Estimating the burden of road traffic crashes in Uganda using police and health sector data sources

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ABSTRACT

Background In many low-income countries, estimates of road injury burden are derived from police reports, and may not represent the complete picture of the burden in these countries. As a result, WHO and the Global Burden of Diseases, Injuries and Risk Factors Project often use complex models to generate country-specific estimates. Although such estimates inform prevention targets, they may be limited by the incompleteness of the data and the assumptions used in the models. In this cross-sectional study, we provide an alternative approach to estimating road traffic injury burden for Uganda for the year 2016 using data from multiple data sources (the police, health facilities and mortuaries).

Methods A digitised data collection tool was used to extract crash and injury information from files in 32 police stations, 31 health facilities and 4 mortuaries in Uganda. We estimated crash and injury burden using weights generated as inverse of the product of the probabilities of selection of police regions and stations.

Results We estimated that 25 729 crashes occurred on Ugandan roads in 2016, involving 59 077 individuals with 7558 fatalities. This is more than twice the number of fatalities reported by the police for 2016 (3502) but lower than the estimate from the 2018 Global Status Report (12 036). Pedestrians accounted for the greatest proportion of the fatalities 2455 (32.5%), followed by motorcyclists 1357 (18%).

Conclusions Using both police and health sector data gives more robust estimates for the road traffic burden in Uganda than using either source alone.

INTRODUCTION

The 2018 Global Status Report on Road Safety identifies road traffic injuries (RTIs) as the leading killer of children and young adults worldwide.[1] An estimated 1.35 million road traffic deaths occur annually. These deaths are not uniformly distributed across the world. Death rates are estimated to be three times higher in low-income countries (LICs) than in high-income countries.[2] Africa has the highest rates of road traffic deaths globally, estimated at 26.6 per 100 000 people per year.[1] Data from the Global Burden of Disease (GBD) 2010 show that between 1990 and 2010, the African region registered an average of 84% increase in road traffic deaths.[3]

In many LICs such as Uganda, data on road traffic crashes, injuries and deaths are mostly derived from the police reports. However, these do not capture the complete burden, as some injuries may not be reported to the police.[4 5] In addition, data on fatalities, non-fatal injuries, economic costs, as well as monitoring and evaluation indicators (eg, seat belt usage and deaths related to alcohol) are scanty, as are reliable vital statistics in these settings. Where such data exist, they are often incomplete.[6]

Furthermore, some countries (eg, Uganda) define a road traffic death as one occurring within a year after involvement in a road traffic crash.[7] This increases the imprecision in the estimates because of challenges of following up patients for such a long period with limited resources. For example in 2016, the Uganda Police reported 3503 road fatalities,[8] which for a population of 41 million people would put Uganda in the same road safety bracket as Australia and the UK.[1] In order to address these data problems, and to allow for comparisons across countries, WHO and the GBD, Injuries and Risk Factors project use complex models to generate estimates for their Global Status Report on Road Safety and GBD report, respectively.[1 3] However, there are limitations in the numbers generated by these models, a key one being the quality of the data provided by most LICs for use in the models. For example, WHO relies on police data (for Uganda) while the GBD project uses multiple data sources but involves complex modelling processes that maybe prone to strong assumptions.[9 10] There is, therefore, a need for alternative approaches that can generate national estimates for road injury burden in LICs and provide readily understood numbers that can inform prevention targets (which are important rallying points for actors in road safety).

In this study, we used data from three major data sources: police stations, health facilities and mortuaries to provide weighted national estimates of the burden of road traffic crashes and injuries in Uganda for the year 2016. This is the first study to describe the Ugandan road traffic burden using data from the three sources.

METHODS

Study design, population and sampling methodology

We used a cross-sectional study design to estimate Uganda's burden of road traffic crashes and injuries in the year 2016. The target population was all road crashes and injuries in Uganda in 2016. Crashes and injuries were classified as fatal, serious (requiring admission to a health facility) or minor (requiring little or no medical attention). The accessible