

## A retrospective study of prevalence of orthopaedic injuries due to road side accidents in South India

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Received: 07-11-2021 / Revised: 20-12-2021 / Accepted: 26-12-2021

### Abstract

**Introduction:** Road transport is a critical structure for economic development of a country. It influences the pace, structure and pattern of development. Surge in population and motorization in the country along with expansion of road network contributes to the number of road accidents, injuries and fatalities. **Materials and Methods:** This was a Retrospective study conducted between July 2021 and September 2021, on patients presenting to the outpatient orthopedic or emergency department of Tagore Medical College and hospital, Chennai. All patients who were admitted due to trauma as determined from the case history by the admitting doctor were included. Cases that were seen as referrals after initial management at peripheral centers were also included. Patients with pathological fractures and burns were excluded. Charts initially retrieved for perusal that were found to be ineligible were excluded. **Results:** 410 of 750 (61.4%) files identified from the admission log for possible perusal were retrieved. Road traffic Accidents (RTA) contributed 51% (n=200) of all trauma patients seen. Males were involved in 81% of the cases with a male to female ratio of 5:1. The peak age was 21-30 years and the average age was 30 years. About two thirds of the patients were between 20 and 40 and 90% of patients were below 40 years of age (Table 2). **Conclusion:** Well equipped secondary as well as tertiary level trauma centers, specially dedicated to management of trauma patients, with a proper triage plan, are necessary for proper management of trauma patients & better utilization of resources.

**Key Words:** Road transport, motorization, trauma.

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### Introduction

Road transport is a critical structure for economic development of a country. It influences the pace, structure and pattern of development. Surge in population and motorization in the country along with expansion of road network contributes to the number of road accidents, injuries and fatalities[1].

This is partly due to increased motorization but also due to failure by authorities to enforce necessary regulations. Throughout the world, the growth of the transport system has been and continues to be a key element in economic development[2]. An increase in gross national product is accompanied by a greater movement of people and goods and greater investment in both vehicles and transport infrastructure. In the developing world, current trends in population growth, industrialization and urbanization are putting heavy pressure on the transport network in general and on road system in particular[3]. Some of the unwanted side-effects of this growth in traffic, such as congestion and noise are immediately obvious to the individual citizen[4].

Over 1.2 million people die each year on the world's roads with millions more sustaining serious injuries and living with long-term adverse health consequences. Globally, road traffic crashes are a leading cause of death among young people and the main cause of death among those aged 15-29 years[5]. Road traffic injuries are currently estimated to be the ninth leading cause of death across all age groups globally and are predicted to become the seventh leading cause of death by 2030.

This study aimed at describing the magnitude and variety of trauma

and to know prevalence and pattern of injuries present among the road traffic accident cases.

### Materials and methods

This was a Retrospective study conducted between July 2021 and September 2021, on patients presenting to the outpatient orthopedic or emergency department of Tagore Medical College and hospital, Chennai.

### Inclusion Criteria

All patients who were admitted due to trauma as determined from the case history by the admitting doctor were included. Cases that were seen as referrals after initial management at peripheral centers were also included.

### Exclusion Criteria

Patients with pathological fractures and burns were excluded. Charts initially retrieved for perusal that were found to be ineligible were excluded.

It was difficult to divide the groups of patients into riders, passengers or pedestrians as this information was not clearly recorded in majority of the files perused. The site of injury was recorded. The lower limb was considered as the pelvic girdle and the rest of the lower limb and the upper limb included the pectoral girdle. Injuries to the face and head including concussions were classified as head injuries. Injuries involving the thorax including rib fractures and injuries to the thoracic viscera were classified as chest injuries. Injuries to the abdominal wall and abdominal and pelvic viscera were classified as abdominal injuries. The data was collected using a research tool designed for that purpose and later keyed in to a computer using MS Excel. The data was then analyzed.

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**Results**

410 of 750 (61.4%) files identified from the admission log for possible perusal were retrieved. Road traffic Accidents (RTA) contributed 51% (n=200) of all trauma patients seen. Males were involved in 81% of the cases with a male to female ratio of 5:1. The peak age was 21-30 years and the average age was 30 years. About two thirds of the patients were between 20 and 40 and 90% of patients were below 40 years of age (Table 2).

Only about 10.4% of patients sustained multiple injuries (n=18). About half of the cases seen were limb fractures (n=85) and 78.53% were closed injuries (n=63). Cranial trauma and soft tissue injuries comprised majority of the remainder (Table 1). About three quarters of all limb fractures were in the lower limbs (n=60) with most being the long weight bearing bones. Both limbs were fractured in 10.49% of cases. The leg was involved more than the thigh (Table 3).

