Developing targets and strategies for school-based injury prevention programs to reduce alcohol associated transport risks

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Abstract

Background There is considerable and ongoing debate about the role and effectiveness of school-based injury prevention programs in reducing students’ later involvement in alcohol associated transport injuries. Most relevant literature is concerned with pre-driving and licensing programs for middle age range adolescents (15-17 years). This research team is concerned with prevention at an earlier stage by targeting interventions to young adolescents (13-14 years). There is strong evidence that young adolescents who engage in unsafe and illegal alcohol associated transport risks are significantly likely to incur serious related injuries in longitudinal follow up. For example, a state-wide representative sample of male adolescents (mean age 14.5 years) who reported being passengers of drink drivers were significantly more likely to have incurred a hospitalised injury related to traffic events at a 20 year follow up.

Aim This paper reports on first aid training integrated with peer protection and school connectedness within the Skills for Preventing Injury in Youth (SPIY) program. A component of the intervention is concerned with providing strategies to reduce the likelihood of being a passenger of a drink driver and effectiveness is followed up at six months post-intervention.

Method In early 2012 the study was undertaken in 35 high schools throughout Queensland that were randomly assigned to intervention and control conditions. A total of 2,521 Year 9 students (mean age 13.5 years, 43% male) completed surveys prior to the intervention.

Results Of these students 316 (13.7%) reported having ridden in a car with someone who has been drinking. This is a traffic safety behaviour that is particularly relevant to a peer protection intervention and the findings of the six month follow up will be reported.

Discussion and conclusions This research will provide evidence as to whether this approach to the introduction of first aid skills within a school-based health education curriculum has traffic safety implications.

Introduction

Young Australians are over-represented in national road fatality and injury statistics making them particularly vulnerable road users. Despite representing only 16 percent of the Australian adult population, 17 to 25 year olds make up 25 percent of motor vehicle fatalities and serious injuries (Road Traffic Authority, 2007). Studies have shown that the crash risk of young drivers is affected by the presence of same-age passengers and the risk significantly increases with each additional passenger (Chen, Baker, Braver & Li, 2000; Simons-Morton, Lerner & Singer, 2005). Bingham, Shope, Parow and Raghunathan (2008) found that although young drivers were relatively less likely to be involved in alcohol-related crashes, passenger presence significantly increased the likelihood that a crash involving alcohol would result in a fatality.

To address the risks faced by young drivers, Graduated Driver Licensing systems (GDL) have been introduced throughout Australia. GDL systems act as a form of exposure control...
by including a range of requirements and restrictions which allow novice drivers initial experience under conditions that involve lower risk. For example, in Queensland, passenger restrictions are imposed on young novice drivers during the night in which they are only permitted one passenger under the age of 21, with the exception of family members (Queensland Government Department of Transport and Main Roads, 2011). There is a growing body of literature supporting the effectiveness of GDL systems in reducing young driver crashes (Hartling et al., 2009; Williams, Tefft & Grabowski, 2012). Research has shown that GDL systems which include night-driving and passenger restrictions appear to be effective (Morrisey, Grabowski, Dee & Campbell, 2006; Rice, Peek-Asa & Kraus, 2004). Unfortunately, young drivers have reported high rates of violating GDL requirements (Masten & Hagge, 2004), in particular passenger restrictions (Williams et al., 2007). Therefore, while GDL systems partially address passenger-related risks greater emphasis needs to be placed on evidence-based interventions that improve the inherent safety of young passengers through early interventions.

A study conducted by the authors explored the impact of a curriculum-based injury prevention program, Skills for Preventing Injury in Youth (SPIY), on passenger-related risk taking and injuries (Chapman, Buckley & Sheehan, 2012). This study reported on results of an early trial of the SPIY program which included 10 schools with participation from approximately 450 Year 9 students. Students who received the program were less likely to report passenger-related risk taking behaviours six months post the intervention, while these behaviours increased among control students. During focus groups intervention students indicated that they were less likely to take risks, and provided examples of ways in which they could avoid risky passenger situations. The current study extends on previous research using a large scale randomised control trial of the school-based intervention, SPIY program and cluster analysis.

