Section: General Surgery

Original Research Article

CLINICO-EPIDEMIOLOGICAL PROFILE OF TRAUMA PATIENTS AT A TERTIARY CARE HOSPITAL IN UTTAR PRADESH: A PROSPECTIVE OBSERVATIONAL STUDY

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ABSTRACT

Background: Trauma is a major public health problem and one of the leading causes of morbidity and mortality, particularly among the productive age group. Road traffic accidents (RTA) contribute significantly to trauma burden in developing countries like India.Understanding the local clinico-epidemiological profile of trauma patients helps in planning preventive strategies and improving trauma care services.

Materials and Methods: This was a hospital-based prospective observational study conducted in the Emergency and surgical departments of Hind Institute of Medical Sciences, Safedabad, Barabanki, from June 2020 to May 2021. A total of 650 trauma patients admitted through OPD and emergency were included. Data regarding age, sex, mode of injury, helmet use, alcohol intake, injury pattern, management and outcome were collected using a predesigned proforma. Data were analysed using descriptive statistics and chi-square test, with $p < 0.05$ considered statistically significant.

Results: Majority of patients belonged to the 11–40 years age group (396/650; 60.91%), with maximum in 21–30 years (147; 22.61%). There was a male predominance (449; 69.1%). Road traffic accidents accounted for 357 cases (54.9%), followed by fall from height (78; 12.0%) and animal injuries (56; 8.6%). Head injury was the commonest isolated injury (164; 25.2%). Among 62 two-wheeler victims, only 10 (16.1%) were wearing helmets and all head injuries occurred in non-helmet users, showing significant association ($p = 0.042$). Alcohol intake was present in 112 RTA cases ($p < 0.001$). 385 patients (59.2%) required surgical intervention and 265 (40.8%) were managed conservatively. 617 (94.9%) patients survived and 33 (5.1%) expired.

Conclusion: Road traffic accidents, especially involving two-wheelers and poor helmet compliance, are the major contributors to trauma in rural Uttar Pradesh. Young males form the most affected group. Strict enforcement of helmet laws, alcohol control while driving, public awareness and strengthening trauma care services can reduce trauma-related morbidity and mortality.

Keywords: Trauma, Road traffic accident, Clinico-epidemiology, Helmet use, Injury pattern, Outcome.

INTRODUCTION

Trauma is a major public health problem worldwide and is one of the leading causes of morbidity and mortality, particularly among the young and productive age group. Injuries account for a significant proportion of the global burden of disease and are the commonest cause of death among individuals aged 1–40 years. Road traffic accidents (RTA) form a major component of this burden, especially in low- and middle-income countries where rapid motorisation, inadequate infrastructure and poor compliance with traffic regulations increase risk.[1-8]

India contributes substantially to the global trauma burden, reporting a high number of injury-related deaths and disabilities each year. Increasing vehicle density, mixed traffic patterns, speeding, alcohol use while driving and limited use of protective devices

such as helmets and seat belts further aggravate the problem. Trauma not only causes mortality but also leads to long-term disability, economic loss and psychological stress for patients and families.[9-16] Understanding the local epidemiology of trauma is essential for planning preventive strategies and improving trauma care systems. Patterns of injury vary across regions depending on geography, population behaviour and availability of health services. Therefore, region-specific data are necessary for effective intervention planning rather than relying solely on national estimates.[17,18]

The present study was undertaken to analyse the clinico-epidemiological profile, modes of injury, injury patterns and outcomes of trauma patients presenting to a tertiary care hospital in rural Uttar Pradesh.

MATERIALS AND METHODS

Study design and setting: A hospital-based prospective observational study conducted in the Emergency and surgical departments of Hind Institute of Medical Sciences, Safedabad, Barabanki, from June 2020 to May 2021.

Study population: All trauma patients admitted through OPD or emergency were included after informed consent.

Inclusion criteria

1. All trauma patients admitted in the hospital as a fresh case (Ist Responder).
2. Trauma patients admitted as such or on reference within 72 hours of Injury.
3. All admitted Medico Legal Trauma Cases.
4. Injuries to patient due to causes like RTA, Machine Injuries, Agricultural injuries, Animal injuries, Physical Assault cases, Stab wounds, Bullet injuries, Blast injuries etc.

