

## Road Traffic Injury–Related Trauma at Abéché University Hospital (Chad): Epidemiological and Injury Patterns

***Seid Younous Adoum***

Abéché University Hospital, Chad  
Adam Barka University of Abéché, Chad

***Aboulghassim Oumar Moussa***

National Referral University Hospital of N'Djamena, Chad  
Adam Barka University of Abéché, Chad

***Adoum Allamine Hassan***

Renaissance University Hospital, N'Djamena, Chad  
Adam Barka University of Abéché, Chad

***Sadié Ismael Guire***

Renaissance University Hospital, N'Djamena, Chad  
University of N'Djamena, Chad

***Moussa Kalli Maide***

National Referral University Hospital of N'Djamena, Chad  
University of N'Djamena, Chad

***Oumar Bachar Loukoumi***

Mother and Child University Hospital, Chad

***Hemchi Housseine Sougou***

***Nazir Ahmat Badou***

***Mahadi Mahamat Annour Ali***

Abéché University Hospital, Chad

***Choua Ouchemi***

National Referral University Hospital of N'Djamena, Chad  
University of N'Djamena, Chad

[Doi:10.19044/esj.2026.v22n9p97](https://doi.org/10.19044/esj.2026.v22n9p97)

Submitted: 22 December 2025

Accepted: 26 March 2026

Published: 31 March 2026

Copyright 2026 Author(s)

Under Creative Commons CC-BY 4.0

OPEN ACCESS

*Cite As:*

Adoum, S. Y., Moussa, A. O., Hassan, A. A., Guire, S. I., Maide, M. K., Loukoumi, O. B., Sougou, H. H., Badou, N. A., Ali, M. M. A., & Ouchemi, C. (2026). *Road Traffic Injury–Related Trauma at Abéché University Hospital (Chad): Epidemiological and Injury Patterns*. European Scientific Journal, ESJ, 22 (9), 97. <https://doi.org/10.19044/esj.2026.v22n9p97>

## Abstract

**Objective:** To describe the epidemiological profile, injury characteristics, therapeutic management, and outcomes of road traffic accident-related trauma treated at the Abéché University Hospital in eastern Chad. **Patients and Methods:** This was a retrospective descriptive study conducted over a 12-month period from September 1st, 2023, to August 31, 2024. **Results:** Among 2,750 consultations, 972 patients were admitted for road traffic injuries, corresponding to a hospitalization rate of 35.34%. The mean age of patients was 26.52 years, with the 21–30-year age group being the most represented (41.60%). Males predominated (82.11%), with a male-to-female ratio of 4.59. Students and pupils constituted the most affected socio-professional group (44.96%). Collisions between tricycles (rakshas) and motorcycles represented the most frequent mechanism of injury (51.7%). The most common lesions were dermabrasions (41.36%) and limb injuries (40.53%), mainly fractures. Head injuries accounted for 4.22% of cases, while polytrauma was observed in 3.60% of patients. Management mainly consisted of local wound care (41.36%), orthopedic treatment (12.65%), and surgical intervention (9.57%). A high rate of discharge against medical advice (24.69%) was observed. The overall in-hospital mortality rate was 9.53%, occurring mainly among patients admitted with severe head injuries and polytrauma. **Conclusion:** Road traffic accidents constitute a major public health issue in the Abéché province, predominantly affecting young men. Collisions involving tricycles and motorcycles represent the leading cause of injuries and are associated with severe trauma and high mortality. Strengthening road safety measures, improving prehospital medical transport through ambulance services, and upgrading hospital technical infrastructure—particularly intensive care units—are essential to reduce road traffic-related morbidity and mortality.

---

**Keywords:** Road traffic, accident, tricycle, motorcycle, polytrauma, Abéché, Chad

## Introduction

Road traffic injuries represent a major public health problem in developing countries (Bandara, 2019). According to estimates from the World Health Organization (2023), road traffic crashes were responsible for 1.19 million deaths worldwide in 2021 and remain the leading cause of death among children and young people aged 5–29 years, as well as the twelfth leading cause of death across all age groups (WHO, 2023). In Cameroon, the prevalence of fractures resulting from road traffic accidents was 16% in the city of Douala in 2024 (Bombah, 2024). In Chad, a study conducted in N'Djamena in 2023 revealed that 19.9% of hospitalizations were related to

road traffic accidents involving two-wheeled vehicles (Andjeffa, 2023). The province of Abéché is located 897 km from the capital, N'Djamena. Abéché is the third most populated city and the main urban center of eastern Chad, covering an area of 29,980 km<sup>2</sup> (Yacoub, 2017). The objective of this study was to describe the epidemiological profile, injury characteristics, therapeutic management, and outcomes of road traffic accidents in the province of Abéché.

