

ORIGINAL RESEARCH

## **Epidemiology of Trauma Patients Admitted to a Trauma Center in Autonomous State Medical College, Shahjahanpur, UP.: A Retrospective Study**

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### **ABSTRACT**

**Background:** The rapid economic and automobile growth in India leads to a rapid increase in road traffic accidents (RTAs). Trauma is an increasing cause of morbidity and mortality in India. This study evaluates the epidemiology of trauma patients reported to the trauma center in Autonomous State Medical College, Shahjahanpur, UP.

**Material and Methods:** This study was performed in the department of Forensic Medicine and Toxicology, Autonomous State Medical College Allied Pt. Ram Prasad Bismil Memorial Hospital, Shahjahanpur, UP, for the period of one year from Aug 2021 to July 2022. The data were collected with the help of a structured *pro forma*. Details of incident, injuries and outcome were noted.

**Results:** RTA was the commonest cause of injury (46.86%). Most common age group affected was 12-40 year age group (64.06%), with predominance of Male (79.4%) and rural population (72%). The commonest victims of trauma were labourer (37.66%). Maximum cases of trauma occurred during summer (58.9%). Jeep was the most common vehicle involved (33.54%). In road traffic injury cases frontal impact was the commonest mode (51.48%) most cases were unintentional injury (68%) and Alcohol intoxication was present in 11.08% of cases.

**Conclusion:** RTA (Road Traffic Accidents) and falls are the predominant causes of trauma. Our study shows that RTAs and workplace injuries are the predominant causes of trauma.

**Keywords:** Road Traffic Accident, Injury, Polytrauma, Epidemiology and Predominant.

## INTRODUCTION

Countries are passing through significant urbanization, motorization, industrialization and a change in socioeconomic values. India is no different to this change. Due to these changes, road traffic accidents (RTAs) have become the first public hazard in the world, which results in one of the largest threat against human lives and safety.<sup>1</sup> Every year around 5.8 million people of all age and economic groups die due to accidental injuries and violence that brings the data close to nine people every minute.<sup>2</sup> The nonfatal injury burden is even more significant, accounting for 18% of the world's health issues.<sup>3</sup> A report of the Ministry of Road, Transport, and Highways, Government of India (2017) has declared 4, 64, 910 road accidents leading to injuries of 4, 70, 975 in a single year in our country.<sup>4</sup> The RTA death rate may increase to approximately 2/10,000 people in developing countries by 2024; however, it will decrease to <1/10,000 in high-income countries. Mortality and morbidities due to road traffic injuries in India are projected to increase by 150% by 2020.<sup>4,6</sup> Registries collecting data regarding injured patients are used to improve knowledge on trauma and its patterns, with the objective to document in-hospital trauma care in the acute setting. Such registries have multiple applications, e.g. the generation of hypothesis, the planning of protocols and studies and the monitoring of the effectiveness of new interventions; on an administrative level, registries are essential for planning resource allocation by estimating needs in materials and human resources, and are used for awareness campaigns as well as occupational surveillance.<sup>7</sup> This study evaluates the epidemiology of trauma patients reported to the trauma center in Autonomous State Medical College, Shahjahanpur, UP.

## MATERIALS & METHODS

This study was performed in the department of Forensic Medicine and Toxicology, Autonomous State Medical College Allied Pt. Ram Prasad Bismil Memorial Hospital, Shahjahanpur, UP, for the period of one year from Aug 2021 to July 2022. In this study total trauma patients recorded were 5000. The data were collected with the help of a structured proforma. This was a retrospective observational study of all trauma patients presenting to our trauma department. Patients' demographic details and complete history were noted. Details of incident, injuries and outcome were noted. The results of the treatment were recorded and analyzed. All statistical calculations were performed using SPSS software version 19.0 (SPSS Inc., Chicago, IL, USA). Statistical significance was defined as two-sided values of <0.05.

## RESULTS

RTA was the commonest cause of injury (46.86%). Most common age group affected was 12-40 year age group (64.06%), with predominance of Male (79.4%) and rural population (72%). The commonest victims of trauma were labourer (37.66%). Maximum cases of trauma occurred during summer (58.9%). Jeep was the most common vehicle involved (33.54%). In road traffic injury cases frontal impact was the commonest mode (51.48%) most cases were unintentional injury (68%) and Alcohol intoxication was present in 11.08% of cases.

