A Study of Bicycle Helmet Use and Bicycle Safety In Dublin

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Abstract

Introduction: Cycling continues to be popular among children, but it also associated with a significant number of injuries and deaths. The majority of deaths are due to head injuries and are therefore emminently preventable. **Aim:** To study bicycle helmet use and attitudes in children age 8-18 years in the Dublin area. **Methods:** A questionnaire was distributed to 6 schools in the suburbs of Dublin (St. Mary's College; Muckross Park College, Mt. Anville College and Jr. School, St. Mary's National School, and Sandford Park School). Permission was obtained from the corresponding principal for each school. The survey consisted of 8 questions that were used to assess the use and attitudes towards bicycle safety and helmet use. The data was compiled and an analysis of trends between groups was established. **Results:** 1230 children aged 8-18 returned completed questionnaires. The results were analysed comparing gender and age. Among children 8-11 years who owned a helmet, around 35% did not wear their helmet. Whereas in boys and girls aged 12-18 years who owned a helmet, around 58% claimed to never wear their helmet. Implementing a law requiring helmet use would have little impact on children 12-18 years (decrease in non-compliance from 58% to 44%). However, legislation would have a greater impact on children aged 8-11 years (decreasing non-compliance from 29% to 16%. **Conclusions**: Helmets are an important form of prevention of head injury among bicycle riders. Health promotion programs in Ireland should focus on bicycle safety education, helmet use, and the adoption of legislation requiring the use of bicycle helmets. Targeting children 8-11 years old will have the greatest impact in the long run, which will hopefully lead to a decrease in the number of bicycle related fatalities. *TSMJ 2001, vol 2, 59-61.*

Introduction

Bicycling is a common mode of transportation and recreation among children. In the US alone, around 28 million American children less than 15 years of age ride a bicycle[1]. Bicycle use, though, is not the only mode of recreation or transport in the 21st century: scooters, roller blades and skateboards are also popular. However, these forms of transport are not without risk. In 1997, an estimated 367,700 American children sought emergency department care for a bicycle related injury. Among the 224 children killed in 1997 from bicycle related injuries, approximately two thirds sustained a head injury[1].

The use of a bicycle helmet can reduce the risk of severe head and brain injuries among cyclists, but unfortunately, many cyclists do not wear helmets. Several studies have indicated that bicycle helmets prevent between 69-88% of serious head or brain injuries[1]. This is especially true among children, for whom accidental injury is the most common and preventable cause of death. Data from the National Centre for Health Statistics in the United States from 1989-1992[2] and the Consumer Product Safety Commission from 1989-1993 estimated that up to 74% of traumatic brain injury deaths and 83% of head injuries per year might have been prevented had bicycle riders worn helmets[2]. Evidence supporting the efficacy of bicycle helmets includes the demonstrated effectiveness of motorcycle helmets, which have been shown by a variety of studies to reduce fatalities and injuries. The usually lower head impact velocity in bicyclists suggests the potential for even greater head injury reduction in bicyclists than in motorcyclists[3]. Therefore with all the data supporting the beneficial value of bicycle helmets in preventing severe head injury and death, the question should be addressed as to why legislation has not been passed in Ireland requiring compulsory use of bicycle helmets in cyclists.

Methods

Six schools in the Dublin area were selected and a simple questionnaire was prepared for distribution to the students. Permission was granted from the principals of each school to distribute the questionnaire. The schools surveyed were St. Mary's College, Muckross Park College, Mt. Anville College and Jr. School, St. Mary's National School, and Sandford Park School. The survey was anonymous and the questionnaire was distributed to as many children as possible. A total of 1230 children returned completed questionnaires that were used to compile the data. The data was divided into groups of male and female, and also grouped according to age brackets (8-11 years & 12-18 years). Totals in each group allowed for relative frequencies to be calculated. The relative frequencies then were compared and trends established.