## Patients and Methods

This research adopts a descriptive and retrospective approach covering a twelve-month period, from September 1, 2023, to August 31, 2024. The study focuses on patients of all ages and genders managed at the Abéché University Hospital for recent trauma resulting from road traffic accidents, regardless of the body region affected. Data were extracted from medical records, as well as admission registers from the emergency department, surgery, and the operating theater. However, patients who were pronounced dead on arrival or those with incomplete medical records were excluded from the analysis. The variables studied included: hospitalization frequency, age, sex, occupation, type of accident, admission delay, mode of transportation, imaging investigations performed, diagnosis, therapeutic indications, and mortality. Consumption of alcohol or illicit substances was assessed through patient interviews, information from relatives, and clinical examination (Tidjani, 2025). Polytrauma was defined as the condition of a patient presenting multiple severe injuries caused by the same accident, with at least one injury posing an immediate or short-term life-threatening risk (Haddadi, 2009). Study authorization was obtained, and the collected data were used exclusively for research purposes.

## Results

During the study period, 2,750 patients were seen in the emergency and surgical departments, of whom 972 were hospitalized for road traffic accidents, corresponding to a hospitalization rate of 35.34%. The mean age of patients was 26.52 years (range: 5–75 years). The most affected age group was 21–30 years (41.60%, n=405). Men predominated (82.10%, n=798), with a male-to-female ratio of 4.59. Students and pupils constituted the most represented socio-professional category (44.96%, n=437). Most patients came from urban areas (77.98%, n=758), while 22.02% (n=214) originated from rural areas. The most frequent type of accident was a collision between a tricycle and a motorcycle, accounting for 51.75% (n=503) of cases.

**Table I:** Distribution of patients according to accident circumstances

<b>Circumstances of the event</b>	<b>n</b>	<b>%</b>
Tricycle–motorcycle	503	51.75
Motorcycle alone	212	21.81
Motorcycle–car	80	8.23
Tricycle–car	81	8.33
Pedestrian	48	4.94
Car–car	32	3.29
Tricycle–tricycle	16	1.65
<b>Total</b>	<b>972</b>	<b>100</b>

Admission occurred within 3 hours of injury in 55.97% of cases, whereas 10.08% (n=98) were admitted after more than 12 hours. Most patients (62.04%, n=603) were transported to the hospital by tricycle (“raksha”), followed by private vehicles (32.92%, n=320). Only 5.04% (n=49) were transported by ambulance, reflecting the absence of an active emergency medical service system in the country, particularly in Abéché. The highest number of accidents occurred in July (26.54%, n=258). Illicit substance use was reported in 32.92% (n=320) of cases, and alcohol consumption in 31.89% (n=310). The geographical position of Abéché as a major northeastern metropolitan area, the porosity of the Chad–Libya–Sudan borders, youth unemployment, and the easy availability of illicit substances may explain this high prevalence. Most patients (95.88%, n=932) were conscious at admission. The most frequent clinical sign was localized swelling at the injury site (75%, n=729), followed by open wounds (11.73%, n=114). Plain radiography was the most commonly performed imaging investigation (72.02%, n=700), followed by ultrasound (5.04%, n=49). No imaging examination was performed in 22.94% (n=223) of patients. Dermabrasions accounted for 41.36% (n=402) of lesions. Polytrauma associated with head injuries was identified in 7.82% (n=76).

