BRIEF REPORTS

A hospital led promotion campaign aimed to increase bicycle helmet wearing among children aged 11–15 living in West Berkshire 1992–98

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Abstract

***Objectives*—To evaluate the effect of a bicycle helmet promotion campaign on helmet wearing among cyclists less than 16 years of age from 1992–98.**

***Setting*—Reading, West Berkshire, UK.**

***Methods*—A hospital led bicycle helmet promotion campaign targeted at 5–15 year olds. The campaign focused on education with active involvement of the children, parents, schools, and safety organisations. Local media and children's celebrities raised the profile of the campaign and a low cost helmet purchase scheme was also set up. A self administered questionnaire survey of 3000, 11–15 year olds was carried out over the period of the campaign. A control group of 3000 teenagers was obtained from a neighbouring area without a helmet campaign. Accident and emergency (A&E) figures were obtained from the local hospital within the campaign area on all children aged under 16 years, attending with bicycle injuries. Unfortunately, no figures were available from the A&E department in the control area.**

***Results*—Self reported helmet use among 11–15 years olds living in the campaign area increased from 11% at the start of the campaign to 31% after five years ($p<0.001$), with no change in the control group. Hospital casualty figures in the campaign area for cycle related head injuries in the under 16 years age group, fell from 112.5/100 000 to 60.8/100 000 (from 21.6% of all cycle injuries to 11.7%; $p<0.005$).**

***Conclusions*—This hospital led community bicycle helmet promotion campaign directed at young people showed an increase in the number of children reporting that they "always" wore their helmet while cycling. There was a significantly higher rate of helmet wearing than in the control area, and a significant reduction in head injuries.**

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Keywords: bicycle helmet; campaign; head injuries; teenagers

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Cycling is a healthy activity that enables children to obtain regular exercise. Unfortunately, many cyclists are injured on British roads through road traffic accidents. Estimates of total bicycle related injuries given by the Royal Society for the Prevention of Accidents are 90 000 road related injuries per year in the UK with an additional 100 000 "off-road" casualties.[1]

In summary, each year between 37 and 50 young cyclists are killed and approximately 100 000 under 16 year olds are treated for cycle injuries requiring hospital treatment in the UK each year.[2] Overall half of all cycle related casualties treated in accident and emergency (A&E) departments are under the age of 16 years.[3] Altogether 70%–80% of deaths among bicycling casualties of all ages are caused by traumatic brain injury.[4–6]

A Transport Research Laboratory hospital study estimated that if the cyclists had been wearing bicycle helmets 30% of the slightly injured would not have been injured, 18% of the serious casualties would have only had slight injuries, and 11% of the serious casualties would have been uninjured.[7]

A number of case-control studies have demonstrated the effectiveness of bicycle helmets in reducing head injuries.[8–12] The results from these studies indicate that bicycle helmets are effective at reducing all forms and severity of skull/brain injury.

Thus, it has been established that helmets are effective in reducing severity of head injury, however, no benefit will accrue if children do not wear them. In 1993 average helmet wearing in the UK was 23%.[13] The current rate is 18%.[14] Unfortunately, promotion campaigns to increase use have had mixed success.[15–21] This study assesses a novel approach: the "Helmet your Head" health led education campaign based in Reading, West Berkshire, UK aimed at increasing bicycle helmet wearing among young people, especially teenagers.

Methods

A hospital led community based programme was initiated in June 1992. It consisted of school based talks; age specific information; true case scenarios/videos of head injured chil-

dren; a demonstration using an egg and small helmet to illustrate the effect of a head injury with and without a helmet; information on how to wear a helmet properly; and a low cost helmet purchase scheme. The programme also ran promotional and awareness events.

Although the campaign promoted helmet use among school age children, the high risk teenage group (11–15 year olds) was used to assess its effectiveness. Two cities in the south of England were compared: Reading (population 242 000) where the campaign was run (intervention) and the neighbouring area of Basingstoke (population 110 000) where there was no campaign (control). From each city, samples were recruited from state schools and youth groups.

Independent samples of 500 teenagers from each centre completed a self administered questionnaire at the beginning of the campaign and at end of each year during the three year programme period (making a total sample of 3000 at each centre). The questionnaire consisted of five items relating to cycling behaviour and opinions held about helmets. In this paper, however, only item 2 "If you cycle, do you wear a bicycle helmet?" is used in analysis. This item consisted of a three point response scale: always; sometimes; never. The response rates were 91% for the intervention area and 93% for the control.

Injury data were collected from the A&E department in Reading to monitor injury figures relating to pedal cycle crashes among the under 16 age group from June 1988 to May 1998. Information on head injuries and total number of cycle injuries was recorded. Unfortunately, no A&E figures were available from the control area.

Results

In Reading there was an increase in the number of 11–15 year olds reporting that they "always" wore a helmet while cycling—from 11% in 1992 to 31% in 1997 ($U=49155$, $p<0.001$). In the control city there was a smaller, non-significant increase in use, from 9% to 15%. At the beginning of the study there was no significant difference between the intervention and control group in the numbers of 11–15 year olds reporting that they always wore a helmet when cycling. At the completion of the study in 1997 there was a 16% higher self report wearing rate in the intervention group compared with controls ($U=68654.5$, $p<0.001$; see fig 1).

