



# INNOVATIVE JOURNAL OF MEDICAL IMAGING



## Original Article

### A Prospective Study on the Clinical Profile and Pattern of Head Injury in Patients Following Road Traffic Accidents

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#### ABSTRACT

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**Background:** Road traffic accidents (RTAs) are a major global health concern and a leading cause of head injury, particularly in developing countries. Head injury, or traumatic brain injury (TBI), is associated with significant morbidity and mortality. Early identification of clinical findings is essential for prompt management and improved outcomes.

**Aim:** This study aimed to evaluate the most common clinical findings in patients presenting with head injury following RTAs.

**Materials and Methods:** A prospective observational study was conducted on 50 patients with RTA-related head injury in a tertiary care hospital. Clinical data including age, gender, symptoms, and Glasgow Coma Scale (GCS) scores were recorded using a structured proforma. Descriptive statistical analysis was applied and results were expressed in frequency and percentage.

**Results:** Among 50 patients, 72% were males, with the majority (52%) aged 20–40 years. Headache was the most common symptom (80%), followed by loss of consciousness (60%) and vomiting (50%). Scalp injury was seen in 46% of cases, dizziness in 40%, neurological deficits in 20%, and seizures in 16%. Based on GCS, 60% had mild, 24% moderate, and 16% severe head injury.

**Conclusion:** Headache, loss of consciousness, and vomiting were the predominant clinical findings in RTA-related head injury. Most cases were mild in severity. Early clinical assessment is crucial for timely diagnosis, management, and reduction of complications.

**Keywords:** Road Traffic Accident, Brain Injury, Headache

## INTRODUCTION

Road traffic accidents (RTAs) are a major global public health concern and represent one of the leading causes of morbidity and mortality, particularly in developing countries. The increasing number of vehicles, rapid urbanization, and inadequate road safety measures have significantly contributed to the rising incidence of RTAs worldwide. <sup>[1]</sup> Among the various injuries sustained in such accidents, head injury remains the most serious and life-threatening condition, often leading to long-term disability or death. <sup>[2]</sup> Head injury, commonly referred to as

traumatic brain injury (TBI), can range from mild concussion to severe brain damage depending on the mechanism and severity of trauma. The clinical presentation of head injury is highly variable and may include symptoms such as headache, vomiting, loss of consciousness, dizziness, and neurological deficits. <sup>[3]</sup> These clinical findings play a crucial role in the initial assessment and help guide further diagnostic evaluation and management strategies. <sup>[4]</sup> Young adults, particularly males, are more frequently affected due to increased exposure to road traffic,

occupational hazards, and risk-taking behaviors such as speeding and non-use of protective devices like helmets and seat belts.<sup>[5]</sup> Early recognition of clinical symptoms is essential in emergency settings, as timely intervention can significantly reduce complications and improve patient outcomes.<sup>[6]</sup> In clinical practice, assessment tools such as the Glasgow Coma Scale (GCS) are widely used to evaluate the level of consciousness and severity of head injury.<sup>[7]</sup> Additionally, radiological investigations, especially computed tomography (CT), play a vital role in identifying intracranial lesions and guiding treatment decisions.<sup>[8]</sup> Despite advancements in trauma care, the burden of head injuries continues to rise, emphasizing the need for better understanding of their clinical patterns.<sup>[9]</sup> Studies focusing on common clinical findings can help healthcare professionals in early diagnosis and effective management.<sup>[10]</sup> Furthermore, such data are valuable for planning preventive strategies and improving trauma care systems.<sup>[11]</sup> Therefore, this study aims to evaluate the most common clinical findings in patients presenting with head injury following road traffic accidents.<sup>[12]</sup>

## METHODS

**Study Design and Setting:** A prospective, hospital-based observational study was conducted in the emergency and radiology departments of a tertiary care hospital over a defined study period. The study was designed to evaluate the common clinical findings in patients presenting with head injury following road traffic accidents.