**Table II:** Distribution of patients according to injury site

<b>Injury site</b>	<b>n</b>	<b>%</b>
Polytrauma and head injuries	76	7.82
Thoracic injuries	26	2.67
Abdominal injuries	32	3.29
Cervicalthoracolumbar spine injuries	43	4.42
Maxillofacial injuries	19	1.96
Dermabrasions	402	41.36
Limb injuries	374	38.48
<b>Total</b>	<b>972</b>	<b>100</b>

Therapeutic Management-wise, local wound care using saline solution was provided in 41.36% (n=402) of patients. Orthopedic treatment was administered to 12.65% (n=123), and surgical management to 9.57% (n=93). Simple clinical observation was performed in 4.42% (n=43). A discharge

against medical advice occurred in 24.69% (n=240) of cases, mainly due to preference for traditional treatment or transfer to nearby healthcare facilities. Meanwhile, 7.31% (n=71) of patients were referred to tertiary hospitals in N'Djamena.

**Table III:** Distribution of patients according to treatment type

<b>Treatment Type</b>	<b>n</b>	<b>%</b>
Local wound care	402	41.36
Discharge against medical advice	240	24.69
Orthopedic treatment	123	12.65
Surgical treatment	93	9.57
Referral	71	7.31
Clinical observation	43	4.42
<b>Total</b>	<b>972</b>	<b>100</b>

The main indications for referral were limb fractures (1.95%, n = 16), followed by cervical spine injuries (1.13%, n = 11) and head injuries (1.03%, n = 10) (Table IV).

**Table IV:** Distribution of patients according to reason for referral

<b>Reason for referral</b>	<b>n</b>	<b>%</b>
Limb fractures	16	22.54
Cervical spine injuries	11	15.49
Polytrauma+head injuries	18	25.35
Maxillofacial injuries	9	12.68
Thoracolumbar spine injuries	8	11.27
Thoracic injuries	5	7.04
Abdominal injuries	4	5.63
<b>Total</b>	<b>71</b>	<b>100</b>

Among the 661 patients treated in our hospital, 63 deaths were recorded, corresponding to a mortality rate of 9.53%. Mortality mainly affected patients with severe head injuries or polytrauma. Among the 10 patients admitted with severe head injury, 8 died, yielding a case fatality rate of 80%. Among polytrauma patients, 22 deaths occurred among 35 cases, corresponding to a case fatality rate of 62.86% (Table V). No follow-up information was available for patients transferred to other hospitals or those discharged against medical advice.

**Table V:** Distribution of patients according to causes of death

<b>Cause of death</b>	<b>n</b>	<b>%</b>
Polytrauma	22	34.92
Limb fractures	10	15.87
Abdominal injuries	9	14.29
Head injuries	8	12.70
Thoracic injuries	6	9.52
Maxillofacial injuries	3	4.76
Cervical spine injuries	3	4.76
Thoracolumbar spine injuries	2	3.18
<b>Total</b>	<b>63</b>	<b>100</b>

## Discussion

This retrospective study, conducted from September 1st, 2023, to August 31, 2024, included 972 patients admitted for road traffic-related injuries. The primary limitation of this study is the absence of a dedicated orthopedic and trauma department at the Abéché University Hospital (CHUA), despite its status as the referral center for Eastern Chad. Furthermore, the facility lacks sufficient human and material resources to manage mass casualty incidents or severe road traffic accidents. The healthcare system suffers from a shortage of specialized equipment for complex trauma, and pre-hospital care remains non-existent in Chad. Poor road conditions and the isolation of certain urban and regional areas delay the evacuation of victims, thereby increasing the risk of preventable deaths. Additionally, the shortage of specialists in intensive care and orthopedic surgery limits the quality of post-traumatic and post-operative follow-up.

The public health implications according to the WHO (WHO, 2023), Chad records over 2,600 deaths annually due to road traffic accidents. In Abéché, the frequency of fatal accidents on interurban routes frequently saturates healthcare services. The lack of adequate rehabilitation services often results in permanent physical disabilities. Nationally, the severity of treated trauma is exacerbated by low helmet use, excessive speed, poor road infrastructure, and the dilapidated state of vehicles (including defective brakes, overloading, and mechanical obsolescence) (Choua, 2014).

