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Does an on-road motorcycle coaching program reduce crashes in novice riders? A randomised control trial

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ABSTRACT

Objectives: Motorcycle riding is increasing globally and confers a high risk of crash-related injury and death. There is community demand for investment in rider training programs but no high-quality evidence about its effectiveness in preventing crashes. This randomised trial of an on-road rider coaching program aimed to determine its effectiveness in reducing crashes in novice motorcycle riders.
Methods: Between May 2010 and October 2012, 2399 newly-licensed provisional riders were recruited in Victoria, Australia and completed a telephone interview before randomisation to intervention or control groups. Riders in the intervention group were offered an on-road motorcycle rider coaching program which involved pre-program activities, 4 h riding and facilitated discussion in small groups with a riding coach. Outcome measures were collected for all participants via telephone interviews at 3 and 12 months after program delivery (or equivalent for controls), and via linkage to police-recorded crash and offence data. The primary outcome was a composite measure of police-recorded and self-reported crashes; secondary outcomes included traffic offences, near crashes, riding exposure, and riding behaviours and motivations.
Results: Follow-up was 89% at 3 months and 88% at 12 months; 60% of the intervention group completed the program. Intention-to-treat analyses conducted in 2014 indicated no effect on crash risk at 3 months (adjusted OR 0.90, 95% CI: 0.65–1.27) or 12 months (adjusted OR 1.00, 95% CI: 0.78–1.29). Riders in the intervention group reported increased riding exposure, speeding behaviours and rider confidence.
Conclusions: There was no evidence that this on-road motorcycle rider coaching program reduced the risk of crash, and we found an increase in crash-related risk factors.

1. Introduction

Motorcycles are widely used globally, with 314 million powered two- and three-wheelers (PTW) registered in 154 countries in 2010, representing a quarter of all registered vehicles. PTWs accounted for nearly one half of total registered vehicles in low- and middle-income countries (49.6% and 45.8%) and 6.8% in high-income countries in 2010 (World Health Organisation, 2013).

Motorcycle riders have a high risk of crash related injury compared to car occupants: in high income country settings the rate of death and serious injury for motorcyclists is 30–40 times that of car occupants (Johnston et al., 2008). In low income settings road injury is a significant contributor to catastrophic household costs (Nguyen et al., 2013) and motorcycle related trauma is a rapidly growing public health issue.

Novice riders have a greater risk of crashing than experienced riders (Mullin et al., 2000; Haworth et al., 2000). Although skill development for novice riders is important for safe riding, there is little evidence on whether rider training programs decrease risk of crash in novice riders. Multiple studies have examined the effectiveness of various rider training programs, but a Cochrane review found research on effectiveness of rider training programs to be inconclusive (Kardamanidis et al., 2010). The review also recommended that due to significant attrition in previous studies of learner riders, any future trials should focus on recruiting committed riders who had passed their provisional licence test (Kardamanidis et al., 2010).