Exclusion Criteria

1. Trauma patients admitted in the hospital after 72 hours of injury.
2. Burn Injuries due to any cause.
3. Patient refusal for giving consent.
4. Patients LAMA, Absconded, Referred.

Data collection: A predesigned semi-structured proforma was used to collect demographic profile, mode of injury, helmet use, alcohol intake, injury pattern, management and outcome.

Statistical analysis: Data were analysed using descriptive statistics and chi-square test. $p < 0.05$ was considered significant.

Ethical approval: Institutional Ethics Committee approval was obtained and confidentiality maintained.

RESULTS

A total of 650 trauma patients were analysed.

Demography: Majority belonged to 11–40 years (396; 60.91%). Male predominance was observed (449; 69.1%).

Mode of injury: RTA constituted 357 (54.9%) cases, followed by fall from height 78 (12.0%), animal injuries 56 (8.6%), slip/fall 54 (8.3%), stairs 39 (6.0%), machine injury 21 (3.2%), assault 8 (1.2%) and others 27 (4.2%).

Table 1: Trauma patients - Distribution according to age group

Age group (in years)	No (N = 650)	Percentage
0-10	43	6.61
11-20	132	20.30
21-30	147	22.61
31-40	117	18.0
41-50	67	10.30
51-60	62	9.53
>60	77	11.84

Table 2: Trauma Patients – Distribution according to Mode of Injury

Mode of Injury	No.	%
Fall On Ground/slip	54	8.3
Fall from height	78	12
Fall from stairs	39	6
Assault	8	1.2
Fall from bed	10	1.5
Road Traffic Accident	357	54.9
Trauma due to Animal	56	8.6
Machine injury	21	3.2
Other	27	4.2

Pattern of injury: Head injury was most common 164 (25.2%), followed by lower limb 147 (22.61%), upper limb 76 (11.6%), chest 44 (6.76%), abdomen/pelvis 39 (6.0%), and multiple injuries 180 (27.6%).

Helmet use and alcohol: Among 62 two-wheeler riders, only 10 (16.1%) wore helmets. All head injuries occurred in non-helmet users ($p = 0.042$). Alcohol intake was present in 112 RTA cases ($p < 0.001$).

Table 3: Trauma Patients - Distribution of Sites / Regions of Body

Site of Injury	N = 650	Percentage
Head Injury	164	25.2
Chest Injury	44	6.76
Abdomen and Pelvis	39	6.0
Upper limb	76	11.6
Lower Limb	147	22.61
Others	180	27.6

Management and outcome: 385 (59.2%) required surgery and 265 (40.8%) were managed conservatively. 617 (94.9%) survived and 33 (5.1%) expired.

Table 4: Trauma Patients - Management Categories

Treatment	No	Percentage
Surgery	385	59.2
Conservative	265	40.8

Table 5: Trauma Patients – Management Outcomes

Outcome	No = 650	Percentage
Survived	617	94.9
Expired	33	5.07

DISCUSSION

The present study analysed 650 trauma patients and demonstrates that young males are the most affected population. The predominance of the 11–40 year age group (60.91%) reflects occupational exposure and risk-taking behaviour, similar to other Indian studies. Road traffic accidents formed the major cause (54.9%), with two-wheeler users being particularly vulnerable. Head injury was the most common isolated injury (25.2%). Helmet compliance was very poor; only 16.1% riders used helmets and all head injuries occurred in non-helmet users with significant association ($p = 0.042$), proving the protective role of helmets.[19-22]

Alcohol intake also showed strong association with RTA ($p < 0.001$), highlighting the need for strict legal enforcement. More than half the patients required surgery (59.2%), indicating significant burden on trauma services, though survival was high (94.9%) due to timely management.[23-25]

Most trauma in this region is preventable. Strengthening road safety, helmet use, alcohol control, public awareness and trauma systems can reduce morbidity and mortality.[26-28]

Strengths and Limitations: The strengths include prospective design and large sample size of 650 patients. However, single-centre design limits generalisability, pre-hospital deaths were excluded and long-term outcomes were not assessed.

CONCLUSION

Road traffic accidents, particularly among two-wheeler users with poor helmet compliance, are the leading cause of trauma in rural Uttar Pradesh. Young males are the most affected group. Enforcement of helmet laws, alcohol control, public education and strengthening trauma care facilities can significantly reduce trauma burden.

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