Road traffic accidents remain frequent in Abéché Province, with a hospitalization rate of 35.34%. They predominantly affect young men, with a mean age of 26.5 years and a peak incidence in the 21–30-year age group. These findings are consistent with those reported in the sub-region. In Nigeria, Omoke et al. (2019) reported a mean age of  $31.2 \pm 12.9$  years, with a peak incidence between 21 and 30 years. Similarly, in Burkina Faso, Diallo et al. (2020) reported a mean age of 31.18 years. Young people are more prone to risk-taking behaviors, particularly alcohol consumption and the use of psychoactive substances, and represent the most economically productive segment of the population, leading to significant socio-economic losses (Tidjani, 2025). Road traffic accidents often result in multiple injuries, most frequently affecting the limbs and the head, which are particularly exposed during collisions, especially in the absence of helmet use (Chalya et al., 2010; Twagirayezu et al., 2008). Our findings are consistent with data reported in the literature: 40.53% of cases involved limb injuries, 4.22% involved head injuries, and 3.60% involved polytrauma. Nearly one quarter of patients (24.69%) left the hospital against medical advice to seek traditional medical treatment. This proportion is higher than that reported in the literature. Abdoul Wahab et al. (2020), in Niger, reported a rate of 8.6%. Discharge against medical advice is relatively common in African healthcare settings

(Aderibigbe et al., 2013; Worku et al., 2019; Kuubiere et al., 2015) and is often associated with lack of information, financial constraints, or spiritual beliefs. The hospital mortality rate following road traffic accidents in Abéché was 9.53%, which is higher than rates reported in the literature. Kalli et al. (2021) in N'Djamena and Tékpá et al. (2019) in Bangui reported mortality rates of 4.1% and 4.2%, respectively. Mortality mainly affected patients with severe traumatic brain injury and polytrauma. This high mortality rate may be explained by several factors, including: Non-medicalized transport of victims by tricycles, absence of an intensive care unit at Abéché university hospital, shortage of specialized physicians in several disciplines (neurosurgery, orthopedic trauma surgery, anesthesiology-intensive care), Lack of a functional CT scan for timely detection of cranio-encephalic injuries and the long distance (897 km) between Abéché and the capital N'Djamena, which complicates referral to facilities with advanced resuscitation capabilities and may compromise patient survival. The recruitment of an orthopedic trauma surgeon and the strengthening of the operating room technical platform could significantly improve patient management.

## **Conclusion**

Road traffic accidents represent a major public health issue in the city of Abéché. They predominantly affect young men and are most commonly caused by collisions between tricycles and motorcycles. Mortality is mainly concentrated among cases involving severe head injuries and polytrauma. Strict enforcement of basic road safety regulations, together with strengthening of the health system through improved technical equipment, could enhance road safety and significantly reduce hospital mortality among road traffic accident victims. Study limitations include the lack of follow-up for patients discharged against medical advice or referred to other hospitals, as well as the retrospective design of the study.

**Conflict of Interest:** The authors reported no conflict of interest.

**Data Availability:** All data are included in the content of the paper.

**Funding Statement:** The authors did not obtain any funding for this research.

**Declaration for Human Participants:** This study was approved by the Scientific Committee of Abéché University Hospital, and the principles of the Declaration of Helsinki were followed.

