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Reducing mortality from motorcycle-related trauma in adolescents in Kinshasa: a multidisciplinary intensive care challenge

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Keypoints

- Motorcycle trauma is a leading cause of preventable adolescent mortality in Kinshasa.
- Limited ICU infrastructure and human resources exacerbate outcomes.
- Multidisciplinary teams reduce mortality and improve functional recovery.
- Adapting ATLS and WHO frameworks to low-resource settings is feasible and effective.
- Helmet enforcement and road-safety education remain essential preventive strategies.

Abstract

Motorcycle-related trauma is a leading cause of adolescent mortality in low- and middle-income countries. In Kinshasa, motorcycle taxis contribute to severe injuries among young riders. Intensive care admission is often insufficient due to systemic limitations, including shortages of trained staff, ventilators, and blood products. Multidisciplinary approaches, integrating intensivists, trauma surgeons, pediatricians, neurosurgeons, nurses, and rehabilitation specialists, are essential. Adaptation of international trauma frameworks and preventive strategies such as helmet enforcement are critical to improving survival and functional outcomes.

Keywords

Accidents, Traffic, Adolescent, Critical Care, Interdisciplinary Communication, Motorcycles.

Introduction

Motorcycle taxis—known locally as *wewa*—have become an indispensable mode of transport in Kinshasa. In a city of nearly 15 million inhabitants, where public transportation is scarce and traffic congestion chronic, motorcycles are cheap, fast, and ubiquitous. Yet this apparent solution to urban mobility conceals a lethal paradox: rising numbers of severe road traffic injuries, disproportionately affecting adolescents and young adults. In July

2022, Congolese media documented repeated fatal crashes involving *wewa* riders, often accused of recklessness and lawlessness [1]. In February 2024, local reports counted more than 30 deaths among motorcyclists in just three days [2].

Globally, road traffic injuries are the leading cause of death among adolescents and young adults [3]. In sub-Saharan Africa, where motorcycles are widely used for commercial transport, young riders and passengers face a disproportionate burden of fatal trauma [4]. Helmet use remains inconsistent, licensing poorly enforced, and overcrowding on motorcycles—sometimes with three or four passengers—is common [5].

The Adolescent Burden of Trauma

The vulnerability of adolescents in motorcycle-related trauma has been documented across contexts. A U.S. study analyzing pediatric motorcycle passenger injuries underscored the frequency of severe head trauma and the importance of prevention [6]. In Malaysia, analyses of fatal collisions highlighted lack of helmets, excessive speed, and unsafe riding environments as key contributors [7]. Similar trends were observed in South Korea, where adolescents under 20 involved in motorcycle crashes presented with higher rates of traumatic brain injury and prolonged hospitalization [8]. These findings echo the experience in Kinshasa, where adolescents, both as riders and passengers, arrive in intensive care units (ICUs) with polytrauma—cranial, thoracoabdominal, and orthopedic injuries.

The Kinshasa ICU Challenge

In theory, admission to ICU should improve outcomes. In practice, mortality rates among adolescents with motorcycle-related trauma in Kinshasa remain unacceptably high. Several systemic factors explain this reality :

- **Limited infrastructure** : A handful of ICUs serve a population of millions, with frequent shortages of ventilators, monitors, and blood products.
- **Human resource gaps** : Trained intensivists, neurosurgeons, and trauma surgeons are scarce; nurses are often underpaid and overworked.
- **Fragmented care pathways** : Prehospital emergency services are underdeveloped; delays in transfer worsen prognosis.
- **Financial barriers**: Families must often pay out-of-pocket for supplies, medications, or even access to imaging.

The consequence is a cycle of delayed interventions, preventable complications, and early deaths. Where high-income countries rely on structured trauma systems and standardized protocols, Kinshasa faces fractured, resource-constrained responses.