Results

The results from the 1230 children surveyed can be seen below:

1. 87% of boys and 62% of girls surveyed aged 12-18 years own a bicycle. From all the children surveyed in this age group, only 60% overall own a helmet (56% of boys and 64% of girls). The 8-11 year age group have a very high bicycle ownership; 90% of boys and 94% of girls own a bicycle. From all the children surveyed in this age group, 74% own a hel-

met (65% of boys and 83% of girls).
2. The majority of both boys (62%) and girls (54%) aged 12-18 years never wear a helmet while riding a bicycle, despite the fact that most of this group own a helmet (60% overall) (Figure 1).
3. Boys and girls 8-11 years of age are more compliant with helmets than children 12-18 years: 29% versus 58% never wear their helmets, respectively. This is an important comparison to the older children in regards to compliance of wearing bicycle helmets (Figure 1).
4. Some important results come from the groups of children who would wear a helmet if required by law. It appears that implementing a law requiring helmet use would have little impact on children 12-18 years where it is most needed, since overall 44% would still not wear a helmet even if compulsory helmet wearing were introduced. However, according to the survey results, legislation requiring helmet use would cause non-compliance with helmets to fall in boys and girls in both age groups, but a greater reduction was seen with females (especially in the 8-11 years age group) (Figure 1).
5. When asked about whether they had attended a bicycle safety course, only 154 of 1230 responded yes. This amounts to 8% of the children surveyed having had education in bicycle safety.

Discussion

The majority of children surveyed in both age groups own a bicycle (75% of 12-18 year olds and 92% of 8-11 year olds). The children aged 8-11 years had a greater percentage owning both a bicycle and helmet as compared with the older children. It is obvious from the data that children 12-18 years of age are less likely to own and to wear a bicycle helmet than children 8-11 years of age. The question then is how can we best improve the wear rate in not only the younger age group, but especially in the older age group. The fundamental problem may be a consequence of poor comprehension of the importance of bicycle helmets, or it may just be a rebellious attitude in the older children because bicycle helmets aren't "cool".

An important aspect of the results is the comparison of the number of children who refuse to wear helmets despite legislation. From Figure 1 it can be seen that compulsory helmets when riding bicycles would increase compliance in the 8-11 year old group, but would have less of an effect on the 12-18 year old group. These results are supported by a Florida bicycle safety programme, which also demonstrated the largest gains in helmet use in the 7-12 years age group. This programme discussed safe biking, helmet use, and addressed risks associated with not wearing a helmet. In the emergency departments, bicycle crash victims were shown a video about bicycle safety and helmet use before discharge[2].

In Ireland, the Eastern Health Board's Department of Public Health (DPH) has been focusing on many areas of health promotion. They believe that accidental injury is a major public health problem. In Ireland every year, accidental injury in general causes around 1,400 deaths, making them the most common cause of death in people less than 45 years of age[3]. In 1996, accidental injuries accounted for just 4.3% of deaths overall; however, they caused 66.9% of all deaths in the 15-24 year age group. Of these statistics, bicycle related casualties accounted for 6% of fatalities; the 6-24 year age group being the most vulnerable[4]. In order to help reduce the number of accidental injuries in Ireland, the DPH has created a strategy based on the 3 E's:

- Education
- Environmental change
- Enforcement

Education is important to help change attitudes. But, for the education to be worthwhile, it must reach the right people, expand knowledge, and change attitudes and behaviour. It will be important to initiate bicycle training for primary school pupils,