Skills for Preventing Injury in Youth (SPIY)
The SPIY program is a theory-based intervention designed to increase a number of protective factors that may reduce adolescent risk taking behaviour and injury, including first aid skills, peer-protective behaviour, school connectedness and individual attitude change. The program is targeted at 13 to 14 year olds and involves eight (weekly) 60 minute lessons which are delivered by Year 9 teachers. Implementation of the SPIY Program involves a full day training session in SPIY curriculum delivery, school connectedness and CPR certification for all teachers delivering the program. The facilitation of SPIY within the classroom encourages considerable group interaction and is based on effective cognitive behavioural strategies. Each lesson involves three core components – scenario based learning, practical first aid activities and critical thinking skills in prevention. The Theory of Planned Behaviour (Ajzen, 1991) is a fundamental component of the SPIY curriculum and it operationalises protective factors in adolescent friendship and in changing adolescents’ attitudes and beliefs about injury risk behaviours to value safer behaviours.

An evaluation has shown significant and meaningful reductions in risk taking behaviour (i.e., interpersonal violence, alcohol use and transport-related risks) (Buckley, Sheehan & Shochet, 2010). Findings from surveys conducted pre and post intervention indicated a decrease in self-reported risk taking for the intervention group and an increase in the comparison group. Results have also shown favourable reports on the delivery of first aid material and demonstrated that first aid skills can be effectively implemented within the high school setting and produce multiple benefits for adolescents (Buckley & Sheehan, 2009).

Research aim

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This study aimed to examine the impact of SPIY on passenger-related risk taking. This study builds on a previous trial of the SPIY intervention and aims to address earlier limitations in order to strengthen the evidence that school-based programs may be an important means of increasing adolescent passenger safety.

**Method**

**Participants**

In total 2521 students aged 13-14 years old from 35 secondary schools in southeast Queensland and the Queensland Central Coast participated in the study. The schools, consisting of state-funded, Catholic and independent schools, were randomly assigned to either a SPIY intervention condition (n = 17) or control condition (n = 20). Control schools were offered the program for use following the research project. At baseline, the mean age of students was 13.5 years, 1515 students (42% male) participated in the surveys from intervention schools and 1006 students (35% male) participated from control schools. At six month follow up 2118 students participated in the survey, a retention rate of 84%. The mean age of participants at six month follow up was 14.0 years. Matched data from baseline to six month follow up was available for 1689 students of which 901 students were from intervention schools and 788 students were from control schools.

**Procedure**

Ethical approval for the conduct of this research was obtained from relevant research committees, schools and parents prior to inviting students’ participation. Students with parental consent who were present on the data collection days gave their informed written consent prior to participation in the research. Students were administered self-report surveys (30 minutes) during class time. Individual names were not required to maintain confidentiality. However, a linking code (e.g., mother’s name and the first letter of the student’s name) was used to match the pre and post intervention surveys.

**Measures**

Demographic items

Demographic information that was collected included students’ age, sex and ethnic background. The Index of Relative Socio-Economic Advantage/Disadvantage, as derived from the 2006 Australian Census, was noted for each school. The Index is a rating constructed from attributes of the population in the area, such as educational attainment, income, employment and occupation. Index rating scores range from 1-10, with low values indicating disadvantage and high values indicating advantage (ABS, 2008).

Risk taking

The measure of risk taking behaviour was based on the Australian Self Report Delinquency Scale, ASRDS (Mak, 1993), with adjustments made by Western and colleagues (2003). Each item describes a risk taking behaviour and participants were asked to respond as to whether or not they had engaged in that behaviour in the past three months. One item was included in the current analysis. The item asked whether students had ridden in a car with a drink driver.

**Results**

Table 1 shows the percentage of intervention and control students by gender who reported change or no change in passenger-related risk taking from baseline and 6 month follow up.

