

Original Article**Study on Magnitude and Pattern of Death in Road Traffic Accidents**

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Abstract

Background: Road Traffic Accident (RTA) is a derelict global health concern. It has constituted one of the foremost causes of morbidity & mortality in the low-income countries like Bangladesh.

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

Results: Age incidence among the RTAs victims was higher (19.60%) in ≥ 60 year age group and sex distribution, two-third (66.11%) were males and one-third (33.89%) were females. 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 the 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 death.

Conclusion: Implementation of proficient preventive measures and enforcement of traffic law are essential to reduce the RTAs incidence.

Keywords: Pattern, Magnitude, RTAs Death, Sylhet, Bangladesh.

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Introduction

Road traffic accident is a major epidemiological problem that have significant effects on public

health concern.¹ In every year about 1.35 million people are died and 50 million injured globally by road traffic accidents.² Road traffic mortality is higher in low-income and middle-income countries (21.5 and 19.5 per 100 000 population) than high- income countries (10.3 per 100 000). About 90% of the world's mortalities on the roads occur in low-income and middle-income countries.³ In South-East Asian countries, 60-80% of road traffic accidents occur in urban and semi-urban areas.⁴ If appropriate preventive measures are not implemented, RTA will be the 7th foremost cause of death by 2030 globally.¹

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Morbidities, disabilities and also mortalities occurred among the victims due to mechanical injuries cause by RTAs.^{5,6} The mortality rate is

higher among the pedestrians, bikers, cyclists and older passengers in Bangladesh.^{7,8} RTAs is the 4th foremost cause of long-lasting disabilities for children in Bangladesh.^{9,10} World Bank estimated, RTAs cost is 1-2% of the gross national product (GNP) of low- income countries like Bangladesh.¹¹

Road traffic accident is an unforeseen and tragic incidence. It is rapidly increasing due to the higher number of vehicles, high speed technology along with causative factors like inexpert drivers, talking on mobile phone during driving, alcohol or drugs use by drivers and violation of traffic rules etc. RTAs victims suffered various types of injuries in both external and internal parts in the body.¹² External injuries may be like abrasion, bruise, laceration and incised wound. Internal injuries may be fractures, injuries in viscera and rupture of major arteries etc. RTAs deaths can occur due to haemorrhage, shock, injuries of vital organs and vagal inhibition etc.¹³ The study of magnitude and pattern injuries and death will be help in implementation of preventive measures to reduce the morbidities and mortalities due to RTAs.

Methods

Study design and settings

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

Data collection

After reviewing all postmortem reports, 301 cases of death were found due to RTAs including 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 obtained properly 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 1 shows the demographic profile of RTA postmortem victims. Age incidence was higher (19.60%) in ≥ 60 year age group. More than half (54.82%) of the postmortem done under the Kotwali police station. The sex distribution of postmortem cases revealed that two-third (66.11%) were males and one-third (33.89%) were females.

Table 1: Demographic profile of 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
Postmortem done under 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 (Highway)	5	1.66

Table 2 interprets the magnitude of the type of injuries of the postmortem cases. It was found that almost all cases were suffered from multiple type of injuries. Regarding the type of injuries, bruise (92.36%) and abrasion (86.71%) were found within majorities in the cases.

Table 2: Magnitude of injuries type of cases

Type of injuries	Frequency (n)	Percentage (%)
Abrasion	261	86.71
Bruise	278	92.36
Laceration	203	67.44
Incised wound	137	45.51
Fracture	121	40.20

*Multiple responses

Figure 1 illustrates the distribution of injuries involving different parts of the body. Injuries in the skull and scalp region were observed as more a common site among the majority (85.38%) of cases, and injuries in the brain and spinal cord were found in 76.08% cases as the second most notable sites.