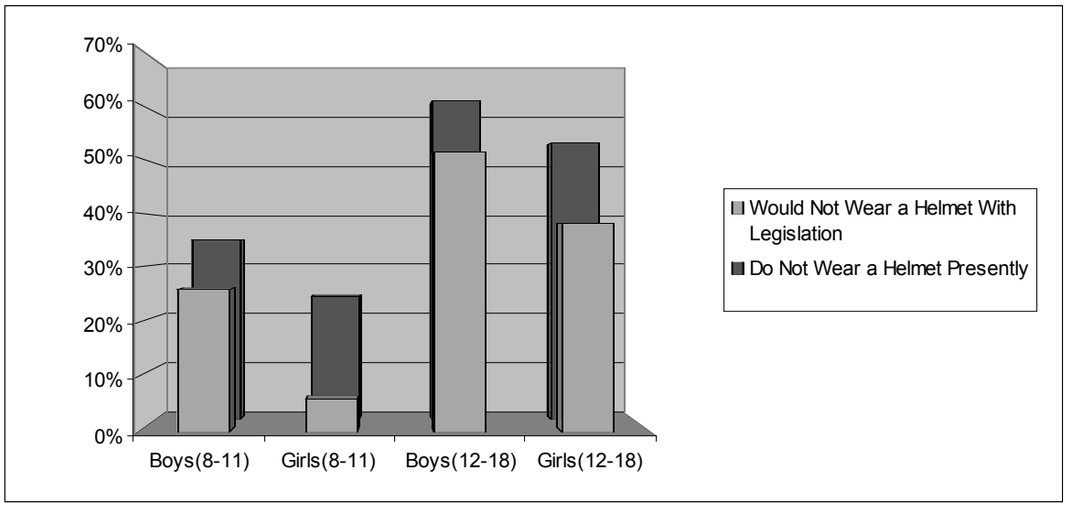

Figure 2: Graph of percentages of children who presently do not wear a helmet compared with who would not after compulsory helmet legislation

whose attitudes may most easily be influenced. Environmental change will come from road improvements and the development of bicycle lanes. Finally, compulsory use of bicycle helmets for all ages should be introduced and enforced.

The Garda Headquarters in Clontarf, Dublin operate a Traffic Education School (personal communication, Micheal Byrne, Garda Headquarters Clontarf in January 2001). The school targets 11-12 year olds and receives 10-12 thousand school children per year. The school focuses on road safety and the promotion of bicycle helmet use. In the 1980's, they claim to have helped increase the rate of children wearing helmets by 11%. From the results, only 8% of children claim to have attended a bicycle safety course. There is clearly a need to educate a greater number of children in bicycle safety; either through school education programs or through a Traffic Education School like the one in Clontarf, since 92% of the children surveyed here had not attended a course.

Police enforcement has been studied in many parts of the world. Police enforcement has been shown to be an important contributor to increasing bicycle helmet use. In Georgia (USA), a comprehensive bicycle helmet program was instituted. The bicycle helmet promotion program used several strategies such as education, helmet giveaways, and adoption of helmet use laws. Police were instructed to impound the bicycle of any child less than 13 years seen riding without a helmet. The impounded bicycle required a parent to retrieve it at the police station, where the safety message was reinforced to the parent and child, and helmet ownership was verified or a helmet provided. This helped increase helmet usage from near 0% to around 45%[1]. Another successful program occurred in Victoria, Australia. There, legislation was passed and enforced in 1990 after a decade of comprehensive, multifaceted education, incentives, and promotion aimed at increasing helmet use in all ages. Helmet use increased from 31% in 1990 (pre-law), to 75% one year later after initiation of tickets and fines[1]. This is significant because the increase in helmet use was associated with a decrease in head injuries but no change in the rate of other injuries[3].

The Department of the Environment of Ireland was contacted about any on-going policy and legislation for mandatory cycle helmet use. At the present time, there are no laws requiring use of a safety helmet; of note, it is mandatory that lights be used from dusk until daytime. The Department of the Environment stated that *"there are no plans to implement a law that requires the use of a cycle helmet, and it would be too difficult to enforce"*. Based on the evidence of bicycle helmet efficacy and on other successful legislative programs around the world, maybe it is time for the Department of the Environment to re-examine the issue of compulsory bicycle helmet use in Ireland.

Conclusions

Helmets are an important form of prevention of accidental injury among bicycle riders. It appears that in order to increase usage among children in the Dublin area, a number of measures have to be put into place. The method of achieving increased compliance initially is unimportant. Compliance with wearing bicycle helmets is likely to increase with legislation alone but several avenues will need to be followed simultaneously, such as education, promotion and advertising to maximise compliance. The earlier this starts, the more acceptable it will be among peers to wear a bicycle helmet, which may further promote the use of bicycle helmets.

It is important to start educating the children about road and bicycle safety, and helmet use. It is imperative for the focus of this education to start with school age children (especially 8-11 years old), since it appears that they are most willing to listen as well as comply with a law requiring mandatory helmet use. Hopefully, more children will start to wear their helmets and the number of fatalities from bicycle use will decrease. My proposal:

- Education- training at school, television advertising campaigns; especially for children between ages 8-11 years Promotion program- a government subsidy for those who can't afford a helmet.
- Legislation for mandatory use of a helmet for all ages with enforcement.
- Stricter penalties for motorists injuring cyclists/pedestrians.
- Creation of bicycle paths especially when building a new road.

Acknowledgments

A special thanks to the schools that participated in the survey. Hopefully we are one step closer to helping prevent more bicycle related fatalities.

References

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