reports conducted to find out the magnitude and pattern of deaths due to road traffic accident (RTA) in the Department of Forensic Medicine of Sylhet MAG Osmani Medical College, Bangladeshduring the study period January 2016 to December 2018.

*Data collection*

After reviewing all postmortem reports,301cases of death were found due to RTAincluding railway accidents during the study period.Data were collected and recorded purposively from the postmortem examination reports.

*Data analysis*

The data were checked and cleaned followed by making a template, categorizing data, coding and recoding into IBM SPSS v23. The analysis was carried out by using descriptive statistics and presented with frequency tables and charts.

*Ethical approval*

Ethical approval was obtainedproperly from the institutional ethical committee.

**Results**

A total of 301 cases of road traffic accident (RTA) was reported during the period January 2016 to December 2018. Table I depictsthe demographic profile of RTA postmortem victims.Age incidence was peak (19.60%) in ≥60 year age group. One fourth (26.58%)of the victims were residing under the Kotwali police station, but the majority (30.90%) of the victims were residingoutside Sylhet district.More than half (54.82%) of the postmortem done under the Kotwali police station. Figure 1 illuminates the sex distribution of RTA postmortem cases.Sex distributionrevealed that 199(66.11%) males and 102(33.89%) females, which presenting a male: female ratio of nearly 2:1.

Table II interprets distribution of injuries involving different parts of the body. Injuries in the skull and scalp region were observed as more a common sitein majority (85.38%) of cases, and injuries in the brain and spinal cord were found in 76.08% cases as second foremost site. Figure 2 illustrates the magnitude of the type of injuries in the postmortem cases.

Table I: Demographic profileof RTA postmortem cases (n=301)

| | Frequency (n) | Percentage (%) |
|---|---|---|
| Age group (years) | | |
| <10 | 30 | 9.97 |
| 10-19 | 32 | 10.63 |
| 20-29 | 48 | 15.95 |
| 30-39 | 55 | 18.27 |
| 40-49 | 43 | 14.29 |
| 50-59 | 34 | 11.30 |
| ≥60 | 59 | 19.60 |
| Sex | | |
| Male | 199 | 66.11 |
| Female | 102 | 33.89 |
| Address of the victims (Police station) | | |
| Kotwali | 80 | 26.58 |
| Airport | 9 | 2.99 |
| Shahparan | 12 | 3.99 |
| Jalalabad | 21 | 6.98 |
| Southsurma | 13 | 4.32 |
| Companygonj | 10 | 3.22 |
| Gowainghat | 11 | 3.65 |
| Gulapgonj | 5 | 1.66 |
| Beanibazar | 3 | 1.00 |
| Zakiganj | 4 | 1.33 |
| Fenchugonj | 4 | 1.33 |
| Kanaighat | 4 | 1.33 |
| Jaintapur | 5 | 1.66 |
| Moglabazar | 4 | 1.33 |
| Biswanath | 5 | 1.66 |
| Osmaninagor | 8 | 2.66 |
| Sylhet railway | 10 | 3.22 |
| Others | 93 | 30.90 |
| Postmortem done to the Police station | | |
| Kotwali | 165 | 54.82 |
| Airport | 9 | 2.99 |
| Shahparan | 12 | 3.99 |
| Jalalabad | 21 | 6.98 |
| Southsurma | 13 | 4.32 |
| Companygonj | 10 | 3.22 |
| Gowainghat | 11 | 3.65 |
| Gulapgonj | 5 | 1.66 |
| Beanibazar | 3 | 1.00 |
| Zakiganj | 4 | 1.33 |
| Fenchugonj | 4 | 1.33 |
| Kanaighat | 4 | 1.33 |
| Jaintapur | 5 | 1.66 |
| Moglabazar | 4 | 1.33 |
| Biswanath | 5 | 1.66 |
| Osmaninagor | 8 | 2.66 |
| Sylhet railway | 13 | 4.32 |
| Others | 5 | 1.66 |

It was found that almost all cases were suffered from multiple types of injuries. Regarding the type of injuries, bruise (92.36%) and abrasion (86.71%) were found within majorities in the cases.

Table IV reveals pattern of causes of death of the postmortem cases. The majority (91.36%) of the cases was observed died due to hemorrhage and shock. Injuries on skull (77.41%) and injuries to the brain (62.79%) also found as alongside leading causes of deaths.

