COCHRANE CORNER

Road safety in low- and middle-income countries: a neglected research area

It is estimated that each year between 20 and 50 million people are disabled and 1.2 million people die as a result of road traffic crashes, with 90% of the deaths occurring in low- and middle-income countries (LMICs).[1] Furthermore, whereas a decrease in deaths has been observed in high-income countries, this is not the case in LMICs, where deaths are projected to increase by 80% over the next 20 years to become the second leading cause in the global burden of disease ranking.[1]

The identification and implementation of effective preventive interventions are essential for tackling this growing epidemic. Systematic reviews of the evidence are vital for identifying and quantifying the effects of interventions, and their findings should have a key role in road safety policy-making. The effects of many preventive interventions are likely to vary according to the setting and context in which they are delivered, especially those interventions that target behavior that is strongly influenced by cultural conditions and norms.[2] It may be difficult to be confident that simply because a prevention intervention has been effective in one setting, it will be equally effective in another, which may have different social, cultural, and economic conditions. Most of the current road safety intervention research originates from high-income countries with very little from LMICs, despite these areas bearing the greater injury burden. Research on the prevention of road traffic injuries conducted in LMICs should therefore be a priority, in order to provide findings that are directly applicable to such settings.[3]

To assess the contribution of road safety research from LMICs in Cochrane systematic reviews, we examined all the reviews of road safety interventions produced by the Cochrane Injuries Group (CIG) to determine the proportion of research from LMICs. To date the CIG has published 13 systematic reviews assessing the effects of a range of interventions for reducing road traffic crashes and injuries (none of these reviews imposed any restriction on geographical setting, thus studies from both high-income and LMICs would be eligible). These 13 reviews include a total of 236 studies, yet just six (2.5%) of these trials were conducted in LMICs. All of the six trials were included in the same review, ''Helmets for preventing injury in motorcycle riders'', three were based in Taiwan, two in India, and one in Indonesia.

In part, this paucity of studies indicates the lack of research capacity and funding in many LMICs. Training and support of local researchers in these settings is clearly crucial. This may involve mentoring schemes, PhD support programs, as well as increasing access to national and international research funding. The work of WHO and other agencies in raising awareness of the burden of road traffic injury in LMICs will also contribute to local and global support from key stakeholders for research initiatives.

It is also important to consider that many of the interventions under examination are costly and potentially irrelevant in low-income settings. Furthermore, most of the research has focused on drivers from high-income countries, yet most of the victims are non-drivers—that is, vulnerable road users (such as pedestrians, cyclists, motorcyclists, and passengers of private and public transport)—from LMICs.

In conclusion, it is clear that much of the current research on road traffic injuries focuses on interventions in high-income settings. There is an urgent need to broaden the agenda and identify effective interventions that target the most common and vulnerable victims of road traffic crashes.

The full text and abstracts of all CIG published reviews can be accessed through http://www.cochrane-injuries.lshtm.ac.uk.

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2 **Chinnock P**, Siegfried N, Clarke M. Is evidence-based medicine relevant to the developing world? *PLoS Med* 2005;**2**:e107.
3 **Ameratunga S**, Hijar M, Norton R. Road-traffic injuries: confronting disparities to address a global-health problem. *Lancet* 2006;**367**:1533–40.

Table 1 Systematic reviews published by the Cochrane Injuries Group assessing the effects of interventions for reducing road traffic crashes and injuries

Cochrane review	Included studies	Trials from LMICs
Alcohol-ignition interlock programs for reducing drink driving recidivism	11	0
Bicycle helmet legislation for the uptake of helmet use and prevention of head injuries	5	0
Graduated driver licensing for reducing motor vehicle crashes among young drivers	15	0
Helmets for preventing head and facial injuries in bicyclists	8	0
Helmets for preventing injury in motorcycle riders	53	6
Interventions for increasing pedestrian and cyclist visibility for the prevention of death and injuries	39	0
Interventions for promoting booster seat use in four to eight year olds traveling in motor vehicles	5	0
Non-legislative interventions for the promotion of cycle helmet wearing by children	22	0
Post-licence driver education for the prevention of road traffic crashes	24	0
Red-light cameras for the prevention of road traffic crashes	10	0
Safety education of pedestrians for injury prevention	15	0
School-based driver education for the prevention of traffic crashes	3	0
Speed enforcement detection devices for preventing road traffic injuries	26	0

LMIC, low- and middle-income countries.