

RETROSPECTIVE STUDY OF PATTERNS AND CHARACTERISTICS AND OUTCOME OF ROAD TRAFFIC INJURED PATIENTS IN A TERTIARY CARE HOSPITAL

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Abstract

Introduction: Road traffic accidents are a human tragedy. Nearly 1.3 million people die every year on the world's roads and up to 50 million people suffer non-fatal injuries, with many sustaining a disability as a result of their injury. These injuries and deaths have an immeasurable impact on the families affected.

Materials and methods: This was a retrospective hospital data-based study of outcome of RTI patients seen in the ED of a tertiary teaching hospital in Hospital, Ranchi, Jharkhand, India. from January 2024 to December 2025 using data from the hospital. RTI patients with isolated injuries were included in the study. Patients who were dead on arrival at the ED and patients with injuries in more than one anatomical region (poly-traumatized) were excluded from the study. Data retrieved from patients and records of RTI patients seen in the ED included patient's demographics, vehicle

type, and anatomical site of the injury and exit or admission outcome. The data was analyzed using SPSS version 20.

Results: Patient attendance at the ED in 2025 was 3500. A total of 280 (9.4%) RTI patients were admitted to the ED in 2025. Only 280 RTI patients were included in the study. There were 193 males and 87 females with a male: female ratio of 2.24:1. The age range was 1 to 94 years with a mean age of 37.5+/-17.5 years. Peak ages were in the fourth (24.2%) and third (20.4%) decades of life respectively (Table 1). A review of the vehicular type revealed that 85.5% of the patients were in commercial vehicles while 17.5% were in private vehicles.

Conclusion: Motorized tricycles may be considered as a safer means of commercial mode of transportation compared to motorcycles despite its own limitations. There is a need to educate patients who are hospitalized after road traffic injuries.

Key Words: Road traffic accidents, Motorized tricycles, disability.

INTRODUCTION

Road traffic accidents are a human tragedy. Nearly 1.3 million people die every year on the world's roads and up to 50 million people suffer non-fatal injuries, with many sustaining a disability as a result of their injury. These injuries and deaths have an immeasurable impact on the families affected.¹

The United Nations has declared 2011-20 as the decade of action on road safety so that the present rising trend of road accidents stabilizes and is reversed by the year 2020.²

In India, road traffic accidents accounted for 2% of all deaths in 2005 nationally, of which 65% occurred in men between the ages of 15 and 59 years taking a heavy toll on those in their most productive years. 82.2% of road casualties were in the age group 15-65 years in the year 2011. Only 15% of the road accident victims were females in the calendar year 2012.³

Road traffic accidents are both predictable and preventable. In India, there is no central authority to lay down guidelines for trauma care. There are no legislations in place to regulate qualification of ambulance personnel and maintenance of ambulance equipment. Rural India lacks appropriate trauma care facilities due to financial constraints and an underdeveloped health infrastructure. The government, medical fraternity and the society at large are yet to recognize trauma as a growing health hazard.⁴

Only a good combination between a mature pre-hospital system and a trauma care center

can provide professional care and the best possible outcomes in cases of trauma.

Lack of local data and information on road traffic accidents in our region has resulted in an utter disregard to this problem amongst our policy makers.⁵

Objectives

To assess the proportion, trend, characteristics and outcomes of non-poly-traumatized RTI related emergency department (ED) admissions of a tertiary health care facility in a developing country and relate the exit pattern from the ED to the injury sustained.

MATERIALS AND METHODS

Study design: Retrospective hospital data-based study

Study location: Department of Orthopaedic Surgery, Samford Hospital, Ranchi, Jharkhand, India.

Study Duration: January 2024 to December 2025.

This was a retrospective hospital data-based study of outcome of RTI patients seen in the ED of a tertiary teaching hospital in Hospital, Ranchi, Jharkhand, India. from January 2025 to December 2026 using data from the hospital.

Inclusion Criteria: RTI patients with isolated injuries were included in the study.

Exclusion Criteria: Patients who were dead on arrival at the ED and patients with injuries in more than one anatomical region (poly-traumatized) were excluded from the study.

Data retrieved from patients and records of RTI patients seen in the ED included patient's demographics, vehicle type, and anatomical site of the injury and exit or

admission outcome. The data was analyzed using SPSS version 20.

RESULTS

Patient attendance at the ED in 2025 was 3500. A total of 280 (9.4%) RTI patients were admitted to the ED in 2025. Only 280 RTI patients were included in the study. There were 193 males and 87 females with a

male: female ratio of 2.24:1. The age range was 1 to 94 years with a mean age of 37.5+/- 17.5 years. Peak ages were in the fourth (24.2%) and third (20.4%) decades of life respectively (Table 1). A review of the vehicular type revealed that 85.5% of the patients were in commercial vehicles while 17.5% were in private vehicles.

