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Original Research Article

Road traffic accidents presenting to the emergency department of a tertiary care hospital in North-East India: A cross-sectional study

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ABSTRACT

Background: Road traffic accidents (RTA) are one of the most common cases brought to a hospital daily. The severity of the situation is not known to most of the masses. It has a high chance of mortality and high disabling capacity due to injuries to the main vital parts of the body.
Materials and Methods: A cross-sectional study was conducted to analyse the pattern of road traffic accidents as regards the type of victims, offending vehicle, place & time of occurrence, type of injuries sustained, fatality among the RTA victims admitted in the emergency department of a tertiary care hospital in North-East India during January 2021-June 2022.
Results: A total of 1002 RTA cases were reviewed, and it was found that most of the RTA (76.3%) were males and 32.7% of the cases belonged to the age group of 21-30 years, followed by the age group of 31-40 years (20.5%). RTAs commonly occurred between 12:01 p.m-6 p.m.; the offending vehicles were 4-wheelers (38%) followed by 2-wheelers (36.4%). Most of the victims were 2-wheeler riders (62.2%) followed by pedestrians (16.8%); the head & face were most affected body parts (42.2%) followed by lower limbs (30.6%) and Imphal West was the most common place of occurrence (48.8%).
Conclusion: With the increasing use of motor vehicles, the number of road traffic accidents is rising. It is important to find a pattern of these cases in this part of the country so that we can prevent such unfortunate and unnatural deaths.

1. Introduction

Road traffic accidents are one of the world's major public health problems, causing more than one million deaths annually.[1] The magnitude of this problem reveals the need to strengthen research in the field of road traffic injuries. A Road Traffic Injury (RTI) is defined as a fatal or non-fatal injury incurred because of a collision on a public road involving at least one moving vehicle.[1,2] Road traffic injuries amount to major economic losses to individuals, their families, and to nations. Road traffic injuries may cause economic losses to individuals and their families, which include the cost of treatment, lost productivity for those killed or disabled by their injuries, and family members who must care for the injured.[3] Research is required for building a safe environment for all road users to decrease the factors that can contribute to mortality. There is a need to identify patterns of road traffic accidents in terms of vulnerable age and sex groups of the victims, mode of transport, types of road users, place and time of occurrence, offending vehicles, etc. This study attempts to answer these questions by analysing data from RTA cases, which were brought to our hospital.[4]

2. Materials and Methods

This cross-sectional study was carried out in a tertiary hospital in North-Eastern India. The data of the study

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subjects had been collected from the MLC register of the emergency department of the hospital. The study population included all cases of RTA brought to the emergency department during the period of January 2021-June 2022, which was 1002 cases in number. Any injury on the road without the involvement of the vehicle like a fall from a height was excluded. After obtaining ethical clearance from the Research Ethics Board of the institute, the medicolegal records of all the Road traffic accident cases brought to the emergency department of the hospital during the period Jan 2021 to June 2022 were reviewed. The variables studied were sex, age, place and time of occurrence, types of road users, offending vehicles, and types of injuries/fatalities. The data collected were entered in the pre-designed proforma and the association of the road traffic accidents with the gender, age and other variables was established. Coding was done for the collection of cases and no cases in the study were identified from the data. Data collected were entered using Statistical package for social sciences (SPSS) version 21 (Armonk NY: IBM Corp). The data was summarized in terms of percentage and frequency.

3. Results

In this study, out of 1002 RTA cases, 765 (76.3%) cases were males, and 237 (23.7%) cases were females indicating a large majority of male predominance in victims. (Figure 1)

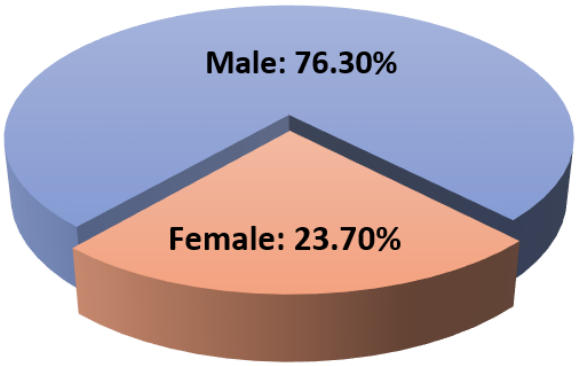

Fig. 1: Showing the gender distribution

As shown in Figure 2, most of the RTA cases (32.7%) belonged to the age group of 21-30years, followed by age group of 31-40years (20.5%) and 41-50years (15%). The youngest victim was 2 years old and the oldest was a 93 years old man. The minimum number of victims were found in >91 years age group.

