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## Original Research Article

# A Retrospective Study of Road Traffic Accident Cases Brought For Medico-Legal Autopsy at a Tertiary Care Hospital In Meghalaya.

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### Article Info

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### Key words

Road traffic accidents,  
Two-wheelers,  
Head Injury,  
Fatal injuries.

### Abstract

**Introduction:** India tops the global list of deaths due to Road Traffic Accidents (RTA). Meghalaya, in the north-eastern part of the country, has its own unique climate and geographical landscape. The present study is important in this area because the rugged terrain and unpredictable weather conditions are safety concerns for driving. **Materials and methods:** This was a retrospective observational study utilising data from hospital records to include all the cases of RTA from Jan 2017- Dec 2021 that were subjected to medico-legal autopsy at the institute mortuary (consecutive sampling). Data were entered in MS Excel sheet and analysed using SPSS Version 21 by descriptive statistics. **Results:** A total of 114 cases were included in the analysis. The commonest vehicle involved was the two-wheeler. Most victims belonged to the age group 21-40 years, involving males in 84% of cases. Head injury was the most common cause of death. In 45% of cases, accidents occurred during winter season. 32.46% of accidents took place at night. **Discussion:** Road Traffic Accidents lead to unwanted and untimely death. This study generates valuable data regarding fatal injuries and specific factors responsible for RTA in our region which would aid administrators in formulating road traffic policies and introducing preventive measures to reduce their occurrence.

### 1. Introduction

Death due to road traffic accidents (RTA) has become a world crisis. Every year, approximately 1.3 million people die due to RTA worldwide making it the 4<sup>th</sup> leading cause of death. India holds the top most position in the global list when it comes to death due to traffic accidents. Along with modernisation, motorisation has eased our lives but we can't discard the fact that this benefit has

also cost lots of lives simultaneously. Hardly a single day goes without reporting road traffic accidents in the casualties.

According to the data from International Road Federation "previously China topped India in Road Traffic Accidents (RTA) but now China has taken hold of the situation"<sup>1</sup>, whereas in India the situation is getting worse day by day.

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According to Ministry of Road Transport and Highways, “the number of RTA cases in the year 2019 was 449,002 and number of deaths accounted to 151,113. In the year 2020, death due to road traffic accident is claimed to be around 1.32 lakh lives which is the lowest in last 11 years and the reason for this is considered to be lockdown due to Covid-19.<sup>2</sup> So, if we see, the scenario as a whole remains the same. Death due to road traffic accidents accounts for the most amongst all autopsies conducted at our institute mortuary. The study is important in this area because the rugged terrain and unpredictable weather conditions affect an individual’s ability to drive and negotiate safely under such circumstances.

**Aims and Objectives**

1. To find out the pattern of fatal injuries due to RTA
2. To find out the specific factors responsible for RTA in this geographical area
3. To recommend preventive measures that can reduce road traffic accidents in this geographical area

**2. Materials and Methods**

This was a retrospective observational study utilising data from hospital records to include all the cases of road traffic accidents from Jan 2017-Dec 2021 that were subjected to medico-legal autopsy at the institute mortuary (consecutive sampling). The records were examined in the Department of Forensic Medicine and a pre-designed proforma prepared for data collection. Data extracted were then entered in MS Excel sheet and analysis was performed using SPSS Version 21 by descriptive statistics. Coded ID numbers were assigned for each of the cases for anonymity. Results were expressed in frequency (n) and percentage (%).

**Ethical considerations:**

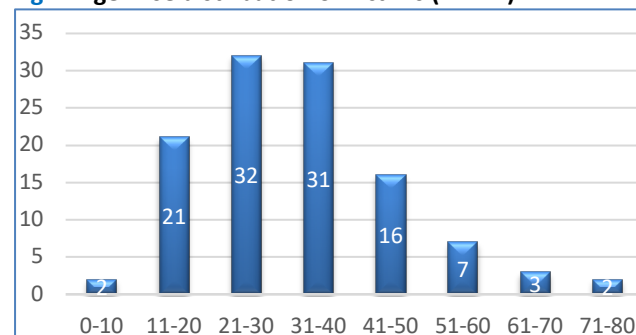
Ethics committee approval was obtained for the study from the Institutional Ethics Committee (IEC) on 13<sup>th</sup> Dec 2021; reference no. NEIGR/IEC/M1/F7/2021.

