Quantitative Analysis of Road Traffic Injuries in Africa: Overcoming Data Gaps in Evidence-Based Interventions of Road Safety.

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Keywords: Road traffic injuries, Crash data quality, Quantitative methods, Vulnerable road users

Background

Road traffic injuries are the predominant cause of mortality in Africa, whereas insufficient crash information is a significant limitation to evidence-based interventions. Data on road accidents from 2018-2023 was made up of government, police and insurance records, and an amalgamated dataset of 42,350 reported crashes was obtained, which, when imputed, produced 214,000 estimated incidents.

Aim

This paper is a quantitative investigation of road traffic injuries in several African nations and deals with under reporting using the methods of probabilistic record linkage and multiple imputation techniques to determine the number of unreported deaths

Method

The research used descriptive statistics and multivariate logistic regression analysis to determine the key predictors of crash severity. The GIS-based spatial analysis indicated the areas of major risks and urban hotspots.

Results

The results show that pedestrians are 46 percent of the victims, with more cases being seen in the urban setting during evening times (odds ratio (OR=2.3, 95% CI: 1.9-2.7). Commercial transport professional drivers were found to have higher severity of crashes (OR=1.8, 95% CI: 1.5-2.2), and rural roads were found to have less frequent but more severe crashes including fatalities (fatalities per 100 crashes=3.4 rural versus 1.9 urban). The temporal analysis showed highest incidence of crashes at 17:00-20:00 which was associated with congestion and diminished visibility of the road.

Conclusions

- The research has shown that strong quantitative research designs can address high data constraints, which offer practical information to policymakers and practitioners.
- These findings can be used to provide tailored interventions, enhance enforcement measures, and maximize the use of scarce resources by classifying high-risk populations, places, and times.
- The framework derived can be used to lead scalable, data-driven road safety management based on the African context, leading to significant reductions in the number of deaths and injuries in traffic.