Available online at www.sciencedirect.com

Public Health

journal homepage: www.elsevier.com/puhe

Original Research

Helmet wearing in Kenya: prevalence, knowledge, attitude, practice and implications☆

A.M. Bachani [a,*], Y.W. Hung [a], S. Mogere [b], D. Akunga [c], J. Nyamari [c], A.A. Hyder [a]

[a] Johns Hopkins International Injury Research Unit, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA
[b] Roless Media Management Institute, Nairobi, Kenya
[c] Department of Public Health, Kenyatta University, Nairobi, Kenya

ARTICLE INFO

Article history:
Received 17 August 2016
Received in revised form
30 November 2016
Accepted 1 December 2016

Keywords:
Road traffic injuries
Helmet
Kenya
Road safety
Low- and middle-income countries

ABSTRACT

Objectives: In light of the increasing prevalence of motorcycles on Kenyan roads, there is a need to address the safety of individuals using this mode of transport. Helmet use has been proven to be effective in preventing head injuries and fatalities in the event of a crash. This study aims to understand the prevalence of helmet use as well as knowledge, attitudes, and practices in two districts in Kenya over a 5-year period (2010–2014).

Study design: Observational studies on helmet use at randomly selected locations throughout each district were done every quarter to estimate the prevalence of helmet use. Roadside knowledge, attitude, and practice (KAP) surveys were done two times a year in each district.

Methods: Helmet use among motorcycle drivers and passengers in Thika and Naivasha was assessed through systematic observations at randomly selected locations in the two districts between August 2010 and December 2014. Roadside KAP surveys were administered in both sites to motorcyclists in areas where they stopped, including motorcycle bays, petrol stations and rest areas near the helmet observation sites. Secondary analysis of trauma registries was also used. Negative binomial regressions were used to assess trends of helmet wearing among motorcyclists over time, and logistic regressions were used to analyze associated risk factors as well as association with health outcomes among those admitted to the four hospitals.

Results: A total of 256,851 motorcycles were observed in the two target districts during the study period. Overall, prevalence of helmet use among motorcycle drivers in Thika and Naivasha across all periods was 35.12% (95% confidence interval [CI]: 34.87%–35.38%) and 37.42% (95% CI: 37.15%–37.69%) respectively. Prevalence of helmet wearing remained similar after the passage of a traffic amendment bill. These results were not statistically significant in either Thika or in Naivasha. Data from the KAP survey showed that respondents recognized the life-saving effect of wearing a helmet, but many did not always wear a helmet because they found it inconvenient/uncomfortable. Analysis of trauma

☆ Open Access provided for this article by the Johns Hopkins International Injury Research Unit through a grant from Bloomberg Philanthropies.

* *Corresponding author*. 615 N. Wolfe St, Suite E-8132, Baltimore, MD 21205, USA. Fax: +1 (410) 614 1419.
E-mail address: abachani@jhu.edu (A.M. Bachani).

http://dx.doi.org/10.1016/j.puhe.2016.12.005

registry data showed that helmet wearing was associated with a significant reduction in head injuries among motorcyclists (adjusted odds ratio: 0.472, 95% CI: 0.327–0.684).
Conclusions: This study highlights the low prevalence of helmet use and documents the potential reduction in the risk of head injuries to motorcyclists if this risk factor was addressed. The passage of a traffic amendment bill showed negligible impact on helmet use. This highlights the need for a multi-faceted strategy that includes media campaigns and widespread enforcement in addition to legislative change for improving helmet use.

Introduction

Kenya is a rapidly developing country in Eastern Sub-Saharan Africa that has and continues to experience increasing motorization. The total number of registered vehicles in the country grew from 750,000 in 2005 to 1,626,000 in 2011, with motorcycles being the largest contributors to this increase from 57,000 (7.6% of all registered vehicle) in 2005 to 514,000 (31.6% of all registered vehicles) in 2011.[1] This trend is similar to that observed in many other low- and middle-income countries around the world, where fatalities among motorcyclists and other motorized two-wheeled vehicles are rapidly increasing.[2,3]

Kenya has amongst the highest road traffic death rates in Africa, estimated at 11 deaths per 100,000 population in 2010.[4] Besides fatalities, road traffic injuries also contribute to a significant proportion of the burden of disability. In Kenya, road traffic injuries were the fifth leading cause of disability adjusted life years (DALYs) among males 15–49 years in 2010.[4] Several studies using hospital surveillance, mortuary, and verbal autopsy data from different regions of Kenya have also highlighted this burden.[5–7] One study from Kenyatta National Hospital, a national referral hospital, found that 61.7% of all trauma admissions were due to road traffic injuries, 7.7% of whom died.[7] The same study also found that motorcyclists were the third largest group of road users injured.[7]

The majority of deaths among motorcyclists involved in road traffic crashes are a result of head injuries, which are estimated to account for over 80% of the fatalities in low- and middle-income countries.[2] While motorcycle helmets have been consistently found to be effective in reducing the risk of death and head injury among motorcyclists in crashes,[8] their use in low- and middle-income countries such as Kenya has historically been low.[9] Amid this increasing burden, advocacy efforts through the Bloomberg Philanthropies Global Road Safety Program (BP-GRSP) and local non-governmental organizations and civil organizations, and a recognition of the need to act on road safety, legislators in Kenya passed an amendment to the traffic bill in November 2012, which among other things, reinforced the mandate of helmet use among all motorcyclists, including drivers and passengers, that was established in 2009.[2,10,11] The amendment in 2012 increased the penalty from 'a fine of five thousand shillings or, in default of payment, to imprisonment for a term not exceeding three months' in 2009,[10] to 'a fine not exceeding ten thousand shillings or, in default of payment, to imprisonment for a term not exceeding twelve months'. The traffic bill amendment was effective once it was signed in November 2012.[11]

This study was undertaken as part of the Bloomberg Philanthropies Global Road Safety Program (BP-GRSP) to evaluate efforts to improve helmet use in two sites—Thika and Naivasha, in Kenya. Specifically, we aim to assess the impact of this legislation in improving helmet use in Kenya. Through a multi-pronged approach, we estimated the prevalence of helmet use before and after this legislation, knowledge, attitudes and practices (KAP) surrounding helmet use, and road traffic crashes and injuries among motorcyclists.

Methods

Three methodologies were used for collecting data for this study: helmet observational studies, roadside KAP surveys and hospital injury surveillance. Each of these methodologies has been detailed previously[9,12] but are also briefly described below.

Helmet observational studies

Serial helmet observations were used to monitor the prevalence of helmet use among motorcycle drivers and passengers in Thika and Naivasha. Helmet use was documented as correct (defined as a standard helmet that was worn correctly and chin strap fastened), incorrect, none or unable to be determined. Systematic observations were done at six randomly selected locations in each of the two target districts as previously described.[9] Observation sites were locations near junctions/intersections and near motorcycle bays (up to 50 m away) where motorcyclists slowed down or stopped to allow helmet observation. A total of 16 rounds of observations were completed between August 2010 and December 2014, with each observation round conducted approximately three to four months apart.

As detailed elsewhere, observations were conducted during five different 90-min periods each day, with each location being observed for at least one weekday and one weekend day to account for variations in traffic patterns and build a representative picture of the prevalence of helmet use in the two sites.[9]

Data were entered in Epi Info version 7, then managed and analyzed using STATA 13 (StataCorp 2013)[13] and Microsoft Excel. Exploratory analyses were first conducted using tabulations and cross-tabulations to identify patterns in helmet use in each of the target sites and by round of observation. Chi-squared tests were used to assess whether the differences