**Table 1: Pattern of injuries following Road traffic accidents**

S.No	Type of Injuries	Number of patients
1	Chest injuries	10
2	Dislocations	5
3	Fractures	85
4	Head injuries	40
5	Spine injuries	8
6	Soft tissue injuries	50
7	Abdomen injuries	3

**Table 2: Distribution of patients according to age sustain trauma**

S.No	Age group of patient's sustaining trauma (in years)	Percentage (%)
1	<11	10
2	11-20	15
3	21-30	40
4	31-40	25
5	41-50	08
6	51-60	05
7	61-70	03
8	71-80	02
9	>80	02

**Table 3: Distribution of fractures in road traffic accident injuries**

S.No	Nature of bones fractured	Number
1	Scapula	02
2	Clavicle	05
3	Humerus	12
4	Radius/Ulna	10
5	Pelvis	08
6	Femur	53
7	Patella	10
8	Tibia/Fibula	65
9	Ankle	04
10	Foot	06

**Discussion**

In our study the most common age group involved in road traffic accidents is 21-30 yr group (40%). Approximately 60% of the patients belong to 11-50 yr age group, which is the economically & socially productive age group. Thus RTA's have a major impact on the society. Similar results were found in other studies in JIPMER [Pondicherry], Delhi & Nepal also. Majority of the RTA victims were males [81%], probably due to their profession & out-door activities. Most of other studies show similar results[6].

Off the vehicles involved in RTA's most common are 2 wheelers [56%], followed by auto rickshaws [16.67%] & pedestrians [14.67%]. It reflects the urban traffic of India & other Asian countries where 2 wheelers are the most common mode of transport. Auto rickshaws pose a unique challenge to road safety measures as neither helmets nor seat belt rules are applicable to them[7,8].

Around 10% of the patients were found to be using mobile phones at the time of accidents, which was probably the causative factor in them. Only 21% of the patients had an abnormal GCS on presentation. And these patients were having positive CT scan; hence GCS is very reliable and re-producible parameters in trauma victims in ED[9].

Use of FAST (Focused Abdominal Sonography for Trauma) done with portable USG in our ED, helped in rapid detection of life

threatening intra-abdominal bleed. Avoidance of safety measures like not using headlights at night [26%], seatbelts [80%], helmets [91%] were found in a substantial proportion of cases, which probably contributed to more severe injuries & susceptibility to RTA. According to one study published in public health, Safety devices were not used in 10% of cases where they should have been used according to legislation[10].

**Conclusion**

Thus stricter application of traffic laws & safety measures are required to bring down the road traffic accident (RTA) rate & related mortality. Helmets & seatbelts have a significant role in preventing severe head injuries & should be advocated & strictly followed. More measures need to be taken for pedestrian & bystander safety. Well equipped & adequately staffed secondary & tertiary level trauma centers should be set up dedicated to managing RTA victims only. Prompt and adequate ambulance service should be provided to the victims with the help of government and other voluntary agencies. Computerization and use of International Classification of Diseases code in the hospitals would help in preparation of a good database for future studies and other uses.

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**References**

1. Nilambar Jha, D.K. Srinivasa, Gautam Roy, S. Jagdish. Epidemiological study of road traffic accident cases: a study from south india. Indian Journal of Community Medicine 2004;Vol. XXIX, No.1:1.
2. Insurance Institute for Highway Safety (IIHS). Fatality facts:teenagers 2010. Arlington (VA): The Institute; 2012.
3. Moskal A, Martin JL, Laumon B Risk factors for injury accidents among moped and motorcycle riders *Accid Anal Prev.* 2012;Nov;49:5-11.
4. Abhishek Singh, Anu Bhardwaj, Rambha Pathak, SK Ahluwalia: an epidemiological study of road traffic accident cases at a tertiary care hospital in rural haryana. *Indian Journal Of Community Health, 23(2),53-55.*
5. Banthia P, Koirala B, Rauniyar A, Chaudhary D, Kharel T, Khadka SB. An epidemiological study of road traffic accident cases attending emergency department of teaching hospital. *JNMA J Nepal Med Assoc.* 2006 Apr-Jun;45(162):238-43.
6. Schelp L, Ekman R. Road traffic accidents in a Swedish municipality. (*Public Health.* 1990 Jan;104(1):55-64.
7. Qi X, Yang DL, Qi F, Zhang QH, Wang JP Statistical analysis on 2213 inpatients with trafficinjuries from January 2003 to September 2005 in Ningbo city *Chin J Traumatol.* 2006 Aug;9(4):228-33.
8. Mullins RJ, Mann NC Population-based research assessing the effectiveness of trauma systems.*J Trauma.* 1999 Sep;47(3 Suppl):S59-66.
9. Lin YK, Lin CJ, Chan HM, Lee WC, Chen CW, Lin HL, Kuo LC, Cheng YC. Surgeon commitment to trauma care decreases missed injuries *Injury.* 2012 Nov 3. pii: S0020-1383(12)00468-8.
10. Downing A, et al. International overview of road safety In: International work-shop on Prevention and control of traffic accidents and injuries (24 Nov-3 Dec. 1992).New Delhi,India.4-12.

**Conflict of Interest: Nil Source of support: Nil**