

Children's bicycle safety education does not reduce injuries

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Learning to ride a bicycle is a common and joyful experience of childhood (up to 68% of children reported riding a bicycle in a two-week period) that has many health benefits.^{1,2} However, children have the highest bicycle-related injury rates compared to other age groups. In NSW, bicycle injury-related hospitalisations in people aged 5-14 years account for approximately half of all bicycle injury-related hospitalisations.³

A typical bicycle education program for children will involve a one-session program focusing on safe cycling information, with some time allocated to practising safe cycling skills. However, these programs have not been well documented or evaluated. We conducted a pilot study investigating the effectiveness of a bicycle education program in increasing safe cycling knowledge and behaviour in the Macarthur area of south-west Sydney.

Five schools from the Macarthur area volunteered to be in either the intervention group (n=96) or the control group (n=85). All participants were students from Year 4 (mean age = nine years, 52% female). Intervention group participants attended a bicycle education class, while the control group participants did not receive any alternative program. All participants completed the study questionnaire at the beginning of the study and again at the end of the study, six months later. The study questionnaire gathered information about safe cycling knowledge and self-reported behaviour. At the end of the study, control group participants were given the opportunity to attend the bicycle education program too.

Results indicate that even at baseline participants from both groups had high levels of safe cycling knowledge (e.g. about 95% of participants knew it was unsafe to carry another person on the bicycle). With such high levels of pre-existing knowledge, it is no surprise that the program had no effect on knowledge in the intervention group.

Interestingly, after the program, a significantly lower proportion of intervention group participants reported safe cycling behaviour compared to control group participants (68.3% vs. 81.1%, $p=0.01$). While not increasing safe cycling knowledge, the program could have made participants more aware of safe cycling behaviour and, therefore, better able to identify unsafe behaviour.

These results indicate that this children's bicycle education program was ineffective in improving safe cycling behaviour. Current programs focusing on increasing knowledge need to

re-assess the program content, as children may already have a high level of safe cycling knowledge. However, programs that have a focus on safe cycling skills may be more likely to improve safe cycling behaviour in children. Examples of programs focusing on skills-based learning are seen in bicycle education programs in the UK.⁴ In this case, the Cycle Training Standards Board (CTSB), made up of a number of key stakeholders, including cycling groups, peak transport bodies and government agencies, sets national standards to which bicycle education programs need to comply. These standards prescribe that programs incorporate progression through graded classes focusing on the skills needed for safer cycling in a modern urban environment. Such standards could be adapted for programs targeting children.

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Encouraging community cycling and physical activity: a user survey of a community bicycle loan scheme

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The public health benefits of cycling are well-recognised. Individual health benefits include reduced risk of mortality,^{1,2} morbidity³ and obesity.^{4,5} Environmental health benefits include reduced pollutants, carbon emissions and traffic congestion.⁶ To promote community cycling and reduce the landfill requirement for discarded bicycles, Fairfield City Council in 2007 established the Western Sydney Cycling Network (WSCN), which incorporates a bicycle donation, recycling and loan program.⁷ Although targeted for the Fairfield area, anyone is able to borrow a recycled bicycle and new helmet for an indefinite period for \$25.

To assess the effectiveness of the Western Sydney Bicycle Loan Scheme in encouraging cycling and physical activity, a survey was conducted of adults 18 years and older who had loaned bicycles from the WSCN since its commencement in 2007. The survey tool incorporated questions from the Active Australia questionnaire and was conducted by telephone. Of the 262 people who had loaned bicycles for their personal use, 113 were contactable by phone (68 were not reached, 49 had not provided a number and for 31 the number was incorrect). Overall, 68 (60.2%) of eligible respondents participated in the survey. The frequencies of responses are shown in Table 1.

Most respondents (93%) had ridden their bicycles since their loans, and 74% had ridden their bicycles in the previous month. Almost one in five respondents (19%) had either upgraded to a better loan bicycle and/or bought a new bicycle. Forty-three per cent reported a greater level of physical activity than prior to their bicycle loan.

In the week prior to completing the survey, respondents had cycled twice on average, and for an overall average time of 102 minutes, either for recreation, exercise or transport. Almost one third of respondents (29%) had cycled more than seven times in the past week. Sixty-five per cent of respondents reported moderate and/or vigorous activity of more than 150 minutes.

Since having their loan bicycle, 46% of respondents reported an increase in cycling behaviour by family and friends, 56% reported being encouraged to ride by friends, family or work colleagues, and 81% reported having encouraged friends, family or work colleagues to ride. Almost one in four (23%) respondents were beginner or tentative riders, highlighting

Table 1: Western Sydney cycling network survey results (n=68).

	Frequency	Per cent
Duration of bicycle loan		
≤12 months	50	74
>12 months	14	21
Ridden bicycle since loan		
Yes	63	93
No	4	6
Upgraded to a better loan bicycle/Bought a new bicycle		
Neither	51	75
Both	2	3
Either	13	19
Last rode loan bicycle		
≤1 month	50	74
>1 month	16	24
Riding level		
Novice or beginner	7	10
Occasional but tentative	9	13
Occasional but competent	29	43
Regular	22	32
Participation in rides/events		
Yes	15	22
No	50	74
Increase in cycling amongst family/friends		
Yes	31	46
No	36	53
Encouraged to ride by friends/family/work colleagues		
Yes	38	56
No	29	43
Encourages friends/family/work colleagues to ride		
Yes	55	81
No	13	19
Physical activity compared to time prior to bicycle loan		
Less	6	9
Same	32	47
More	29	43
Postcode of residence		
Fairfield/Liverpool	43	63
Not Fairfield/Liverpool	25	37

the potential for increasing the prevalence of cycling through lending people bicycles.

The survey data indicates that the bicycle loan scheme is effective in encouraging community cycling and physical activity. The data indicate that loan recipients are actively using their bicycles, riding regularly and achieving the recommended weekly level of physical activity of 150 minutes or more.⁸ The bike loan scheme appears to have helped generate a climate of encouragement for cycling. Future research should measure physical activity levels before, as well as after, borrowing a bicycle, to quantify increases in physical activity.

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