



Pattern of Road Traffic Accident Patients Admitted In Government Medical College and Hospital Nagpur – A Cross Sectional Study

Prafulla S Sune¹, Sandeep M Bhelkar², Uday W Narlawar³, Sanjeev M Chaudhary²

Financial Support: None declared

Conflict of Interest: None declared

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How to cite this article:

SunePS, Bhelkar SM, Narlawar UW, Chaudhary SM. Pattern of Road Traffic Accident Patients Admitted In Government Medical College and Hospital Nagpur – A Cross Sectional Study. Natl J Community Med 2020;11(6):240-243

Author's Affiliation:

¹Resident; ²Associate Professor; ³HOD and Head, Dept. of Community medicine, GMC Nagpur, Nagpur

Correspondence

Dr. Prafulla S Sune
pra.sune.48@gmail.com

Date of Submission: 24-03-2020

Date of Acceptance: 29-06-2020

Date of Publication: 30-06-2020

ABSTRACT

Introduction- Injuries are increasingly recognized as a global public health epidemic. Around the world, almost 16,000 people die every-day from all types of injuries. Injuries represent 12% of the global burden of disease, the third most important cause of overall mortality and the main cause of death among 1-40-year age groups.

Methodology- This hospital based cross-sectional study was conducted among the road traffic accident patients admitted in trauma care center of Government Medical College and Hospital Nagpur.

Result- Most common type of injury was abrasion in 91.45% followed by laceration in 79.61% of study subjects. Other common injuries were contusion, fracture, internal hemorrhage, crush injury and dislocation. Majority of the study subjects i.e. 67.11% had head injury.

Conclusion- Head injury was the most common injury found in the study. Abrasion and laceration was also more commonly found in study subjects. Head injury was found more in non-users of personal protective devices which was statistically significant.

Key words- Nagpur, Road traffic, Accidents

INTRODUCTION

Injuries are increasingly recognized as a global public health epidemic. Around the world, almost 16,000 people die every-day from all types of injuries. Injuries represent 12% of the global burden of disease, the third most important cause of overall mortality and the main cause of death among 1-40-year age groups.¹

In India, nearly 80,000 get killed and 340,000 are injured every year in about 300,000 accidents on road network of just 22,00,000 km². There is an accident every minute and death every 8 min. Significant variations also arise between different states of India.²

Among the top 10 causes of mortality in the country, road traffic accident (RTA) was the 10th cause two decades back, but with the increasing urban expanse and lifestyle changes, it is projected that RTAs will occupy the fifth position in the list of major killers and third position among causes of disease burden in 2020.³

It is projected that RTA will be the second most common cause of disability-adjusted life years in India in the year 2020.⁴

According to the recent WHO report, trauma would become the third largest killer in developing countries by 2020.^{5,6}

About 20-50 million are injured every year in road traffic accident (RTA) cases. Road crashes cost

about USD \$518 billion globally. In India, RTAs and injuries account for 17% of disability-adjusted life years losses. It burdens the economy by 550 crores (12.5 billion dollars), an amount that is equal to our defense budget.^{7,8}

Road traffic injuries are only public health problem where young people are most affected. Today RTAs have emerged as a major cause of morbidity and mortality.⁹

Rationale for the study

Various factors like Human factors, environmental factors and automobile factors play major roles before, during and after a road traffic accident event. To know the patterns injury due to road accidents and factors responsible for it, present cross sectional study was attempted.

AIM & OBJECTIVE

The research was undertaken to study the pattern of injury in road traffic accident patients admitted in Government medical college and Hospital Nagpur and also to study some factors influencing the road traffic accidents.

METHODOLOGY

This hospital based cross-sectional study was conducted among the road traffic accident patients admitted in trauma care center of Government Medical College and Hospital Nagpur. Approval of study protocol was obtained from Institutional Ethics Committee and head of the department of Trauma care. After explaining about the study and importance of participation in the study, informed written consent of the patients were obtained.

All the Road traffic accident patients admitted in trauma care center of Government Medical College and Hospital Nagpur during the period from July 2019 to November 2019 were included in the study. Total 420 patients of road traffic accident were admitted in trauma care center of Government Medical College and Hospital Nagpur from July 2019 to November 2019. Out of these only 152 road traffic accident patients were included in study as they were fulfilling the inclusion criteria.

Data was collected by using predesigned and pre-tested proforma. Data was collected by face to face interview technique. Clinical examination to assess the pattern of injury was carried out. The information including factors influencing the accidents was asked. Pattern of injury in road traffic accident patients were assessed by site and type of injury present.