Age group (In years)	Number of patients	Percentage
Less than 5	10	3.5
6-10	6	2.1
11-20	23	8.2
21-30	57	20.4
31-40	67	24.2
41-50	40	14.3
51-60	30	10.5
>60	27	9.7
Not Documented	19	7.1
Total	280	100

Table 1: Age Distribution

Gender	Number of patients	Percentage
Male	193	69
Female	87	31
Total	280	100

Table 2: Gender Distribution

Age Group (years)	Vehicle category		Total
	Commercial	Private	
0-5	7 (69.2)	3(30.8)	10
6-10	3 (47.8)	4 (52.2)	7
11-20	18 (78.3)	5 (21.7)	23
21-30	52(90.4)	6 (9.6)	58
31-40	59 (86)	10 (14)	69
41-50	36 (88.8)	5 (11.2)	41
51-60	24 (79.7)	6 (20.3)	30
>60	20 (70.6)	8 (29.4)	28

Table 3: Mode of transportation by age group

Nature of injury sustained	Gender		Total
	Male	Female	
Head injuries	64(73.1)	24(26.9)	88
Fractures	47(75.2)	16(24.8)	63
Burn	1(45.5)	2(54.5)	3
Scald	1(50)	1(50)	2
Laceration	10(69.6)	4(30.4)	14
Bruises	8(54.1)	7(45.9)	15
Abrasion injuries	4(63.0)	3(37.0)	7
Blunt chest trauma	5(69.0)	2(31.0)	7
Avulsion injuries	4(44.0)	5(56.0)	9
Spinal cord	6(62.5)	4(37.5)	10
Dislocation	3(66.7)	2(33.03)	5
Crush injuries	3(100.0)	0	3
Blunt abdominal injuries	1(45.5)	2(54.5)	3
Others	18(58.1)	14(41.9)	32

Table 4: Distribution of nature of injury sustained and sex

Duration of stay	Number of Patients (n)	Percentage (%)
≤ 2 days	210	75
3–7 days	60	24.42
8–14 days	10	3.57
Total	280	100

Table 5: Duration of hospital stay

ICU Admission	Number of Patients (n)	Percentage (%)
Required ICU Care	55	19.64
Managed in Wards/Step-down	225	80.35
Total	280	100

Table 6: ICU Admission

Operative Treatment	Number of Patients (n)	Percentage (%)
Required Emergency/Planned OT	68	24.28
Managed Conservatively	212	75.71
Total	280	100

Table 7: OT required

Transfusion Status	Number of Patients (n)	Percentage (%)
Received Transfusion	50	17.85
Did Not Require Transfusion	230	82.14
Total	280	100

Table 8: Blood transfusion

Vehicle type	Outcome			
	Admitted to ward (%)	Discharged (%)	DAMA (%)	Death (%)
Motor-cycle	44.1	31.8	13.3	10.8
Cars	50	27.1	15.4	7.6
Minibus	58.8	24.7	12.4	4.1
Motorized tricycle	24	52	16	8
Truck	100	0	0	0

Table 9: Comparison of the exit mode from the emergency department.

DISCUSSION

Globally, the number of road traffic deaths has continued to increase, reaching 1.35 million in 2016. Increased urbanization and motorization in developing countries in general and India in particular over the past few decades has been accompanied by an exponential increase in road traffic injuries and fatalities with consequent burden on the inadequate health care system in the country.⁶ While some developed countries have made progress with regard to post-crash care and legislations to regulate road traffic accident risk factors such as vehicle safety standards, many developing countries are yet to fully grasp the enormity of the problem. Subsequently there are no extant laws or health care plans to ameliorate the burden of this 'disease'. Adequate

information is required to propose appropriate intervention both at the Prehospital phase and hospital phase of care.⁷

The demographics of the population when compared to other developing countries are as in the table below. The similarity in demographics is demonstrated in the male predominance, and the peak population in the third and fourth decades. These are the most mobile and active age groups in the population. The relatively higher male predominance in the study in India may be a reflection of the culture where a significant proportion of the female population do not work outside the home.⁸

The vehicle utilization pattern in RTI revealed a preponderance of commercial vehicles. Motorcycles are the most frequent

mode of transportation (44%) for victims involved in RTI and this mode of transportation is often adopted by members of the public because of its relative speed and ability to ride through traffic apart from being readily available. It is readily available. The commercial motorcycles are often under pressure to meet required financial targets with the owners. In addition, motorcycles are at a higher risk for both collision traffic accidents as well as non-collision accidents than other vehicles. There are no laws in india controlling the use of motorcycles as means of transportation as well as no strict laws in place to ensure the riders are trained to ride and comply with traffic regulations.⁹

Consequently, the riders and passengers are susceptible to road traffic accidents. The economic challenges in the country may be responsible for the dearth of private vehicles but however the data obtained from this study demonstrates the relative safety of motorized tricycles compared to motorcycles. The age-related pattern of vehicular use demonstrates the predominance of commercial vehicles in all age groups except the primary school age children (6-10 years) who have a slight preponderance of private vehicles (Table 2). This may be due to the preference of some parents to pick up their children from school in their private vehicles.¹⁰

CONCLUSION

This study showed diverse injury characteristics and high morbidity and mortality among the victims attending the emergency department. There is also the need to health educate patients against the common practice of discharge against

medical advice. Motorized tricycles may be considered as a safer means of transportation compared to motorcycles despite its own limitations. The strength of this study is that it was conducted in one of the main tertiary hospitals in India and it probably reflects the operational realities of a public hospital ED in the urban environment. Our study also provides pilot data on trends, burden and outcomes of RTI victims which may guide policy makers in improving the planning of hospital resources and staffing.

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