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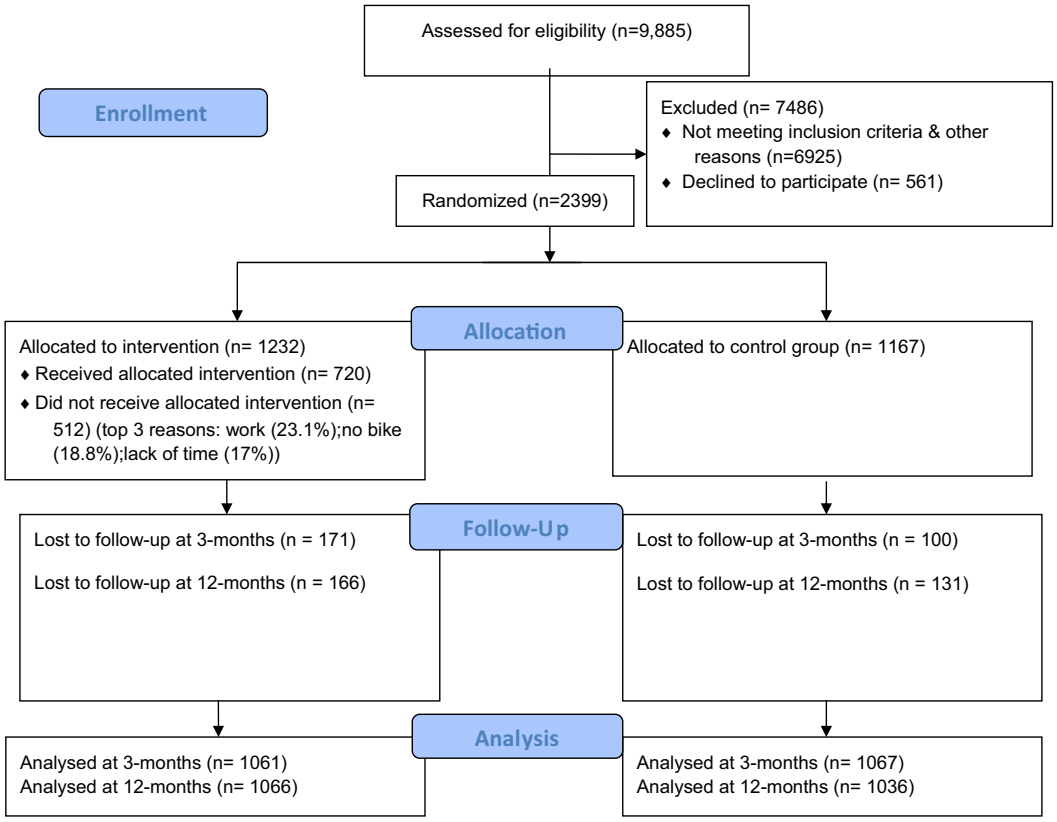

Fig. 1. Trial design and procedure.

In 2010, VicRoads, the road authority for the State of Victoria, Australia, commissioned the development of an on-road coaching program for novice riders in Victoria. The aim of the program was to assist recently licensed riders who to become safer riders and to reduce their involvement in risk-taking behaviour and crashes. Learner-centred approaches and principles of insight training (Gregersen, 1996) were central to the philosophy of the program design. This study aimed to determine the effectiveness of the resulting program "VicRide" in reducing crash involvement for novice motorcycle riders in Victoria.

2. Methods

2.1. Study design and participants

This was a randomised control trial with blinded outcome assessment conducted in the state of Victoria, Australia. The target population were novice motorcycle riders who had passed the motorcycle operators' test (MOST) within the previous 12 months and held a probationary or restricted licence. In Victoria there is no mandatory pre-licence training. Participants were required to be the registered owner of a motorcycle (not a scooter) that complied with the VicRoads Learner Approved Motorcycle Scheme (power-to-weight ratio of the motorcycle less than 150 kW per tonne and engine capacity no greater than 660 cc), and to have ridden at least 500 km over at least 12 trips on public roads since obtaining their learner permit to ensure a minimum level of experience riding on-road.

The trial was registered on 10th May 2010 with the Australian and New Zealand Clinical Trial Registry: ACTRN12610000372088 and ethics approval was obtained from the Monash University and the University of Sydney Human Ethics committees.

The study design and procedures are summarised in a flow diagram in Fig. 1.

2.2. Recruitment and randomisation

Baseline interviews were conducted between 19 May 2010 and 30 October 2012 and the final follow-up interview was on January 8 2014. Data were analysed in 2014. Recruitment was initially by mailed invitation through the State licence database but proved slow so a second recruitment approach was introduced from 25th October 2010, whereby participants were approached directly by trained telephone interviewers after receiving the initial mailed invitation. Consenting participants completed a baseline telephone interview, and were randomised to intervention or control groups using an automatic simple randomisation process built into the CATI software. Initially a 50:50 allocation was used but was changed to a 60:40 allocation in April 2012 due to low intervention completion rates.

On completion of the baseline interview, participants were advised of their intervention group status. The intervention group were asked to complete the program within six weeks; the control group were advised their program participation would be delayed for 12 months. All participants consented to data linkage to their police-recorded crash and offence data and to telephone interviews at baseline, and at three and 12 months following program delivery. Participants received $90 and a high visibility vest on completion of the program. Those who undertook the program within six weeks received an additional $50.

2.3. Procedures

Prior to the coached ride, participants were sent a booklet in preparation for the ride. This included becoming familiar with the