

## Health Education - bicycle safety

### Introduction

The government regularly runs public health education campaigns. For example, '5-a-day', 'Know your units', and 'Go smoke free'. Not all are effective. In this activity, students look at research into the effectiveness of a 'Bike Ed' programme in Australia. They also discuss the outcomes of other campaigns.

### The Activity

**Task 1:** Students will first of all predict the likely outcomes of some health education promotions using a human graph. Put pieces of paper at opposite sides of the room with 'Definitely change behaviour' and 'Definitely will not change behaviour' and as you give details of each promotion the students have to stand in a line showing what their opinion is. You can then ask them to justify their opinion.

1. Kids "wanna be like you"
2. Know your limits
3. Antibiotics
4. Details of current promotions which can be found on the Department of Health website. (<http://www.dh.gov.uk/en/News/Currentcampaigns/index.htm>)

**Task 2:** Students will answer questions about a research study. At the end of the activity they should return to the campaigns in task 1 and suggest ways in which they could 'misfire'.

### Resources

- Powerpoint 'Public Health Campaigns'
- Worksheet

### Suggested answers to Questions:

- Q1. What result were the researchers expecting to obtain?  
*That there would be less injuries amongst children who had taken part in the Bike Ed programme.*
- Q2. What is a case-control study?  
*A study in which individuals with a particular factor or disease (the cases) are compared with others who are similar but who do not have the particular factor or disease (the control). In this case the factor is injury caused by bike riding.*
- Q3. What factors might the researchers have needed to take into account when choosing the children to take part in the study?  
*Age, gender, amount of bike use, family background, area where they live, schooling*

#### How Science Works

**Gc** We can assess the size of a risk by counting the number of instances of harm in a representative sample of cases.

**Gd** The perceived risk of an activity is often quite different from the actual measured risk.

**Ge** Several factors can influence a person's willingness to accept a specific risk.

- Q4. Suggest a reason why the Bike Ed course wasn't mentioned when children were being asked to take part in the study.  
*Knowing that Bike Ed was being studied might have biased the results. Perhaps families with an injured child who had taken Bike Ed would have been put off taking part because the course was supposed to help their child be a safer cyclist, and hadn't.*
- Q5. Use the data in table 1 to justify this finding.  
*The odds ratio for family income below AU\$20 000 is 3.2 (with a range from 1.5 to 6.6), whereas the odds ratio for family income above AU\$40 000 is 1. This shows that the risk of injury is greater in families with low income compared with higher income families.*
- Q6. Is there evidence of a beneficial effect of taking a Bike Ed course on the risk of injury? Explain your answer.  
*Table 2 shows that there is no beneficial effect of taking a Bike Ed course. The chance of injury is just as likely if children have taken the course compared with not taking the course. The chance of injury is greater in children who have taken the on-road level of the course.*
- Q7. Would you have expected an education programme such as Bike Ed to lead to an increased risk of injury? Explain your answer.  
*No. Possibly would have expected that it would have had no effect, but not that it increased the likelihood of injury.*
- Q8. What other sorts of action do you think might be worth trying to reduce bicycle accidents?  
*educating drivers to watch out for children,  
more traffic free cycle lanes*
- Q9. Can you recall any health campaigns run by the government in recent years? Did they change your behaviour? Discuss why they did or did not.  
*reasons suggested for failure of health education campaigns in the past include:  
scare tactics causing people to 'switch off' – early HIV campaigns  
too complex information - alcohol units  
unrealistic – 'take more exercise' where few affordable opportunities exist  
ignoring reasons for risky behaviour – a sex education campaign that does not acknowledge the pleasure may not be credible*
- Q10. Choose one way in which you know you should, but have so far failed to, change your lifestyle to benefit your long term health. Discuss what sort of measures would help you do this. Are they educational, financial or some other approach?  
*this question might lead to a general discussion about lifestyle risk and whose responsibility it is to change behaviour*

October 2008

## Health Education - bicycle safety

### Introduction

The reasons for poor health are complex, as you may have learned at this point in the topic. More education is sometimes seen as a useful way of changing behaviour. This activity looks at outcomes from one education program asks you to discuss others.

### Activity

Read the information and answer the questions which follow.