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The variables were categorised into three groups which included positive change (i.e., a reduction in riding as a passenger of a drink driver from baseline to six month follow up), negative change (i.e., an increase in riding as a passenger of a drink driver from baseline to six month follow up) and no change over the same period.

<table>
<thead>
<tr>
<th>Ridden with drink driver</th>
<th>% positive change</th>
<th>% negative change</th>
<th>% no change</th>
<th>% positive change</th>
<th>% negative change</th>
<th>% no change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>9.2</td>
<td>5.8</td>
<td>85.0</td>
<td>5.0</td>
<td>6.3</td>
<td>88.8</td>
</tr>
<tr>
<td>Male</td>
<td>7.3</td>
<td>8.4</td>
<td>84.2</td>
<td>7.0</td>
<td>8.0</td>
<td>85.0</td>
</tr>
</tbody>
</table>

Note. Ridden with a drink driver in the preceding 3 months.

Table 1: Change in reports of riding with a drink driver from baseline to 6 month follow up

Differences from baseline to six month follow up between students from intervention and control conditions who reported being passengers of drink drivers were examined using Chi-square analyses. Analyses were differentiated by gender. There was a significant difference between female intervention and control students, with intervention females showing a significant positive change in passenger risk behaviours \[\chi^2(2, N = 959) = 6.38, p = .041\]. Standardised residual = 1.7]. As indicated by the percentage change from baseline to six month follow up, female intervention students showed a greater percentage of positive change in reports of being a passenger of a drunk driver than control students.

Among males, there was no significant difference between intervention and control students reported incidences of being a passenger of a drink driver \[\chi^2(2, N = 655) = .075, p = .963\]. As indication by the percentage of positive change, negative change and no change following the intervention, little difference is observed between male intervention and control students reports of being a passenger of a drunk driver.

Discussion

The increased crash risk of young drivers in the presence of same-age passengers is well documented (e.g., Chen et al., 2000). Therefore, greater attention needs to be given to initiatives that improve the inherent safety of young passengers. The results show evidence for school-based injury prevention programs, such as SPIY, to improve the safety of young passengers. Six months following the SPIY program females from intervention schools were significantly less likely to report being a passenger of a drunk driver. The occurrence of riding in a car with a drunk driver also decreased among males who received the SPIY intervention in comparison to the control group. It is encouraging that six months following participation in SPIY, intervention students’ reported involvement in passenger-related drink driving decreased to a greater degree than control students.

Chapman and colleagues (2012) findings from the early trial of the SPIY program, support the current study by reporting that students who received the intervention were less likely to report passenger-related risk taking behaviours six months post the intervention, while these behaviours increased among control students. Although the SPIY program is designed to globally target a reduction in risk taking behaviours and associated injury, the findings suggest that the program can have a positive effect on reducing the occurrence of travelling in a car with a drunk driver. Therefore, evidence-based curriculum interventions may be an appropriate form of targeting the inherent safety of young passengers earlier than GDL systems.
The current findings should be considered in light of some limitations. The present research relied on self-report data, which has potential to be biased by participant recall or inaccuracy. In this study, it was not possible to use independent confirmation or external sources and therefore further research should incorporate objective measures. Another limitation of this study is the single item measurement tool which assessed dichotomously whether participants had travelled in the car with a drunk driver in the previous 3 months. While this measure fails to account for the extent of the outcome behaviour it has the potential to capture all instances of this unsafe behaviour. Further the follow up period of participants was relatively short. To overcome this limitation, there is potential to examine change in this outcome at long term follow up with 12 month data collection in progress.

Despite these limitations, the research documents evidence for a school-based injury prevention program to reduce passenger-related risk taking in comparison to a control group, who showed only a small decline in riding in the car with a drink driver at 6 month follow up. The current study extended previous findings of the SPIY trial by Chapman et al. (2012) using a large scale randomisation control trial of the SPIY intervention. The large scale trial was strengthened by the large sample size and wide diversity of schools. This research supports the need to target strategies aimed at reducing passenger-related risks.

References


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