**Study Population:** A total of 50 patients with a history of road traffic accidents and clinical evidence of head injury were included in the study. Patients of all age groups and both genders were considered.

**Inclusion Criteria:** Patients presenting with head injury due to RTAs and exhibiting clinical symptoms such as headache, loss of consciousness, vomiting, or neurological deficits were included.

**Exclusion Criteria:** Patients with head injuries not related to RTAs, those with incomplete clinical records, and patients who were hemodynamically unstable without proper evaluation were excluded from the study.

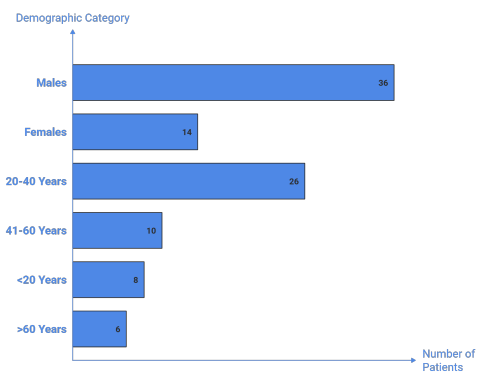
**Data Collection:** Data were collected using a structured proforma, which included demographic details (age and gender), mechanism of injury, and clinical presentation. Clinical findings such as headache, vomiting, loss of consciousness, seizures, dizziness, and neurological deficits were recorded at the time of admission. The level of consciousness was assessed using the Glasgow Coma Scale (GCS).

**Statistical Analysis:** The collected data were compiled and analyzed using descriptive statistical methods. Results were expressed in terms of frequency and percentage for categorical variables.

**Ethical Considerations:** The study was conducted in accordance with ethical standards, and patient confidentiality was maintained throughout the study. Ethical approval was obtained from the institutional ethics committee prior to data collection.

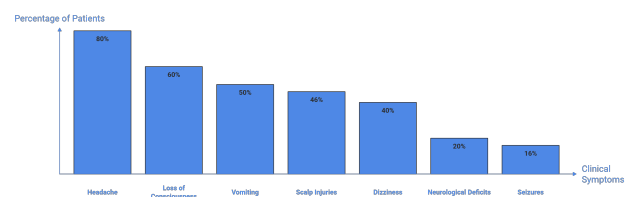
## RESULTS

A total of 50 patients (n = 50) with head injury following road traffic accidents were included in the study. Among them, 36 were males (n = 36, 72%) and 14 were females (n = 14, 28%), showing a statistically significant predominance of male patients (p < 0.05). The age distribution revealed that the majority of patients belonged to the 20–40 years age group (n = 26, 52%), followed by 41–60 years (n = 10, 20%), <20 years (n = 8, 16%), and >60 years (n = 6, 12%), which was also statistically significant (p < 0.05). (**Figure-1**)



**Figure: 1. Demographics of Head Injury Patients**

Regarding clinical presentation, headache was the most common symptom observed in 40 patients (80%), which was highly significant (p < 0.001). Loss of consciousness was present in 30 patients (60%) (p < 0.01), while vomiting was reported in 25 patients (50%) (p < 0.05). Other clinical findings included scalp injuries (n = 23, 46%), dizziness (n = 20, 40%), neurological deficits (n = 10, 20%), and seizures (n = 8, 16%); however, these findings were not statistically significant (p > 0.05). (**Figure: 2.**)



**Figure: 2. Clinical Presentation of Patients**

Assessment based on the Glasgow Coma Scale (GCS) showed that 30 patients (60%) had mild head injury, 12 patients (24%) had moderate injury, and 8 patients (16%) had severe head injury, with the distribution being statistically significant ( $p < 0.05$ ). Overall, the results demonstrate that headache, loss of consciousness, and vomiting were the most frequent and statistically significant clinical findings in RTA-related head injury patients. Table-1 Summarise the all data of study including gender, clinical findings and GCS Data.