Statistics: Data was entered in MS EXCEL sheet 2019 and analysis was done by applying appropriate statistical tests.

RESULT

Table 1 shows the distribution of study subjects according to type of injury. Most common type of injury was abrasion in 91.45% followed by laceration in 79.61% of study subjects. Majority of the study subjects i.e. 67.11% had head injury followed by lower limb injury in 57.24%.

Table 1: - Distribution of study subjects according to pattern of injury. (N=152)

| Variables | Cases (%) |
|-----------------------|-------------|
| Type of injury | |
| Abrasion | 139 (91.45) |
| Laceration | 121 (79.61) |
| Contusion | 62 (40.79) |
| Fracture* | 53 (34.87) |
| Internal hemorrhage* | 45 (29.6) |
| Crush injury* | 8 (5.26) |
| Dislocation* | 5 (3.29) |
| Site of injury | |
| Head | 102 (67.11) |
| Lower limb | 87 (57.24) |
| Face | 82 (53.95) |
| Upper limb | 72 (47.36) |
| Chest | 27 (17.76) |
| Back | 20 (13.15) |
| Abdomen | 10 (6.57) |
| Neck | 6 (3.94) |
| Pelvis | 1 (0.66) |

* As per report available to patient

Table 2A: - Distribution of study subjects according to factors influencing road traffic accidents

| Factors | Cases (%) |
|--------------------------------------|------------|
| Time of occurrence | |
| Morning (6.01 am to 12.00 noon) | 22 (14.47) |
| Afternoon (12.01 pm to 6.00 pm) | 47 (30.93) |
| Evening (6.01 pm to 12.00 mid-night) | 76 (50) |
| Night (12.01 am to 6.00 am) | 7 (4.6) |
| Accident Location | |
| Highway | 25 (16.45) |
| Main Road | 53 (34.87) |
| Side Road | 57 (37.5) |
| Alley | 17 (11.18) |
| Persons involved in accident | |
| Driver | 95 (62.5) |
| Occupant | 12 (7.9) |
| Pedestrian | 15 (9.87) |
| Pillion rider | 30 (19.73) |
| Type of collision | |
| Run off road | 71 (46.71) |
| Head on | 47 (30.92) |
| Rear end | 21 (13.82) |
| Sideways | 13 (8.55) |

Table 2B: - Distribution of study subjects according to factors influencing road traffic accidents

| Factors | Cases (%) |
|---|-------------|
| Type of vehicle (N=137)* | |
| Cycle | 4 (2.92) |
| Motorized two -wheeler | 116 (84.67) |
| 3-wheeler | 6 (4.38) |
| Four-wheeler | 9 (6.57) |
| Heavy transport vehicle | 2 (1.46) |
| Alcohol consumed (N=95)† | |
| Yes | 23 (24.21) |
| No | 72 (75.79) |
| Valid driving license (N =91)‡ | |
| Yes | 32 (35.16) |
| No | 59 (64.84) |
| Driving experience in years (N =91)‡ | |
| 0-5 | 43 (47.25) |
| Jun-15 | 35 (38.47) |
| 16-25 | 12 (13.19) |
| 26-35 | 1 (1.09) |
| Use of protective measures (N=91)‡ | |
| Helmet | 9 (9.89) |
| Safety belt | 2 (2.2) |
| Not used | 80 (87.91) |

* Pedestrian not included; † Only drivers were included.

‡ Not Applicable to pedestrian, occupant, pillion rider & cyclist.

Table 2C: - Distribution of study subjects according to factors influencing road traffic accidents

| | Cases (%) |
|--|-------------|
| Road condition at accident site | |
| Broken road | 63 (41.44) |
| Narrow road | 23 (15.13) |
| Poor lighting | 13 (8.55) |
| Road crossing | 9 (5.92) |
| Speed breakers | 4 (2.63) |
| No problem with the road | 86 (56.58) |
| Speed of the vehicle (N=137)* | |
| < 40 km/ hr | 51 (37.23) |
| 40-80 km/hr | 86 (62.77) |
| Overloaded vehicle (N=137) * | |
| Yes | 28 (20.44) |
| No | 109 (79.56) |
| Distracting factors (N=110) § | |
| Talking to another person | 8 (7.27) |
| Thinking about something/someone else | 5 (4.55) |
| Looking at something/someone else | 2 (1.82) |
| Using Mobile Phone | 1 (0.9) |
| No distracting factor | 94 (85.46) |
| Accident in the past | |
| Yes | 21 (13.81) |
| No | 131 (86.19) |

* Pedestrian not included; §For drivers and pedestrian.