## References:

1. Abdoul Wahab A. M., Chaibou B., Mahamadou Habibou D., Zirbine A. S., & Souna B. S. (2020). Quelle est la proportion des sorties contre avis médical liées aux pratiques traditionnelles parmi les patients admis au service des urgences traumatologiques d'un hôpital sahélien? *Revue de chirurgie orthopédique et de traumatologie*, 106, 434–437.
2. Andjeffa, V., Adendjingué, D., Dingamodji, M., Siniki, F., Emery, N., Nassou, H., Binoun, A., Rimtebaye, K., Assane, K., & Sané, A. (2023). Accidents de la circulation impliquant des véhicules motorisés à deux roues au centre hospitalier de référence nationale de N'Djaména. *Révue de Chirurgie d'Afrique Centrale (RECAC)*, 4(25), 5-8.
3. Aderibigbe, S. A., Agaja S. R., & Bamidele J. O. (2013). Determinants of utilization of traditional bone setters in Ilorin, north central Nigeria. *J Prev Med Hyg*, 54: 35-40. <https://pmc.ncbi.nlm.nih.gov/articles/PMC4718358/>
4. Bandara, K.V., Vadysinghe, A. N., & Edussuriya, D. H. (2019): Medico legal aspects of injuries sustained by occupants of three wheelers in road traffic crashes. *Sri Lanka Journal of Forensic Medicine, Science & Law*, 10(1):25-33.
5. Bombah F. M., Mohamadou F., Batchom A. D., Mantho P., Nyekel R., Eone D. H., Engbang J. P., & Ngowe Ngowe M. (2024). Étude comparative de l'épidémiologie, de la présentation clinique et de la prise en charge des fractures des os de la jambe dues aux accidents de la voie publique dans les hôpitaux du Cameroun et de France. *Health Res Afr*, 2(1), 26-30.
6. Chalya, P. L., Mabula J. B., Ngayomela, I. H., Kanumba, E. S., Chandika, A. B., & Giiti, G. (2010): Motorcycle injuries as an emerging public health problem in Mwanza City, north western Tanzania. *Tanzania Journal of Health Research*, 12:214-221. <https://doi.org/10.4314/thrb.v12i4.55500>.
7. Choua O., Zounvournai A., Sidi S. K. (2014). Accidents de motos à N'Djaména: plaidoyer pour le port de casque. *Ann Univ Abd Moum; Série A* (25), 26-33.
8. Diallo, M., Soulama, M., Ouédraogo, N., Sidibé, A., Ouédraogo, S., Cissé, A., & Dakouré, P. (2020). Accidents de la circulation impliquant des tricycles motorisés dans la ville de Bobo-Dioulasso. *Revue marocaine de chirurgie orthopédique et de traumatologie*, 86, 6-11.
9. Haddadi S. "Le polytraumatisé: approche thérapeutique et logistique."(2009); *Journal de chirurgie (Paris)*, 146(4):347-54. doi : 10.1016/j.jchir.2009.08.008.
10. Kalli, M., Valentin, A., Younous, S., Bonté, A., Mantou, B., Djibdouna, K., Guire, S. I., Abdoulaye, Y., Wiché, A., & Ouchemi, C.

- (2021). Aspects épidémiologiques des traumatismes liés aux accidents de la route chez l'adulte au centre hospitalier universitaire de référence nationale de N'Djaména(CHU-RN), Tchad. *European Scientific Journal*, 17(25). <https://doi.org/10.19044/esj.2021.v17n25p396>.
11. Kuubiere, C. B., Abass, A., & Majeed, S. F. (2015). Patients preference for traditional bonesetters in Northern Ghana. *Al Ameen Journal Medical Science*, 8(2), 115-118.
  12. Omoke, N. I., Lasebikan, O. A., Onyemaechi, N. O., & Ajali, N. (2019). Auto tricycle injuries and the vulnerability of occupants and pedestrians in a developing country: A multi-center study. *Niger J Clin Pract*, 22:971-6. doi: 10.4103/njcp.njcp\_571\_18.
  13. Tekpa, B. J., Diemer, S. C., Mapouka, P. A., Wakanga, A., & Grésengué, G. (2019). Aspects épidémiologiques, cliniques et thérapeutiques des traumatismes liés aux accidents de la circulation de moto à Bangui. *Annales de l'Université de Bangui*, 5(001), 4–7.
  14. Tidjani A., Nenodji M. Consommation des substances psychoactives au Tchad. Ministère de la santé publique, Tchad [en ligne]. 2025 [Consulté le 19 avril 2025].<http://tchadvision.com/les-resultats-d-une-etude-alarmanante/p2>.
  15. Twagirayezu, E., Teteli, R., Bonane, A., & Rugwizangoga, E. (2008). Road traffic injuries at Kigali university central teaching hospital, Rwanda. *East and Central African Journal of Surgery*, 13(1), 73-76.
  16. Worku, N., Tewelde, T., Abdissa, B., & Merga, H. (2019). Preference of traditional bone setting and associated factors among trauma patients with fracture at Black Lion Hospital in Addis Ababa, Ethiopia: institution based cross sectional study. *BMC Research Notes*, 12:590. <https://doi.org/10.1186/s13104-019-4643-z>.
  17. World Health Organization. (2023). Global status report on road safety 2023: Supportin.
  18. Yacoub, M. S. Abéché d'hier et d'aujourd'hui. (2017). *Paris: L'Harmattan*.