



## Characteristics and Health Outcomes of Patients with Road Traffic Injuries managed in Critical Care Unit

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### Abstract

Due to the rapid motorization, traffic accidents are increasing quickly in developing nations. Few data exist on the clinical outcome referred to the intensive care unit. The study aimed to evaluate the characteristics and healthcare outcomes of intensive care unit patients with road accident injuries. A contemplative cohort study was performed where 100 patients' files from CMC Multispecialty Hospital, Hisar was reviewed using a data collection sheet for 6 months from January 2022 – June 2022. Data was analyzed using SPSS. Average age of patients who had been in traffic accidents was  $40.3 \pm 3.1$  years. Around 56 number were men than compared to female (n=44). The ratio of men to women was 3.5:1. 35 number of patients had education equivalent to a secondary school diploma or less. Patients without jobs made up n=52. Up to 32 patients experienced head injuries, with 10 suffering multiple traumas. More young people must sign up for the NHIF and other health insurance plans to ease their financial load. To make sure no casualties are left by the side of the road, highway patrolling and efficient RTA patient evacuation should be reinstated to assess the part that low levels of education play in RTA, more research must be conducted.

**Keywords:** Road traffic accidents, critical care, adults and head injury

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### Introduction

A road traffic injury (RTI), as defined by the 2013 Global Status Report on Road Safety, is a non-fatal or fatal injury sustained by a collision on a public road having one or more moving vehicle. Between 20 and 50 million people experience non-fatal injuries, and many of them develop a dysfunction as a result (Tobi et al., 2016). Along with being

the backbone of the country and a significant factor in socioeconomic development and growth, India's road network also contributes significantly to accidental deaths, with the road accidents for about 36-38% (or an average of about 1,50,000 deaths annually) of all deaths from other causes between 2015 and 2019 (India



Had Most Deaths in Road Accidents, 2019; Shrivastava et al., 2014)

Road Traffic Accident (RTAs) are a significant contributor to serious head injuries (SHI) among Indian nationals. 14.3% of the adult admissions to intensive care units (ICU) and high dependency units (HDU) are from productive age groups, with young men being the most commonly affected group (Tobi et al., 2016). The World Health Organization (WHO) forecasts that by the year 2030, traumatic brain injury (TBI) would overtake several diseases as the leading reason of disability and death. TBI is a serious medical issue and public health since it affects roughly 10 million individuals each year and burdens society with mortality and morbidity (Hyder et al., 2007). Low- and the middle-income countries (LMICs), having a higher threat of TBI and less established healthcare systems to address the resulting health effects, bear a disproportionately heavy burden from this frequently ignored injury (Puvanachandra & Hyder, 2008).

Health care institutions are under pressure from road traffic injuries (RTI), but they are ill-equipped to offer the necessary treatments. Even though India's health care systems have improved, many hospitals continue to refer the patients to facilities offering better care (Pal et al., 2019). Trauma was the most common reason for critical care unit (CCU) admissions,

particularly for patients having head injuries, and it was linked to extremely high fatality rates (Ahmed et al., 2017). After the original head injury, disability may develop, and patients who survive brain injuries are more damaged than those who survive injuries to other body parts (Ng & Lee, 2019)

Road accident victim management continues to be a very expensive and inconvenient endeavor because regular services, including scheduled theatre services, must be rescheduled in order to care for the seriously injured victims. Intensive Care Unit facilities and pricy medical supplies are used in management. Since the majority of patients in Indian hospitals are not able to pay charges for all the services, the lack of appropriate schemes for the medical finance has placed a significant financial burden on those facilities (Sam et al., 2019). This study aims to evaluate the demographics and medical outcomes of individuals with traffic accident injuries treated in CCU.

## Methods

A retrospective cohort analysis was carried out at CMC Multispecialty Hospital, Hisar. All patients being admitted/referred to the CCU for the injuries caused by road traffic in the previous six months were identified using the admission and discharge register. The files of 100 patients were chosen at random. A data collecting



sheet was used to review the files on a desktop for the period of 6 months from January 2022- June 2022. The hospital administration was consulted for approval to use adult hospital records. Both secrecy and anonymity were upheld.

### Results and Discussion

The average age of patients who had been in traffic accidents was 40.3 ±3.1 years. Age under 40 years old was substantially connected with a Glasgow coma scale below 8. Around 56 number were men than compared to female (n=44) The ratio of men to women was 3.5:1. Most of the victims of the accident were single (n=68). Around 35 patients had an education equivalent to a secondary school diploma or less. Patients without jobs made up n=52. Up to 32 patients (97.5%) experienced head injuries, with 10 patients suffering multiple traumas. On admission, 85.8% of the patients had the Glasgow coma scores <

8/15, which indicated significant head trauma. Motor cars were responsible (n=30) of the accidents, while motor cycles were involved is (n=20) of them. However, none of the cases, the underlying reason remained unknown. As can be seen in Table 1, there was no meaningful correlation between GCS and the aetiology of damage. According to this study, men made up the majority of the patients. The ratio of men to women was 3.5:1. Most of the patients were unmarried, had only completed their secondary education, and were unemployed. According to studies, RTAs were a significant contributor of severe injuries of head (SHI) among Indian citizens, primarily young men, accounting for 14.3% of adult ICU/HDU admissions (Adenekan & Faponle, 2009). Male dominance is probably a result of their propensity for taking risks in general. It may be necessary to study the function of low levels of education in RTA.

