

Evolution Of A Successful Community Bicycle Helmet Campaign

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Background: Bicycling injuries claim more than 900 lives each year in the United States, and the major cause of deaths is head injuries. Bicycle helmets can prevent head and brain injuries, yet helmet use rate remains low. Helmets are expensive, and their cost can be prohibitive. This study asks the question, "If bicycle helmets are made affordable, will they be worn?"

Methods: A multifaceted bicycle helmet campaign was begun in Grand Junction, Colorado, population 76,000, in 1992 and was evaluated after its first 2 years. The educational component involved presentations in local schools and at community functions, physician education, and media promotions. A discount helmet program was established through community donations, which allowed helmets to be sold to low-income families for \$5 and to middle- and upper-income families for \$15; approximately 2400 helmets were sold. One year later a local retailer sold helmets for \$12.99; approximately 4000 helmets were sold.

Results: Twenty-three locations were surveyed in 3 consecutive years by observers looking for bicycle riders and the presence or absence of helmets. The base-line overall use rate in 1992 was 9.9 percent, which increased to 20.9 percent in 1993 and to 37.1 percent in 1994. There were increases in helmet use in all age groups.

Conclusions: A community bicycle helmet campaign that combines affordable helmets with appropriate education can effect an increase in helmet use. A major key to a successful program is a local retailer willing to sacrifice profits to promote helmet sales and use. (*J Am Board Fam Pract* 1995; 8:283-7.)

Bicycling injuries claim 900 lives per year in the United States¹ with the majority of deaths caused by head injuries. Approximately 600 of those dying are children.¹ There were six bicycle-related deaths in Mesa County, Colorado, from 1988–1993,² a rate three times the national average. Bicycle helmets have been found to prevent 85 percent of head injuries and 88 percent of brain injuries.³ Unfortunately, helmet use rate in the United States has been quite low; most studies have reported rates of less than 10 percent.⁴⁻⁶ The three most common reasons for children not wearing bicycle helmets are (1) helmets are too expensive, (2) parents do not think they are important, and (3) children do not find them fashionable.⁷

Several community campaigns have focused on education, on discount programs for low-cost helmets, and on legislation to increase helmet use

rate.⁸⁻¹⁰ The Head Smart program in Seattle utilized multifaceted educational efforts and discount helmet coupons (bringing helmet prices down to \$25). The helmet use rate for children aged 5 to 12 years increased from 5 percent in 1987 to 23 percent in 1989.^{8,9} Thompson and colleagues¹¹ analyzed hypothetical subsidies of bicycle helmets and found that discounted helmets would be cost effective for injury prevention. Other efforts to increase helmet use have included legislation. In Howard County, Maryland, the use rate rose from 4 percent to 47 percent after a law was passed requiring bicycle helmets for children younger than 16 years.¹⁰ Several states and local governments now have ordinances requiring bicycle helmet use.¹²

Many interventions have been shown not to be successful. Health education projects alone have generally been ineffective.^{13,14} Bicycle accidents that required emergency department care did not necessarily lead to future helmet use.¹⁵ A single study reported an increase in helmet wearing after an accident, yet 75 percent of riders still rode unprotected.¹⁶ Many physicians do not include bicycle safety in their patient education,¹⁷ and when anticipatory guidance is offered to children and their parents, it has been ineffective.¹⁸

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An abstract of phase 1 of this paper was presented at the Mead Johnson Family Practice Research Forum, Fort Lauderdale, FL on 2 December 1993.

This report describes a successful two-phase helmet campaign by Headstrong West, a Grand Junction community coalition started in 1992. Its goals are to promote helmet use and bicycle safety. A major emphasis of the campaign was the discount helmet program. This study is unique in that it involved a grass-roots community effort to make helmets affordable to all families in the area. Bike helmets are expensive (typically \$25 to \$75), which can be prohibitive to many families. This study asked the question: "If bicycle helmets are made affordable, will they be worn?"

Methods

Discount Bike Helmet Program — Phase 1

A multifaceted community campaign was begun in 1992 in the Grand Junction, Colorado, area, population 76,000. The target groups were 8600 elementary school children and their families. One critical focus of the intervention was the subsidized helmet campaign. Contributors to the program were Grand Junction area hospitals, a health maintenance organization, local physicians, pharmaceutical companies, service groups, and concerned community members. Helmets were purchased wholesale for \$12 to \$17 and, using an honor system, sold to children of low-income families for \$5, children of middle- and upper-income families for \$15, and family members for \$17. Approximately 45 percent were sold for \$5, 45 percent for \$15, and 10 percent for \$17. Price reductions for the helmets were offered by means of coupons distributed to all elementary school children. The coupons contained bike helmet educational information directed at parents (Table 1). Approximately 2400 helmets were sold during the 1992–1993 school year.