**3. Results**

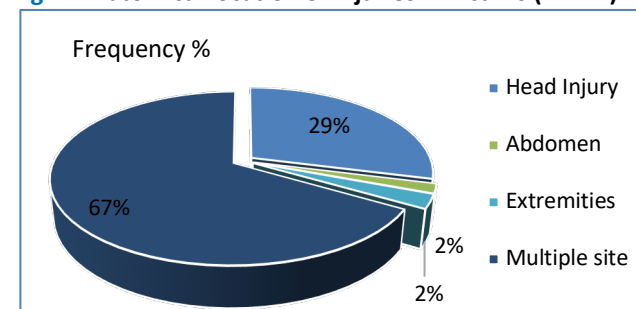
A total of 269 medico-legal autopsies were conducted during the study period out of which 114 (42%) were attributed to RTA. Of the 114 cases, males accounted for 96 cases and females accounted for 18 cases which is 84% and 16% respectively and it is observed that male to female ratio is 5:1. The age wise distribution of the victims of road traffic accident in this geographical area (Figure 1) reveals that the age group from 0-10 years comprised 1.76%, 11-20

years consisted of 17.54%, 21-30 years comprised 28.07%, 31-40 years accounted for 27.19%, 41-50 years consisted of 14.04%, 51-60 years consisted of 6.14%, 61-70 years comprised 2.63% and 71-80 years consisted of 1.76%. Hence, in our study most common age group was found to be 21-40 years of age that accounted for 45.26% of the total RTA cases.

**Fig 1: Age wise distribution of victims (n=114)**



**Fig 2: Anatomical location of injuries in victims (n=114)**



**Table 1: Cause of death (n=114)**

Cause of death	Cases	Percentage (%)
Head injury	83	72.81%
Haemorrhagic shock	22	19.30%
Septicaemia	4	3.51%
Aspiration pneumonia	3	2.63%
Peritonitis	2	1.75%

**Table 2: Victims as per Seasonal Variation (n=114)**

Climate	Frequency (n)	Percentage (%)
Winter	52	45%
Spring	17	15%
Monsoon	33	29%
Autumn	12	11%

As per anatomical location involved (Figure 2), most of the fatalities had multiple injuries that accounted for 66.67%, followed by head injury alone that comprised 28.95%. Abdominal injury and injury of extremities accounted for 2.63% and 1.75% respectively. It is seen that the most common cause of death was due to head injury that accounted for 72.81%. This was followed by haemorrhagic shock which was 19.30%. Other non-specific causes like

septicaemia, aspiration pneumonia, and peritonitis accounted for 3.51%, 2.63% and 1.75% respectively which is seen in case of patients who were admitted and survived for prolonged period following RTA but finally succumbed to injuries (Table 1). Unlike other studies winter was the most common time of year that witnessed 45% of RTA (Table 2) followed by monsoon which accounted for 29% of the total cases. Most of the crashes took place between 4.00 pm - 12.00 am and night time accounted for 47% of all the cases (Table 3).

**Table 3: Victims as per time of occurrence (n=114)**

Time of occurrence	Frequency (n)	Percentage (%)
12.00AM-8.00AM	17	14.91%
8.00AM-4.00PM	31	27.19%
4.00PM-12.00AM	37	32.46%
Not known	29	25.44%

**Table 4: Offending vehicles at time of accidents (n=114)**

Types of vehicles involved	Frequency (n)	Percentage (%)
Two-wheeler motor vehicle	46	40.35%
Four-wheeler motor light vehicle	20	17.54%
Four-wheeler heavy motor vehicle	19	16.67%
Bicycle	3	2.63%
Auto rickshaw	3	2.63%
Unknown	23	20.18%

Unknown timings accounted for 25.44% that indicates "hit and run cases". Two-wheeler motor vehicles were the most common vehicle (40.35%) involved in the accident followed by four-wheeler vehicle that accounted for 34.21%. Bicycle and auto rickshaw occupants comprised 2.63% each. Unknown 20.18% again indicates 'hit and run case' (Table 4). Out of 114 cases, 25 victims were pedestrians that accounted for 22% of the cases.