**Table 1: GCS upon admission and socio-demographic features of RTA patients who were admitted to the CCU**

Variables	GCS at admission		Total	Chi-square	Df	p value
	Below 8	Above 8				
Age	30-40 years	20	7	27	18.056	4
	41-50 years	31	6	37		
	Above 50 Years	20	16	36		
Marital status	Single	60	8	68		



	Married		4	24			
	20						
	Divorced	5	0	5	2.692	4	.639
	Separated	3	0	3			
Education level	NONE	26	1	27			
	Primary	35	0	35			
	Secondary	25	1	26	2.312	4	.876
	College	10	0	10			
	University	2	0	2			
occupation status	Unemployed	50	2	52			
	Casual Laborer	10	3	13			
	Self Employed	21	8	29	5.560	3	.220
	Formal	6	0	6			
Gender	Female	40	4	44			
	Male	50	6	56			
Type of injury	Severe Head Injury	31	1	32			
					9.423	2	.010
	Fracture Femur	25	1	26			
	Multiple injuries	9	1	10			
Cause of Injury	Stampede	0	2	2			
	Motor cycle	16	4	20			
	Hit and run	17	3	20			
	Motor Vehicle	25	5	30	12.377	6	.090
	Fall from Height	21	2	23			
	Assault	1	2	3			



	Train crash	2	0	2			
ICU stay	< 20 days	55	11	66			
	≥ 20 days	30	4	34	.740	1	.442
Total				100			

In CCU, the average stay was 18 days. GCS scores below 8 and referral status had an important (p 0.01) association, most of the patients recovered and discharged to general wards. Table 2 findings (p>0.05) indicate that there was no association between mortality and GCS, age, or CCU stay duration.

The majority of accidents involve either motor cars or motorbikes. None of the patients' injuries were not fully understood, and these patients, who had been left at the scene of the collision by the cars or bikers, were taken to the hospital by the police and good Samaritans. This discovery was alarming and might have delayed both the start of CCU care and transportation to the hospital. Motorcycle accidents are quite common, and more has to be done to reduce them given the higher passengers who were carried on a motorcycle at any given moment to that carried on the motor vehicles. GCS and injury cause did not, however, significantly correlate. According to research by the (EBIC) European Brain Injury Consortium, 52% of brain injuries have been caused by accidents by vehicle (Bener et al.,2009)

**Table 2: Relation between Referral position and certain other characteristics among RTA patients treated in the Intensive Care Unit**

Variables		Referral status			Total
Waiting time	< 30 min	6	20	26	
	31-60 min	1	5	6	
	> 60 min	7	10	17	
Total		14	35	49	
GCS at admission	≤ 8	0	1	1	
	> 8	1	0	1	
Total				100	

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that it is a significant health concern. The greatest danger to life is trauma, and head injuries in particular are on the rise as a



result of an uptick in traffic accidents. There are few population-based epidemiological research on brain injury undertaken in poor nations, despite the fact that it is a significant health concern. The greatest danger to life is trauma, and head injuries in particular are on the rise as a result of an uptick in traffic accidents. Just a comprehensive strategy, like the enforcement of traffic safety laws and advancements in automotive engineering as well as emergency treatment, can be blamed for the decline in severe injuries following traffic accidents.

Along with other technological advancements, traffic-related policies, alcohol regulation, and seat belt enforcement are thought to be of particular importance (Ernstberger et al. 2015). RTA causes significant human suffering, long-term disability, and resource loss, which puts a strain on both local economies and the global economy. In a broader sense, RTA has left millions of individuals dealing with the loss or impairment of friends or family members. RTA therefore has a much higher overall cost. Road conditions, cars, and human behavior all play significant roles in determining the frequency and severity of RTA (Beavogui et al., 2012). In five European nations, Majdan et al. (2013) examined the seriousness and prognosis of TBI brought on by the RTA in various categories of the road users. The cause of

44% of TBIs was traffic. The normal age of the patients was about 32.5 years, which was lower than the average age of car passengers (25 years). Pedestrians were believed to have had the most serious and extensive injuries. Tackling TBI and RTA simultaneously may be more efficient because they are significantly related. Young boys are the group most at risk for RTA-related TBI.

### **Conclusion**

Our research revealed that young men in the reproductive age group who were unemployed and had low levels of education were the most that were impacted by RTA. Most of the patients were transferred to the CCU because of severe injuries of head and GCS scores below 8/15. Referrals from other hospitals accounted for the majority of RTA patients in CCU. For the average person, the duration of stay and administration costs are substantial. To unequivocally validate this discovery, a comparative study might be conducted. Targeting this population with preventative strategies and providing ICUs with the tools they need to improve patient outcomes are both critical. CCUs should receive resources in order to the counties to provide ICU care and CT scan services for patients in order to lower the number of referrals to other hospitals. More young people must sign up for the NHIF and other health insurance plans to ease their financial load. To make



sure no casualties are left by the side of the road, highway patrolling and efficient RTA patient evacuation should be reinstated to assess the part that low levels of education play in RTA, more research must be conducted.

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