Most of the RTAs occurred in between 12:01noon - 6p.m. followed by the period between 6p.m. to 12 midnight. The least number of accidents occurred after midnight. (Figure 3)

The most common offending vehicle was 4-wheelers with 382 (38.1%) cases followed by 2-wheelers 365(36.4%)

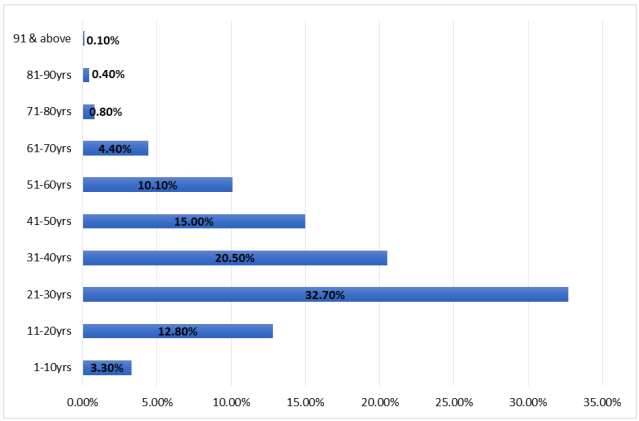

Fig. 2: Showing the age distribution

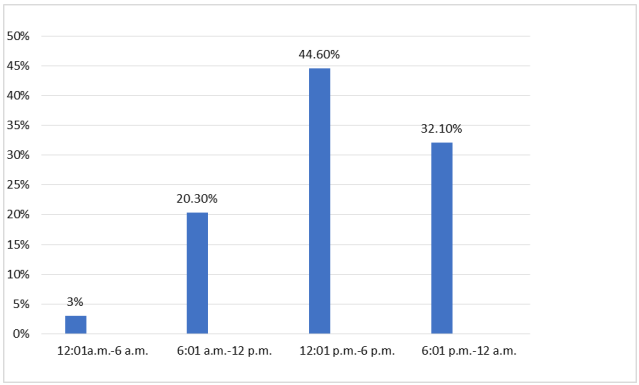

Fig. 3: Showing time of occurrence

cases. Out of 1002 RTA cases, 20.1% were self-accidents. However, the offending vehicles were unknown in 3% of the cases as shown in Figure 4.

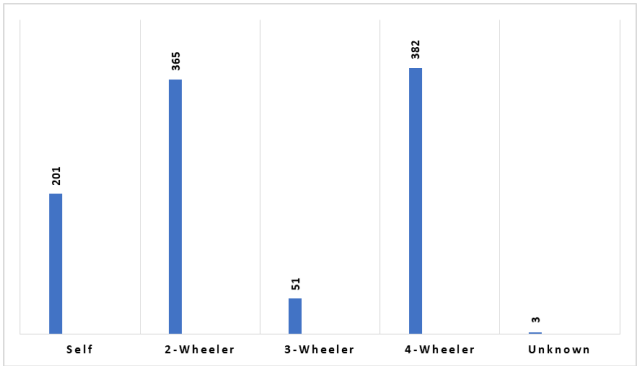

Fig. 4: Showing the types of offending vehicles

In this study, the most common victims were two-wheeler riders i.e., 623(62.2%) followed by pedestrians (16.8%). Only 5.2% of the victims were occupants of 3 or 4-wheeler vehicles. (Figure 5)

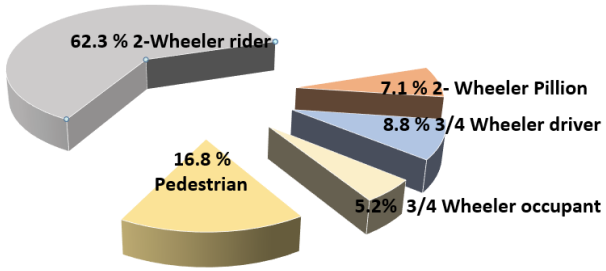

Fig. 5: Showing the types of the victims

As evident from Table 1, during the study period, the most common type of injury sustained by the victims were injuries to the head & the face (42.2%), followed by lower limb injuries (30.6%) and the upper limb injuries (18.6%). Abdominal injuries were seen in only 2% of the cases.