Discount Bike Helmet Program — Phase 2

A key participant for Headstrong West emerged in fall 1993. A local sporting goods store committed

Table 1. Educational Information Printed on Bicycle Helmet Coupons.

Why should your child wear a bike helmet?

- Hundreds of children die each year from head injuries during bicycle accidents
- Bike helmets can save your child's life and prevent disastrous head injuries
- Most bicycle accidents happen within 5 blocks from home, so helmets should be worn all the time

to sell bicycle helmets to school children, using coupons for \$12.99, and later to the general public for the same price. As a result of this initiative the store sold more than 4000 helmets from September 1993 to August 1994. Because of the willingness of this retailer to participate in the program, Headstrong West no longer had to raise money through contributions to maintain its discount bike helmet program.

Educational Component

A bike helmet educational curriculum using information from the Denver-based parent organization, Headstrong,¹⁹ was used in the physical education departments of the 23 elementary schools. Bike rodeos with helmet education were held at schools and various community locations. The educational tool most useful was the "egg head smash" demonstration. A bare egg was placed on a model bicycle, which traveled down a ramp, crashed, and threw the egg to the ground; the egg subsequently smashed its "head." Then a "helmeted" egg sustained the same accident but was protected from injury by the "helmet." Children easily understood the analogy of the egg shell being a skull and the egg white and yolk being the brains.

Media activities included articles in the local newspaper, as well as television coverage, promoting bike helmets and bike safety. Educational posters were placed in every primary care physician's office and in every school. Strategic planning meetings were held by Headstrong West and its efforts were promoted by the Grand Junction Traffic Safety Council. A campaign of positive reinforcement was implemented by the Grand Junction Police Department; children seen wearing bicycle helmets were given "citations" redeemable for a milkshake at a local fast food restaurant.

This project was used as a model of community health education for a family practice residency with faculty, residents, and students performing the teaching in the settings mentioned above.

Data Collection

Cyclists wearing bicycle helmets were counted in July 1992 (before the intervention), July 1993, and July 1994. A trained medical student performed the observations in each year. Observations were made during a 20-minute period at 23

locations in the Grand Junction area. The same locations were used in all years, but the time of observation varied. The observer recorded the number of cyclists seen, estimated age (5 to 13 years old, 14 to 21 years old, and more than 21 years old), and the presence or absence of bicycle helmets. No cyclists were counted more than once, and no infants in child seats were observed during the sightings. Statistical analysis was by chi-square with a $P < 0.05$ considered significant.

Results

The total numbers of cyclists observed in 1992 and in 1993 were similar (171 and 177, respectively), as was the number of 5- to 13-year-old children (71 and 72, respectively) (Table 2). In 1994 fewer 5- to 13-year-old children were counted, probably because that summer was unseasonably hot. There were more 14- to 21-year-old cyclists in 1992 than in 1993 or 1994 and fewer adult riders in 1992 than in 1993 or 1994. Reasons for these variations are not clear.

The base-line total helmet use rate in 1992 was 9.9 percent. This rate increased to 20.9 percent in 1993 and to 37.1 percent in 1994. Use rate for 5- to 13-year-old children in 1992 was 5.6 percent. Increases were seen in 1993 and 1994 to 12.5 percent and 30 percent, respectively. In the 14- to 21-year-old age group, the base-line in 1992 was 3.2 percent, which fell to 0 percent in 1993 and increased to 25 percent in 1994. The 1992 rate for those older than 21 years was 28.9 percent, with increases to 41.2 percent in 1993 and 47.1 in 1994. All these increases in helmet usage were significant (Table 2).

Discussion

In this study we found that discounted helmets will certainly be purchased. There were 6400

helmets sold to school-age children and their families out of an elementary school population of approximately 8600. Informal studies in the Grand Junction schools showed previous helmet ownership of 15 to 35 percent depending on the general income level of the families in the school's neighborhood.