The Case for Multidisciplinary Care

Adolescents with severe motorcycle trauma represent a clinical challenge requiring simultaneous expertise across specialties. The evidence is clear: multidisciplinary, team-based care reduces mortality in traumas patients [9]. In Kinshasa, implementing such an approach would involve:

- **Intensivists/critical care physicians**: securing airway, optimizing ventilation, fluid resuscitation, and hemodynamic support.
- **Emergency physicians**: early triage and rapid initiation of trauma protocols.
- **Pediatricians**: recognizing the unique physiological needs of adolescents, particularly in fluid balance and pharmacology.
- **Neurosurgeons**: timely intervention in cases of traumatic brain injury.
- **Trauma and orthopedic surgeons** : operative stabilization of fractures and hemorrhage control.
- **Nurses** : continuous monitoring, prevention of ventilator-associated infections, wound care.
- **Psychologists and social workers**: addressing the psychosocial aftermath of injury for adolescents and families.
- **Rehabilitation specialists**: enabling reintegration into school, work, and society.

Without this collaborative framework, the burden of disability compounds the tragedy of high mortality.

Survivors may face permanent neurological deficits, chronic pain, or limb loss, often leading to lifelong poverty and social exclusion.

International Standards and Local Realities

Globally, trauma systems are guided by standardized frameworks such as Advanced Trauma Life Support (ATLS) and the World Health Organization's Emergency Care System Framework [10,11]. These emphasize early recognition, structured triage, multidisciplinary coordination, and continuum of care from prehospital to rehabilitation.

Adapting such standards to resource-limited settings like Kinshasa requires pragmatism:

- **Simplified trauma protocols**: stripped-down checklists focusing on airway, breathing, circulation, disability, exposure ("ABCDE") can standardize care even in understaffed ICUs.
- **Task-shifting**: training general surgeons, anesthesiologists, and pediatricians to provide emergency neurosurgical or trauma interventions when specialists are absent.
- **Simulation training** : interprofessional drills for nurses, physicians, and paramedics to improve team coordination.
- **Low-cost innovation** : using portable ultrasound for rapid diagnosis, locally manufactured cervical collars, and improvised splints when imported supplies are unavailable.

Policy and Prevention

Even the most advanced ICU cannot offset systemic neglect of road safety. Prevention is therefore crucial. Helmet laws exist in the Democratic Republic of Congo but are weakly enforced; many adolescents ride without helmets or share a single helmet among multiple passengers. Road infrastructure is inadequate, and motorcycle licensing is poorly regulated. Public health campaigns targeting adolescents, supported by school-based education, can shift cultural attitudes toward safety. Government enforcement of helmet and speed laws is a matter not only of regulation but of political will.

Path Forward

The crisis of adolescent motorcycle trauma in Kinshasa is not inevitable. International collaborations and "twinning" partnerships between African trauma centers and academic ICUs abroad could accelerate capacity-building. Telemedicine could enable remote neurosurgical consultations. Investments in prehospital systems—ambulances, paramedic training—would shorten delays to definitive care.

Ultimately, reducing mortality among adolescents injured in motorcycle crashes in Kinshasa demands recognition that trauma care is a multidisciplinary, systems-level challenge. This includes not only intensivists and surgeons, but also pediatricians, nurses, psychologists, rehabilitation specialists, and policymakers.

Conclusion

Adolescent motorcycle trauma in Kinshasa exemplifies the intersection of urban poverty, fragile health systems, and preventable mortality. While the scale of the challenge is daunting, the potential for impact is profound. By implementing multidisciplinary care adapted to resource limitations, integrating international standards pragmatically, and prioritizing prevention, Kinshasa can begin to bend the curve of adolescent trauma survival. For the thousands of families who entrust their children daily to *wewa* transport, the stakes could not be higher.

Conflict of Interest

The authors declare no conflicts of interest related to the publication of this article.

Author Contributions

- A. Kalonji: ICU and anesthesia perspective
- A. Makembi Bunkete: supervision and coordination
- W. Mbombo: adolescent trauma perspective
- K. Anga: trauma surgery perspective
- J. Nsiala: emergency care and local context
- M. Bula-Bula : pediatric ICU perspective
- B. Barhayiga: orthopedic perspective

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