Table 2A shows that majority of the accidents i.e. 50% occurred in evening time (6.01 pm to 12.00 mid-night) followed by 30.93% occurred in afternoon time (12.01 pm to 6.00 pm). Most of the accidents i.e. 37.50% occurred at side road followed by accidents at main road i.e. 34.87%. Drivers were in-

involved in majority of the accidents i.e. 62.50% followed by pillion rider i.e. 19.73%. Most of the accidents i.e. 46.71% occurred by run off the road by type of collision followed by accidents by head on collision i.e. 30.92%.

Table 2B shows that majority of the accidents i.e. 84.67% had two-wheeler involved as type of vehicle. Some drivers i.e. 24.21% had consumed alcohol at the time of accident. Majority of the drivers i.e. 87.91% had not used any protective measures during driving. Only 9.89% of the drivers had used helmet as protective measure followed by 2.20% of the divers who used safety belt as protective measure.

Table 2C shows Most of the road condition at the accident site i.e. 41.44% was broken road followed by narrow road in 15.13% of the accidents. Majority of the vehicles i.e. 62.77% had speed of 40-80 km/hr during accident and only 37.23% of the vehicles had speed < 40 km/ hr.

Some vehicles i.e. 20.44% had overloaded during accidents and majority of the vehicle i.e. 79.56% were not overloaded.

Table 3 shows the distribution of study subject showing relationship between use of protective devices and head injury. 65.93% of the study subjects who had head injury did not have used protective device. This showed statistically significant difference in head injury of study subjects using protective device use.

Table 3: - Distribution of study subject showing relationship between use of protective devices and head injury. (N=91)*

| Protective device use | Head injury | | Total(%) |
|-----------------------|-------------|------------|------------|
| | Present (%) | Absent (%) | |
| Yes | 05 (5.50) | 06 (6.59) | 11 (12.09) |
| No | 60 (65.93) | 20 (21.98) | 80 (87.91) |
| Total | 65 (71.43) | 26 (28.57) | 91 (100) |

* Not applicable to pedestrian, pillion rider, occupants & cyclist
Chi square= 4.136, degree of freedom = 1, p-value=0.0419

DISCUSSION

Majority of the accidents i.e. 50% occurred in evening time (6.01 pm to 12.00 mid-night). As evening time is most common traffic time and alcohol consumption time is generally evening, so majority of the accidents happened in the evening.

Drivers were involved in majority of the accidents i.e. 62.50%. Most of the accidents i.e. 46.71% occurred by run off the road by type of collision. Majority of the accidents i.e. 84.67% had two-wheeler involved as type of vehicle followed by four-wheeler i.e. 6.57%. Similar results were found in

study conducted by Sanjay Singh, et al (2017). Drivers were most commonly involved and injured in the accident 507 (46.9%).¹⁰ In some studies occupants were suffered from accidents.

Some drivers i.e. 24.21% had consumed alcohol at the time of accident. High alcohol consumption was found in study conducted by Mohit Sharma, et al (2015). About half of injured cases admitted that they were in effect of alcohol.¹¹

Majority of the drivers i.e. 87.91% had not used any protective measures during driving. Similar results were found in study conducted by Baburao B et al, (2016). Majority (89%) did not use any safety measures. Only 3% used car seat belt and 8% wear helmet.¹²

Most of the road condition at the accident site i.e. 41.44% was broken road followed by narrow road in 15.13% of the accidents. In 8.55% of the accidents, road condition at the accident site was poor lighting. Similar results were found in study conducted by Muthukumar T, et al (2018). Around 43.3% of the study participants said the road, where the accident took place was satisfactory, followed by pits and holes (23.8%) and slippery (18%).¹³

Majority of the vehicles i.e. 62.77% had speed of 40-80 km/hr during accident. Some vehicles i.e. 20.44% had overloaded during accidents. Similar results were found in study conducted by Khwaja Mir Islam Saeed, et al (2016). The average speed of the vehicles involved in accidents was 59.5 ± 22.10 km/hours.¹⁴

Majority of the study subjects i.e. 67.11% had head injury followed by lower limb injury in 57.24%. Similar results were found in study conducted by Dr Navneet Badoni, et al (2016). Only about 10.4% of patients sustained multiple injuries (n=36). About half of the cases seen were limb fractures (n=175) and 78.53% were closed injuries (n=125). Cranial trauma and soft tissue injuries comprised majority of the remainder.¹⁵

CONCLUSION

Maximum accidents took place mostly in evening hours. Two wheelers were mostly involved in road traffic accidents. Head injury was the most common injury found in the study. Abrasion and laceration were also more commonly found in study subjects. Head injury was found more in non-users of personal protective devices which was statistically significant.

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