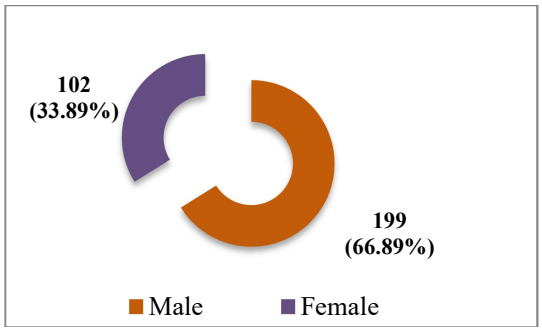


Figure 1. Sex distribution of RTA cases (n=301)

Table II: Distribution of injuries on the body of cases

| Injuries on the body | Frequency (n) | Percentage (%) |
|---|---|---|
| Skull and scalp | 257 | 85.38 |
| Brain and spinal cord | 229 | 76.08 |
| Chest | 131 | 43.52 |
| Abdomen | 86 | 28.57 |
| Pelvic region | 93 | 30.90 |

*Multiple responses

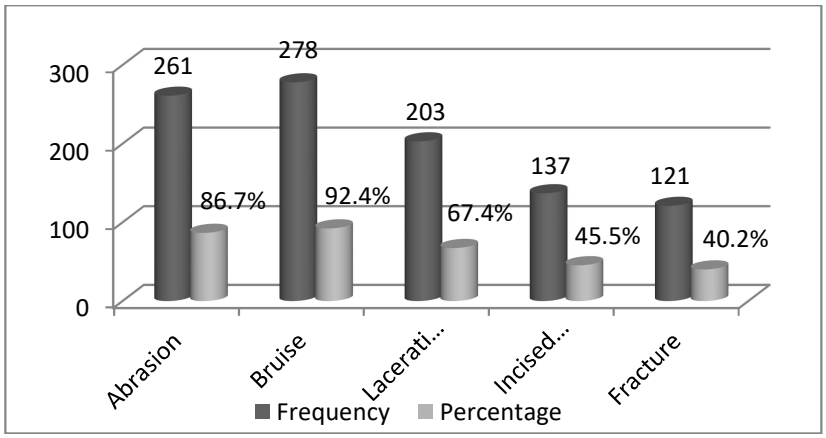


Figure 2. Magnitude of the type of injuries

Table IV: Pattern of causes of death

| Causes of death | Frequency (n) | Percentage (%) |
|---|---|---|
| Hemorrhage and shock | 275 | 91.36 |
| Injurieson skull | 233 | 77.41 |
| Injuriesto the brain | 189 | 62.79 |
| Spinal injuries | 56 | 18.60 |
| Multiple fractures | 116 | 38.54 |
| Heart or aortic injuries | 21 | 6.98 |
| Lungs injuries | 26 | 8.64 |
| Liver injuries | 12 | 3.99 |

*Multiple responses

**Discussion**

RTA is one of the foremost causes of disability and mortality, which a growing menace, incurring loss of valuable human resources, along with wastage of potential economic growth. The RTA deaths was high (19.60%)in the age group ≥60 year. A study conducted in Madurai, India had not similar statistics.[15] But about one-fourth (26.58%) cases were in young age group (10-29 years) which are similar to the different studies in Bangladesh andIndia.[16-18] In case of males maximum deaths (66.89%) occurred which are similar to the studies.[8] Injuries in the skull and scalp region(85.38%) were observed more common in majorities of cases which are similar to the studies.[19,20]

In the study, it was observed that almost all the cases were suffered frommultiple types of injuries. Bruise (92.36%) and abrasion (86.71%) were most common types of injuries which are similar to the studies.[15,19,20]The highest number (91.36%) of the cases was observed died due to hemorrhage and shock as a leading cause of deaths which are similar to the different studies in Bangladesh and India.[8,16-21]Throughout the postmortem reports analysis, it has been observed that head injuries was most common as site on the body and hemorrhage and shock was most common causes of deaths in the RTA victims.

*Conclusion*

Road traffic accident is an unforeseen and unfortunate occurrence. Preventing measures like avoiding high speeding and driving under the influence of alcohol, promoting the use of helmets, seat belts and other restraints, ensuring that people walking and cycling are more easily visible, improving the design of roads and vehicles, enforcing road safety regulations, and improving emergency medical services, could be used to control the increasing toll of deaths due to RTA. More importantly there should be enforcement of legislation and stringent punishment. Community involvement in implementingawreness campaigns such as motorcycle helmet campaign, anti-drunk-drivingcampaign etc. In addition setting speed limits, separate lane for bicycles, proper roadway for pedestrians in vehicle congested areas and over bridge or subway in national highways crossovers is an effective strategy that can reduce the risk of fatal road traffic accidents.

