PostScript

RESEARCH LETTER

Audit of an intervention to decrease cycle related head injuries in primary school children

Cycling is good for health, recreation, and transportation,¹ however there is concern that these benefits may be partially offset by the risk of injury to cyclists. UK police reports show that in 2004 134 cyclists were killed, and 2174 severely injured. Of these 577 were children; 300 of primary school age.² Thirty four percent of cyclists who required admission to hospital had sustained a head injury of these half were children. One percent of cyclists admitted with a head injury died as a result.³

Using cycle helmets prevents injury and death from head injury as demonstrated overwhelmingly in a Cochrane review. It showed that helmets reduced the risk of head injury by 85% and risk of brain injury by 88%.⁴ Helmets are particularly important for children as they suffer the majority of serious head injury.^{5,6} The problem is persuading children to wear helmets—most primary school children ride a bike but only around half own a helmet and only 29–44% always wear one.^{7,8}

The literature shows that a combination of legislation and education is most effective at increasing helmet usage in children.^{9–11} Although the UK government has removed value added tax from helmet sales it has so far shied away from compulsory legislation.¹² This makes us all the more reliant on other methods. Local hospital based interventions have been successful in the past,¹³ and this encouraged us to communicate directly with local schools in an attempt to increase helmet usage and decrease serious head injuries among primary school children in our area.

Methods

We included all patients attending the Accident and Emergency Department of a

Scottish District General Hospital with cycling related injuries. The initial and repeat audits took place over 40 day periods corresponding to the school summer holidays in 2004 and 2005 respectively. Doctors recorded the patient's age and gender, the nature of the injury, the need for admission, and if a helmet had been worn.

Head injuries were treated according to the recommendations of the Scottish Intercollegiate Guidelines Network which were unchanged over the period of the audit.¹⁴

In an attempt to decrease the number of serious head injuries among young children we wrote to the headteachers of all 77 primary schools identified within the hospital's catchment area immediately before the 2005 summer holidays. We asked head teachers to address the issue of cycle safety and to encourage helmet use among their pupils. We encouraged head teachers to tackle the issue in the way they felt best for their school while discussing ways to make helmets appear "cool" such as renaming them "cranial protectors" and referred to two websites aimed at improving child cycle safety, one run by Disney and one by the UK Government.^{15,16}

Results

The initial audit (2004) included 52 patients aged 2–66 years, median 10 years old. Five (10%) were of preschool age (<5 years old), 32 (62%) were of primary school age (5–11 years old), 14 (27%) were of secondary school age (12–16 years), and only three (6%) were above school age (>16 years old). Five (10%) of patients with an age range of 5–12 years required admission, four for head injuries and one for reduction of a limb fracture.

Ninety percent of injured cyclists had not worn a helmet. Of the 20 patients who attended with a head injury only one had been wearing a helmet while 19 had not. None of the children that required admission had worn a helmet, furthermore no child that had been wearing a helmet had required admission. Helmet usage among the admitted group was significantly lower than

in those discharged (test of two proportions $p = 0.018$).

The repeat audit (2005), conducted after our intervention letter, included 31 patients aged 3–56 years, median 11 years old, of whom 48% were of primary school age. Three patients (10%) aged 7, 13, and 56 were admitted, two for reduction of upper limb fractures and one with an abdominal injury. One 47 year old with severe multiple injuries was dead on arrival. No children of primary school age required admission for head injury.

There was no significant difference in the incidence of helmet wearing, the proportion of head injuries, or the number of patients requiring admission between the two audits performed before and after our letter of intervention (test of two proportions, $p = 0.20$, $p = 0.26$, and $p = 0.65$, respectively). However there was a significant decrease in the number of school aged children requiring admission for head injury (test of two proportions $p = 0.036$).

The decrease in head injuries in the absence of an increase in helmet usage appears contradictory. However we were recording usage in cyclists who suffered an injury severe enough to require hospital treatment and cannot comment on the level of helmet usage among the cycling population as a whole.

Discussion

Almost 300 primary school aged cyclists are killed or seriously injured in the UK each year, the majority from severe head injury. This figure could be substantially reduced if more children wore cycle helmets.

Injured cyclists made up 0.6% of our department's workload over the school summer holidays. The majority of cycle injuries occurred in children with over half in children of primary school age. Overall 34% of the cycle related injuries we saw were head injuries and only 14% of patients had worn a helmet.

We attempted a simple intervention whereby local head teachers were contacted directly by A&E clinical staff and urged to encourage helmet use among their pupils. We subsequently demonstrated a significant decrease in the number of head injuries severe enough to require admission in the target group of school aged children. The design of this study does not allow us to say whether or not our intervention was responsible for this decrease. However the intervention is simple, cheap, and compelling enough to deserve further examination in a larger study.

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Head injury is the leading cause of death and serious injury in primary school aged cyclists. This could be substantially reduced if more children wore cycle helmets.

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LETTER

The logic of comparing international terrorism with other causes of injury

Our recent article in *Injury Prevention* comparing international terrorism mortality to road crash mortality¹ has stimulated questions around methodology and logic.²

To respond, firstly, we consider that there is a strong case for making comparisons between the burden of international terrorism and other causes of preventable mortality. Indeed, we and others have published such comparisons elsewhere in the peer reviewed literature (see studies cited in our previous papers^{1,3,4}). Such comparisons can inform the issues of societal risk perception, and guide more rational policy development processes, so as to optimize lives saved per level of government expenditure on prevention.

Regarding the sample frame and time period for our study, we strove to maximize methodologic rigour by using a standardized country grouping for which road crash mortality data are systematically collated and published (that is, OECD countries). Similarly, for the time period we used the latest 10 year period for which data were available at the time we undertook the analysis.

Furthermore, we studied “international terrorism” rather than “domestic terrorism”, because of the difficulty in obtaining data of adequate quality on the latter, partly because it overlaps more with criminal behavior and with various grades of civil war. As we have discussed elsewhere,⁵ the case of Israel highlights many definitional complexities around what is terrorism (relative to warfare) and how to classify terrorism within disputed areas of land (for example, those occupied by one state and claimed by another). We have suggested³ that such issues need to be

resolved as best as possible by a well resourced global review of the epidemiology of international terrorism—ideally conducted by a respected international health agency such as the World Health Organization.

Finally, the respondents to our article² imply that resourcing is not important to reducing road crash injury (given revenue generation via speed cameras). Although we applaud such interventions as speed cameras, we note that no successful and sustainable road safety strategy relies on one intervention. Many other road crash prevention interventions do require substantial resource inputs by governments, including roadside breath testing for alcohol, mass media campaigns around alcohol/sleepiness and driving, street lighting, speed calming measures, and especially major road modifications.

We hope that *Injury Prevention* continues to publish articles on the injury burden of terrorism, and continues to see this as an issue that can be informed by logic, data, and appropriate contextual commentary.

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