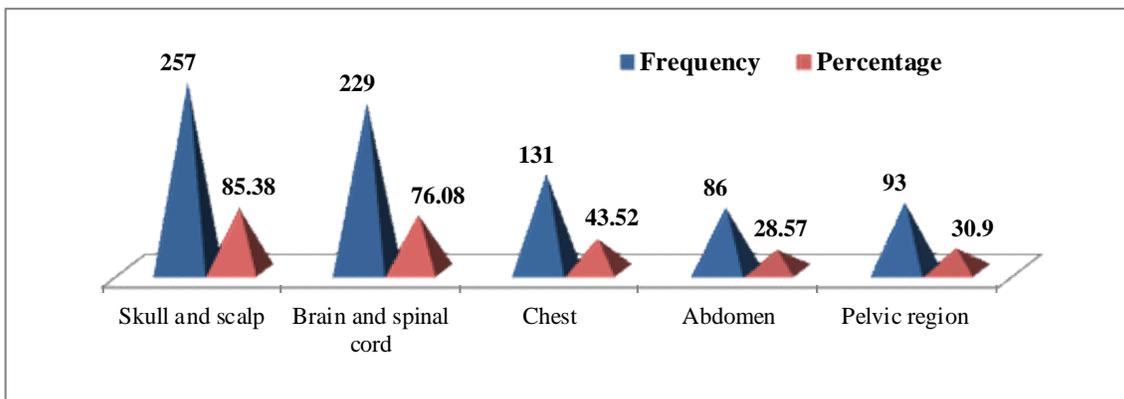


Figure 1: Distribution of injuries on the body of cases

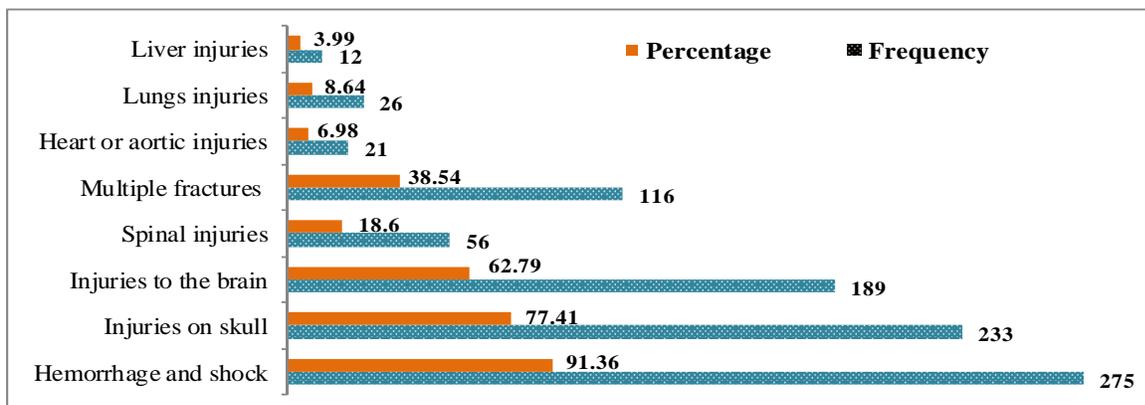


Figure 2: Pattern of causes of death

Figure 2 presents the pattern of causes of death of the postmortem cases. The majority (91.36%) of the cases were observed died due to hemorrhage and shock. Injuries on the skull (77.41%) and injuries to the brain (62.79%) also found as alongside leading causes of death.

Discussion

Road traffic accident (RTA) is an important cause of mortality and morbidity due to the increasing number of vehicles, lifestyle modifications and the risk attitudes among the drivers and population. RTA death was high (19.60%) in the age group ≥ 60 year. A study conducted in Madurai, India had not similar statistics.^{14,15} But about one-fourth (26.58%) cases were in young age group (10-29 years) which are similar to the different studies in Bangladesh and India.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 from multiple types of injuries. Bruise (92.36%) and abrasion (86.71%) were most common type of injuries which are similar to the studies.^{15,19,20} The highest number (91.36%) of the cases were observed died due to hemorrhage and shock as 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 were most common as site on the body and hemorrhage and shock were most common causes of death among the RTAs victims.

Conclusion

Stringent prosecution of traffic laws, promoting efficient patterns of roads, safer route for walkers to reduce exposure to highways and busy roads, use of seat belts, maintaining fitness of vehicles,

driving licenses, enlightening public awareness etc. can reduce the incidence of RTAs in our country. More importantly there should be legislation and punishment against drunken driving. It is apropos to conclude that RTAs related morbidities & mortalities can be minimised through strengthening of emergency healthcare laws and proper health education, and also emphasize in interventions with the combined efforts from the community, governmental and non-governmental organizations.

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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 February 25].
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 February 25].
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 February 26].
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 traffic 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. 3rd 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.