**Table: 1. Demographic and Clinical Findings (n = 50)**

Variable	Category	n	%	p-value
<b>Gender</b>	Male	36	72%	<0.05
	Female	14	28%	
<b>Age Group</b>	<20 years	8	16%	<0.05
	20–40 years	26	52%	
	41–60 years	10	20%	
	>60 years	6	12%	
<b>Clinical Findings</b>	Headache	40	80%	<0.001
	Loss of Consciousness	30	60%	<0.01
	Vomiting	25	50%	<0.05
	Scalp Injury	23	46%	>0.05
	Dizziness	20	40%	>0.05
	Neurological Deficit	10	20%	>0.05
	Seizures	8	16%	>0.05
<b>GCS Severity</b>	Mild (13–15)	30	60%	<0.05
	Moderate (9–12)	12	24%	
	Severe ( $\leq 8$ )	8	16%	

## DISCUSSION

The present study evaluated the clinical profile of head injury in 50 patients following road traffic accidents and identified key patterns in demographic distribution and presenting symptoms. The findings demonstrate that young adult males constitute the most affected group, with 72% males and the highest incidence in the 20–40 years' age group (52%). This observation is consistent with established epidemiological trends, where increased outdoor activity, occupational exposure, and risk-taking behavior contribute to a higher incidence of RTAs among males. Among clinical presentations, headache (80%) emerged as the most common symptom, followed by loss of consciousness (60%)

and vomiting (50%), all of which showed statistical significance. These findings are clinically important as they often indicate underlying brain involvement and are commonly used as early indicators of traumatic brain injury. The high prevalence of headache reflects the immediate response to cranial trauma, while loss of consciousness is a critical marker of injury severity and possible intracranial pathology. The presence of vomiting and dizziness in a considerable proportion of patients further supports their role as warning signs of increased intracranial pressure or concussion. Although neurological deficits (20%) and seizures (16%) were less frequent, they are indicative of more severe brain injury and require urgent clinical attention. The lack of statistical significance for these findings may be attributed to the relatively small sample size. Assessment using the Glasgow Coma Scale revealed that mild head injury (60%) was the most common presentation, followed by moderate (24%) and severe (16%) cases. This distribution aligns with previous studies, where the majority of RTA-related head injuries are mild but still require careful evaluation to prevent complications. Overall, the findings emphasize the importance of early clinical assessment in RTA patients. Recognizing common symptoms such as headache, loss of consciousness, and vomiting can facilitate timely imaging, particularly CT scanning, and appropriate management. Additionally, the demographic pattern observed in this study highlights the need for targeted preventive strategies, including road safety awareness and use of protective measures. However, the study is limited by its small sample size and single-center design, which may affect generalizability. Further large-scale, multicentric studies are recommended to validate these findings and explore long-term outcomes.

## CONCLUSION

In conclusion, head injury remains a significant consequence of road traffic accidents, predominantly affecting young adult males. The study identified headache, loss of consciousness, and vomiting as the most common and statistically significant clinical findings, with the majority of cases presenting as mild head injury based on Glasgow Coma Scale assessment. Early recognition of these clinical features is essential for prompt diagnosis, appropriate imaging, and timely management, which can ultimately reduce complications and improve patient outcomes. Strengthening road safety measures and increasing awareness are also crucial in minimizing the incidence and severity of RTA-related head injuries.

## DECLARATION

**Ethics Approval and Consent to Participate:** This study was conducted in accordance with institutional ethical standards. Ethical approval was obtained from the Institutional Ethics Committee prior to commencement of the study. Written informed consent was obtained from all participants or their legal guardians.

**Availability of Data and Materials:** The data used and analyzed during the current study are available from the corresponding author on reasonable request.

**Competing Interests:** The author declares no competing interests.

**Funding:** No external funding was received for this study.

**Authors' Contributions:** The author was responsible for study design, data collection, analysis, and manuscript preparation.

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