#### 4. Discussion

Road Traffic Accidents lead to unwanted and untimely death. There are multiple factors that are responsible for RTA in this geographical area of India. Two-wheelers were the commonest vehicle involved in the accidents. This may be correlated with the fact that these are light vehicles and are usually moved with high speed, simultaneously the extreme weather in this terrain also acts as add on factor. Similar findings were revealed by Singh et al and Pathak SM et al in their studies.<sup>3,4</sup> Most of the victims belonged to the age group 21-40 years, similar results were

found in studies conducted by Pathak SM et.al in Pune (AFMC)<sup>3</sup> and Reddy NB at Bangalore.<sup>5</sup> National Crime Records Bureau, Delhi has also mentioned that most of the victims of RTA are from the age group 15-44 years of age. Vollrath M et al in his study in Germany have mentioned higher incidence of RTA amongst young drivers as compared to the older drivers.<sup>6</sup> Hadaye RS et al in their studies have mentioned that "males drive the vehicle more often and show more risk taking behaviours than females".<sup>7</sup>

Pathak SM et al also found in their study that "males are affected 5.7 times more than females" and he stated the reason of this as "males being more active outdoors".<sup>3</sup> In contrast to this, Meghalaya being a matrilineal society, females are equally active in outdoor activities, hence driving being one of the convenient means of communication, but still male predominance in RTA is seen in 84% of cases with a ratio of 5:1 and it is at par with other studies.<sup>1,3</sup> In our study most of the fatalities had multiple injuries and head injury was the most common cause of death that may be related with the fact that most two-wheeler drivers are reluctant to use helmet. The studies of Jalilian MM et al also revealed that only "50% of two-wheeler victims had used helmet".<sup>8</sup>

Unlike other studies, where monsoon was held responsible for most of the accidents,<sup>1,3,7</sup> in our study winter witnessed 45% of accidents. This may be correlated with the climate of this geographical area. As winter is very foggy, one of the major causes of accidents in this area could possibly be due to impaired visibility to drive and negotiate a vehicle safely under the circumstances. Around 47% of the crashes took place in the night hours with peak time between 4pm-12 midnight. Similar results were revealed in the studies of Hadaye RS et al and Kiran et al.<sup>7</sup> This can help us to summarise that evening and early night hours are the busiest whereas the drivers are reluctant in late night. Singh SK in his study also concluded that "road accidents are relatively higher in extreme weather and working hours".<sup>4</sup> Pedestrians contributing to 22% of RTA in our study reflects the lack of traffic knowledge and display reckless driving. Ameratunga S et al also concluded in their study that the pedestrians form the most vulnerable group of RTA.<sup>9</sup>

Most of the RTA are recorded in the National Highways NH44 and NH40 in this region. Although the scenic beauty and landscape of this region are incomparable, the rugged terrain is equally

dangerous, especially in winters when it is too foggy. Sugandhi DS et al in their study also concluded that “most of the traffic accidents that are fatal occurs in NH” (National Highway).<sup>10</sup>

RTA is a major cause of death in the younger age groups and creates an extra burden on the health system, especially in a developing country like ours where the government can only allocate 2-3% of its GDP on the health system and is still considered as infant in comparison to the western countries.

### 5. Conclusion

Our study revealed that head injury is the leading cause of death in road traffic accidents in this geographical region. Majority of accidents occurred in winter and during night hours. Therefore, it is recommended that preventive measures be followed through strict implementation of traffic rules, compulsory wearing of helmets, using of fog lights in winter, cautious driving during night journeys, and creating awareness about traffic rules in the community. These measures would go a long way in decreasing the accident rate and promote a culture of safety in our roads and highways.

### Limitation of the study

As this was a retrospective study based on hospital records, we could not determine other relevant socio-demographic factors like alcohol consumption, over speeding of vehicles, overtaking while driving, using of safety measures, etc. However, no smell of alcohol was present as per the autopsy report for the cases that were done.

**Ethical Clearance:** IEC approval is taken from the Institutional Ethical committee.

**Contributor ship of Author:** All authors equally contributed.

**Conflict of interest:** None to declare.

**Source of funding:** None to declare.

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