Table 1: Distribution of main injuries sustained on different parts of the body

Variable (injury)	Frequency	Percent	Cumulative percent
Head & Face	423	42.2	42.2
Thorax	66	6.6	48.8
Abdomen	20	2.0	50.8
Upper Limb	186	18.6	69.4
Lower Limb	307	30.6	100.0
Total	1002	100.0	

Out of a total of 1002 RTA cases, 17(1.7%) RTA cases were brought dead to the emergency department, 41(4.1%) cases were found to be under the influence of alcohol and a total of 58 (5.8%) cases were found to be unconscious.

In this study, most of the victims sustained non-fatal injuries (85.2%) and 2.1% sustained fatal injuries. However, 12.7% of the cases were inconclusive as the victims were taken for further management of injuries, and were not recorded in the MLC register of the emergency department.

The maximum number of cases were RTAs in the Imphal West area (48.8%) followed by Imphal East (29.4%) followed by Thoubal (5.5%), Bishnupur (4.3%) and the rest from other parts of the state.

4. Discussion

The male preponderance of RTA cases observed in this study could be due to the fact that there are more male population operating vehicles and vehicular machinery, and a lesser percentage of woman vehicle users. This observation was supported by the previous studies by González-Sánchez et al[1] and Kanchan et al,[5] where a remarkable difference in the gender variation was observed in victims of road traffic accidents.

Kanchan et al[5] in a cross-sectional study in Manipal, India observed that most of the victims of RTA were in the third decade of life i.e., 21-30 years of age. Kumar et al[6] in their study of the socio-demographic profile of road traffic accident victims in a district hospital in Karimnagar also observed that the peak age group of sustaining road traffic accidents were in the age group of 21-30 years (52.5%) followed by 31-40 years (26.2%).[7] Chhetri et al[8] also observed that age groups 21-40 years were the most vulnerable with the highest percentage of 58.4% in 2018 and 50.6% in 2019. Similar results were observed in the present study. This could be due to the fact that young people may indulge in speeding or driving under the influence and they also tend to have risk-taking behaviour, which often put them at risk of accidents.

A substantial variation is seen in road traffic accidents during different times of the day. Accidents are relatively constant and high from 12 PM till 12 A.M. but low during midnight and early hours of the day. It is highest during 12:01 PM-6 PM (44.6%), followed by 6:01PM-12AM (32.1%) in our study.[9] Singh SK[10] in their study also observed a relatively constant and high number of road traffic accidents in between 12PM-9PM which may be favourably compared with the findings of our study. However, this does not imply that daytime driving is riskier than night- time driving.

In the present study, in most of the cases, the offending vehicle is a 4-wheeler (38.1%) followed by 2-wheeler (36.4%). For self-accident cases, the vehicle involved was mostly 2-wheelers and 22 out of 201 cases were females and 179 were males. The higher number of self-accident cases in males may be due to the use of alcohol and or speeding with aggressive driving behaviour, etc.

The most common type of victim in this study was the rider of two-wheelers (62.2%) followed by pedestrians (16.8%). Young males riding 2 wheelers like bikes have a tendency of speeding and taking over vehicles from the wrong side of the lanes or they may be under the influence of alcohol or driving without proper training.[11] In a study in France,[1] the higher risk of RTAs was observed in male pedestrians, which was attributed to their greater tendency to violate traffic rules.[12,13]

According to the present study findings, the most commonly injured areas were the head 7 face (42.2%) followed by the lower limb (30.6%). Least injuries were observed in the abdominal region. This could be correlated with the highest percentage of two-wheeler riders as victims with their non-usage of safety head gears like helmets.[14] Chhetri TB et al[8] in their study observed that head trauma was the most affected region with 73.3% cases which is in conjunction with the present study. Similar findings were observed in a study conducted by Hassan NA & Emara A[15] where the highest number of injuries are sustained in the lower limb (37.26%) closely followed by head injury

(23.84%).

5. Conclusion

The commonest victims of RTA are males in their 3^{rd} decade, who are mainly 2-wheeler riders. The presence of head injuries emphasizes the need for wearing helmets for both riders and pillion riders. Even though laws in this regard are in place, strict implementation is required. There are several other factors contributing to RTAs, which include carelessness of the public, over-speeding, drunk driving, poor maintenance of vehicles, reckless driving, etc. RTAs being multi-factorial usually cannot be avoided. However, road traffic accidents can be prevented & minimized by understanding the pattern and following traffic rules & safety measures.

6. Limitation of the Study

The toxicological analysis findings in suspected drunk drivers could not be incorporated.

7. Source of Funding

None.

8. Conflict of Interest

None.

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