**Table 1: Common cause of injury**

Common cause of injury	N(%)
Fall from Height	1290(25.8%)
Fall of Heavy Object from Head	1317(26.34%)
RTA	2393(46.86%)

**Table 2: Demographic data**

Variable	N(%)
<b>Age group (years)</b>	
<12	1200(24%)
12-40	3203(64.06%)
>40	597(11.94%)
<b>Gender</b>	
Male	3970(79.4%)
Female	1030(20.6%)
<b>Residence</b>	
Urban	1400(28%)
Rural	3600(72%)
<b>Occupation</b>	
Labourer	1883(37.66%)
Professional Job	630(12.6%)
Student	1000(20%)
Housewives	890(17.8%)
Farmers	597(11.94%)

**Table 3: Trauma according to season**

Season	N (%)
Summer	2995(58.9%).
Winter	1005(20.1%)
Rainy	1000(20%)

**Table 4: Trauma according to vehicle**

Vehicle	N (%)
Jeep	1677(33.54%)
Car	1200(24%)
Truck	1400(28%)
Motorcycle	723(14.46%)

**Table 5: Trauma according to Impact**

Trauma according to Impact	N (%)
Frontal Impact	2574(51.48%)
Occipital Impact	289(5.78%)
Parietal Impact	435(8.7%)
Temporal Impact	644(12.88%)
Multiple Impact	1058(21.16%)

**Table 6: Trauma according to type of injury**

Type of injury	N(%)
Unintentional injury	3400(68%)
Intentional injury	1600(32%)

**Table 7: Trauma according to alcohol consumption**

Trauma according to alcohol consumption	N (%)
Alcohol intoxication	554(11.08%)

<b>Alcohol intoxication absent</b>	4446(88.92%)
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## DISCUSSION

India is rapidly developing and is currently one of countries with the fastest growing economy in the world.<sup>8</sup>

RTA was the commonest cause of injury (46.86%). Most common age group affected was 12-40 year age group (64.06%), with predominance of Male (79.4%) and rural population (72%). The commonest victims of trauma were labourer (37.66%). Maximum cases of trauma occurred during summer (58.9%). Jeep was the most common vehicle involved (33.54%). In road traffic injury cases frontal impact was the commonest mode (51.48%) most cases were unintentional injury (68%) and Alcohol intoxication was present in 11.08% of cases.

Kashid M et al recorded a total of 2650 injuries in 2466 patients. The mean age was  $42.45 \pm 15.7$  years, the mean ISS was  $13.82 \pm 6.2$ , and the mean GCS was  $12.20 \pm 4.1$ . The mean time to admission at different trauma centres was  $48.41 \pm 172.8$  h. Head injuries were the most common (29.52%). The study concluded that roadside accidents due to over speeding was the most common cause whereas driving under the effect of alcohol was the second most common cause. Accidents are common because of bad traffic etiquette on Indian roads.<sup>9</sup>

Harna B et al depicted in the study RTAs as the most common cause affecting adults between 20 years and 40 years. The study reports other risk factors like alcohol intoxication and motorcycle riders. Mostly, the patients are present in a semiconscious and disoriented state requiring fluid resuscitation. Abrasions and bruises in the extremities stand out as the most common injury pattern. The fractures suffered were the most common injury suffered by the patients. Our study shows that RTAs and workplace injuries are the predominant causes of trauma affecting mostly adults. This study defines the correlation of various parameters with causation and distribution of the trauma in the sample population. This study was performed to improve the understanding of the mode of trauma, severity of injuries, and outcome in our hospital, so that effective prevention and comprehensive management strategies could be made.<sup>10</sup>

Difino M et al included 6065 patients in the study. Most injuries (94%) were blunt. Road traffic accidents, especially involving motorcycles, were the most common cause of injury. Self-inflicted injuries were responsible for less than 5% of trauma but they were severe in 56% of cases. The median age was 38 and it remained constant over the years; 43% of patients were 14–39 years of age. Different characteristics and patterns of injury were observed for each age group and gender. Males were more likely to be injured in the central years of life while females presented a trimodal pattern in the age distribution. Young adults (14–39 years old) were overall at higher risk of self-harm. Overall mortality was equal to 5.2%. Most deceased were male and  $\geq 65$  years of age.<sup>11</sup>

## CLINICAL SIGNIFICANCE

This study signifies the fundamental study for the occurrence, distribution, and prevention of trauma in society. The acquisition of knowledge of different patterns of trauma patients along with other descriptive factors helps to understand the causation of this disease as well as development of preventive measures. This can form the basis of hospital and regional trauma management strategies.

## CONCLUSION

RTA (Road Traffic Accidents) and falls are the predominant causes of trauma. Our study shows that RTAs and workplace injuries are the predominant causes of trauma. This study defines the correlation of various parameters with causation and distribution of the trauma in

the sample population. This study was performed to improve the understanding of the mode of trauma, severity of injuries and outcome in our hospital, so that effective prevention and comprehensive management strategies could be made.

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