The target populations were elementary school children and their families. The data reflect an increase in helmet use for all age groups. No intervention was done for the 14- to 21-year-old age group (although some in this group were undoubtedly siblings of those targeted), and their observed helmet use rate was low in 1992, went to zero in 1993, and increased to 25 percent in 1994. No intervention was attempted for the 14- to 21-year-old age group, as this age was believed to be the most difficult on which to have an effect regarding use of helmets.²⁰ It is hoped that the promotion of positive habits in elementary school students will be carried into the teenage years.

The numbers of documented cyclists were representative of the time and location of the observation; data collection could have been improved had observations been for longer periods and had more locations been included. It is unclear why there was such variation in the subgroups during the 3 years. It is possible that the time of day could have influenced the demographics of the cyclists with late afternoon having more adult cyclists and fewer children. Possibly a single cyclist could have been counted again on a different day in a different location.

With bicycle helmet use on the rise in the Grand Junction area, it is hoped that there will be a decline in bicycle-related head injuries. There were no bicycle-related deaths during the second year of the program. There have been several cases of injured helmeted cyclists who came to the parent hospital with damaged helmets that most certainly prevented or minimized head injuries.

Table 2. Helmet Use from 1992 through 1994 (number wearing/number observed).

Age	1992 No. (%)	1993 No. (%)	1994 No. (%)	Chi-square	P Value
5 to 13 years	4/91 (5.6)	9/72 (12.5)	9/30 (30)	11.29	0.0035*
14 to 21 years	2/62 (3.2)	0/37 (0.0)	10/40 (25)	19.38	0.00006*
>21 years	11/38 (28.9)	28/68 (41.2)	33/70 (47.1)	3.38	0.18
Total	17/171 (9.9)	37/177 (20.9)	52/140 (37.1)	33.61	0.00000005*

*Statistically significant.

Conclusion

This study shows that if helmets can be made affordable to all families, they will be purchased; and if a proper educational program exists, helmets will be worn. Headstong West is successfully overcoming the three major barriers to

helmet use in children: (1) helmets are not too expensive through the efforts of the discount helmet program, (2) parents believe helmets are important as a result of our educational efforts, and (3) children think that wearing a helmet is acceptable as a result of education and positive reinforcement.

The major key to a successful bicycle helmet program is having a local retailer willing to sacrifice profits to improve helmet sales and use. If helmets are sold for \$5 to \$15 instead of \$25 to \$75, customers will buy them.

These efforts have given insight into methods to increase helmet use and have led to improvements in the campaign. Headstrong West is now using the following interventions:

1. School principals are giving out "citations" on random days to all students who wear their helmets when they ride to school. These citations are redeemable for a hamburger at a local fast-food restaurant.
2. Public service announcements continue to be implemented in the newspaper, radio, and local television.
3. Helmet education has been put on a new bicycle route map, which will be widely distributed in the community.
4. There are continued efforts with the discount helmet program, school bicycle rodeos, and community exhibits.
5. High-school volunteers will be trained to do elementary school helmet education as part of their community service projects. This experience will increase awareness of bicycle-related head injuries in a high-risk 14- to 21-year-old population.

Headstrong West has currently chosen not to pursue local legislation. Although some of the most extensive improvements in helmet use have occurred in communities where legislation has come into effect,^{11,21} the residents of western Colorado are very resistant to any legislative efforts that might limit their personal freedom or habits; Headstrong West believes that trying to initiate a helmet law could be counterproductive.

This program offers an excellent method for teaching community health education to family practice residents and medical students. So often medical education is geared toward inpatient or

outpatient care with less attention given to prevention. This program gives the residents and students a rewarding opportunity to be active in the community. In the community-oriented primary care model, it is important to define the needs appropriate to a community. There are few communities without bicycle riders of any age. The need for bicycle safety and helmet use is ubiquitous, and thus helmet education and an implemented program for affordable helmets are appropriate for all communities.

This project has also reminded family practice residents and community primary care physicians to include bicycle helmet education and bicycle safety information as part of their health maintenance teaching to patients. Data from the National Safe Kids Campaign²² have shown that the total lifetime cost (including acute medical care, acute and extended rehabilitation, and residential care) for a severely head-injured youth to be more than \$4 million. It is easy to appreciate the economic benefit of a helmet preventing a bicycle-related head injury. Community-based projects such as Headstrong West can and should be a part of all family physicians' efforts.

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