Researchers in Australia carried out a case-control study to see if the risk of bicycle injury in children is decreased if they have taken part in a “Bike Ed” scheme. These schemes are a school based bicycle safety education programme. There are three levels in the scheme. To start with students are taught basic traffic rules in the classroom – often using toys to simulate road environments. At the second level, children practise riding bikes in the school playground and learn some basic bike maintenance skills. At the third level children are taken out on local streets in supervised groups and carry out riding exercises.

**Q1.** What result were the researchers expecting to obtain?

**Q2.** What is a case-control study?

The study looked at cases of injury in children between the ages of 5 and 14 who were riding bikes (without stabilisers) either on roads or pavements. Children who were injured in backyards or other places where there was no traffic were not included in the study. To identify the children, the researchers worked with two hospitals in the north-western suburbs of Melbourne where most of the injured children from the area were treated. The control children were found by phoning random telephone numbers in the same areas of Melbourne to find families with a child who had ridden a bike at least once in the previous week. Both groups of children (and their parents) were interviewed by the researchers, and were told that they were taking part in a study about the factors associated with the risk of injury whilst cycling. The Bike Ed course wasn't mentioned during initial conversations.

**Q3.** What factors might the researchers have needed to take into account when choosing the children to take part in the study?

**Q4.** Suggest a reason why the Bike Ed course wasn't mentioned when children were being asked to take part in the study.

The researchers found that there were more boys than girls in both groups – 79% in the injury group and 70% in the control group. The researchers then used Odds ratios (see box) to see if there was any link between different factors and risk of injury. These are shown in table 1.

<b>Factor</b>	<b>Odds ratio (range)</b>
Age (years)	
9-11	1.0
12-14	1.1 (0.66 to 1.7)
Family Income (AU \$)	
<20 000	3.2 (1.5 to 6.6)
20-30 000	1.6 (0.80 to 3.1)
30-40 000	1.3 (0.7 to 2.6)
>40 000	1.0

Table 1: Age and Family income in cases and controls, with estimated Odds ratios for injury risk.

The Odds ratios showed that there was no evidence of an age trend in risk injury between the ages of 9 and 14 years.

#### Odds ratio

This is a way of comparing if the chance (or probability) of an event happening in one group is the same as it happening in another.

An odds ratio of 1 suggests that the chance of the event occurring is the same in both groups.

When comparing a case group with a control group then an odds ratio of more than 1 means that the event is more likely to happen in the case group. An odds ratio of less than 1 means that the event is less likely to happen in the case group.

When looking at social factors and the risk of injury in each group of children the researchers concluded that there was a clear trend in family income. They found that the lower the income of the family then the greater the risk of injury.

**Q5.** Use the data in table 1 to justify this finding.

The researchers also looked at the level of Bike Ed that the children in both the injury and control groups had reached. They calculated the Odds ratio taking into account the social and economic factors identified. This adjusted Odds ratio is given in table 2.

	Adjusted Odds Ratio (range)
Bike Ed (any level)	1.57 (0.91 to 2.71)
Bike Ed In school Only	1.37 (0.71 to 2.64)
On-road	1.94 (0.88 to 4.29)

Table 2: Comparison of cases and controls for risk of injury related to Bike Ed course taken.

**Q6.** Is there evidence of a beneficial effect of taking a Bike Ed course on the risk of injury? Explain your answer.

The scientists suggested that Bike Ed is thought to provide 'immunisation' against injury or a reason to allow unrestricted bike use by some families who do not have much experience of cycling. This then leads to an increase in risky cycling behaviours amongst the children. Families in which there were cyclists other than the child showed a lower risk of injury which backs up the theory.

**Q7.** Would you have expected an education programme such as Bike Ed to lead to an increased risk of injury? Explain your answer.

**Q8.** Suggest two other sorts of action do you think might be worth trying to reduce bicycle accidents.

**Q9.** Can you recall any health campaigns run by the government in recent years. Did they change your behaviour? Discuss why they did not, or perhaps did.

**Q10.** Choose one way in which you know you should, but have so far failed to, change your lifestyle to benefit your long term health. Discuss what sort of measures would help you do this. Are they educational, financial or some other approach?