**References**

1. Road safety. World Health Organization. Regional Office for South-East Asia; 2017.
2. Global status report on road safety. [Internet].World Health Organization: 2018. Available from: https://www.who.int/publications-detail-redirect/global-status-report-on-road-safety-2018. [Cited on 2020 September 27].

3. Global status report on road safety: Time for action. [Internet].WHO: 2009. Available from: http://whqlibdoc.who.int/publications/2009/9789241563840_eng.pdf?ua=1. [Cited on 2020 September 27].
4. Injuries in South-East Asia Region: priorities for policy and action. [Internet].WHO: 2015. Available from: http://apps.who.int/iris/bitstream/handle/10665/177997/SEA-Injuries-24.pdf;jsessionid=3F5297168AE683FF3FBCEC32F2C1602A?sequence=1. [Cited on 2020 September 27].
5. Park K. Park's textbook of preventive and social medicine. Preventive Medicine in Obstet, Paediatrics and Geriatrics. 2005:374-9
6. Mostary KF, Halim KS, Rahman MM, Islam MS, Muna AT, Khan BEZ. Pattern of road trafic injuries and disability burden among accident victims. Bangladesh Medical Journal. 2018;47(1):28-32.
7. Jha N, Srinivasa DK, Roy G, Jagdish S, Minocha RK. Epidemiological study of road traffic accident cases: A study from South India. Indian J Community Med. 2004;29(1):20-4.
8. Ahmad M, Rahman FN, Chowdhury MH, Islam AK, Hakim MA. Postmortem study of head injury in fatal road traffic accidents. Journal of Armed Forces Medical College, Bangladesh. 2009;5(2):24-8.
9. Ahmad M, Rahman FN, Chowdhury MH, Islam AK, Hakim MA. Postmortem study of head injury in fatal road traffic accidents. Journal of Armed Forces Medical College, Bangladesh. 2009;5(2):24-8.
10. Yadollahi M, Gholamzadeh S. Five-Year Forecasting Deaths Caused by Traffic Accidents in Fars Province of Iran. Bulletin of Emergency & Trauma. 2019;7(4):373.
11. Peden M, Hyder A. Road traffic injuries are a global public health problem. BMJ. 2002;324(7346):1153.
12. Kumar RD, Raju GM, Vijayanath V. Deaths due to Fatal Road Traffic Accidents A Retrospective Study. Journal of Indian Academy of Forensic Medicine. 2013;35(3):236-8.
13. Nandy A. Principles of Forensic Medicine. 3nd ed. Calcutta: New Central Book Agency. 2010:515.
14. Th M, Nabachandra H. A study of pattern and injury severity score in blunt thoraco-abdominal trauma cases in Manipal. Medico-legal upda medico-legal update. 2005:47-52.
15. Selvaraj T, Uthayakumar R. A Retrospective Study of Fatal Road Traffic Accidents on Autopsies done at Madurai Medical College and Hospital. Indian Journal of Forensic Medicine & Toxicology. 2020;14(3):764-7.
16. Rahman MZ, Ahmad M, Rahman FN, Islam SM, Rahman KG, Haque MR. Abundance of road traffic accidents among medicolegal postmortem cases. Faridpur Medical College Journal. 2011;6(1):28-31.
17. Reddy NB, Hanumantha PM, Reddy NN, Reddy CS. An epidemiological study on pattern of thoraco-abdominal injuries sustained in fatal road traffic accidents of Bangalore: Autopsy-based study. Journal of emergencies, trauma, and shock. 2014;7(2):116.
18. Toro K, Hubay M, Sotonyi P, Keller E. Fatal traffic injuries among pedestrians, bicyclists and motor vehicle occupants. Forensic science international. 2005;151(2-3):151-6.
19. Kuna K, Prasad KS. Retrospective Study of Road Traffic Accident (RTA) Injury Case Profile in North Andhra. International Journal of Health and Clinical Research. 2019; 2(3):1-3.
20. Siddaramanna TC, Kumar DR. Retrospective study of pattern of external injuries in road traffic accidents. International Journal of Biomedical and Advance Research. 2014;5(09):451-3.
21. Farooqui JM, Chavan KD, Bangal RS, Syed MA, Thacker PJ, Alam S, Sahu S, Farooqui AA, Kalakoti P. Pattern of injury in fatal road traffic accidents in a rural area of Western Maharashtra, India. The Australasian medical journal. 2013;6(9):476.