The injury rate for those under 16 years old attending the A&E department from 1988–98 for cycle related head injuries and total cycle injuries is shown in table 1. There was little change in either the rate of total injuries or head injuries before the start of the promotion campaign in 1992. In the next year, however, the rate of cycle injuries fell from 520.8/100 000 population of under 16 year olds in West Berkshire in 1991–92 (before the campaign) to 376.7/100 000 in 1992–93. This was largely maintained over the five years of the campaign. The rate of head injuries also reduced significantly, from 112.5/100 000 in 1991/1992 to 60.8/100 000 ($Q=10.68$, $p<0.005$). This represents a fall in head injuries, as a percentage of total bicycle related injuries, from 21.6% to 11.6%.

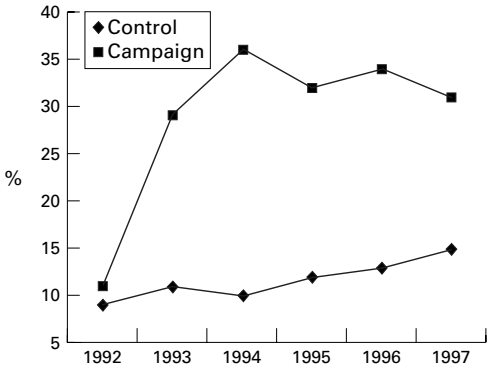

Figure 1 Percentages of 11–15 year olds in the control and campaign (intervention) areas reporting that they always wear a helmet when cycling (1992–97).

Discussion

In the intervention area there was an increase in reported helmet use over the first 18 months of the campaign—an increase that was sustained over the next 4.5 years. The intervention and control groups were similar in their mean age and gender, as well as in their rates of helmet wearing at baseline. In spite of these encouraging results, even at the end of the study only one third of children reported they "always" wore a helmet. The wearing rate for the control group increased from 9% to 15%. This could be attributed to the television and radio coverage of the campaign in the neighbouring area.

In the year after the launch of the campaign, cycle related head injuries fell sharply after having been at a steady rate previously. It is possible, but unlikely, that other factors led to the fall in cycle related head injuries over the campaign period. For example, safety may have assumed greater importance in the general population, increasing helmet use independently.

The survey data did not demonstrate a reduction in cycle usage during the study, nor

Table 1 Children under 16 years old who attended the A&E department, 1988–98, for treatment of a bicycle related injury, rates per 100 000 population (<16 years) in West Berkshire

	Pre-programme				*Post-programme*					
	1988–89	*1989–90*	*1990–91*	*1991–92*	*1992–93*	*1993–94*	*1994–95*	*1995–96*	*1996–97*	*1997–98*
Head injuries	124.2	117.5	107.5	112.5	62.5	70	74.1	48.3	51.7	60.8
All bicycle injuries	542.5	553.3	525	520.8	376.7	392.5	500	408	443.3	513.3
Head injuries as % of all bicycle injuries	22.89	22.38	20.48	21.6	16.6	17.83	14.83	11.84	11.65	11.85

was there any evidence that head injury rates were reduced nationally. Unfortunately, the casualty data did not give information on cycle helmet wearing rates in head injured patients attending the A&E department.

Increases in observed rates of helmet wearing from 5% to 16% were obtained in an intensive community wide campaign in Seattle in the 1980s.[17] In contrast, other efforts have met with mixed success.[18–21] Approaches to promoting helmet use have varied, with some focusing on education in schools and others distributing educational material in the community. Why was the Reading campaign apparently so successful in a country without mandatory helmet wearing legislation?

It is possible self reported wearing rates were inaccurate, but this is not borne out by the reduction in cycle related head injuries. There is always reason to question the validity of self report questionnaires, and responder bias may occur. However, given that the sampling procedure used different, independent groups and all children sampled knew the views of the researchers regarding helmets, it does not follow that those sampled later were more likely to give socially desirable responses than those sampled earlier. None the less, observational studies are needed to ensure validity of data relating to helmet wearing.

The fact that the campaign was hospital led may have contributed to its effectiveness. One person (AL) spearheaded it, and close relationships were fostered with the local media (newspapers, radio, and television), schools, and the teenagers themselves. The leader of the campaign was well versed in teenage issues—for example, peer pressure.

Further studies should include rates of helmet wearing of those seen in A&E and a closer examination of the reasons for this campaign's success. Whether the effect will be maintained remains to be seen. Similarly it is uncertain whether the model can be implemented in other communities or nationwide. There is currently no national initiative promoting helmet use in the UK.

The results of this campaign strongly suggest that a national helmet initiative, based on the elements in this programme, is justified. Similarly, helmet legislation deserves further consideration. Such legislation in Australia and in several USA states has been followed by a significant reduction in mortality and morbidity.[15–16 21] Although figures from New Zealand have shown an increase in helmet wearing rate, there has not been a concurrent reduction of head injuries.[22] It is possible that the use of medical insurance claim forms in conjunction with hospital records to classify bicycle related head injuries may not be reliable.

Implications for prevention

Our study demonstrates the effectiveness of the "Helmet your Head" campaign in reducing the rate of bicycle related head injuries in children. These results support the introduction of a nationwide educational programme for the under 16s to increase the wearing rate of bicycle helmets, and as a consequence to decrease bicycle related head injuries.

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