

## **Transport injury risks in Queensland adolescents of Pacific Islander descent**

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### **Abstract**

Ethnicity is rarely considered in the development of injury prevention programs, despite its known impact on participation in risk behaviour. This study sought to understand engagement in transport related risk behaviours, patterns of injury and perceptions of risk among early adolescents who self-identify as being from a Pacific Islander background. In total 5 high schools throughout Queensland, Australia were recruited, of which 498 Year 9 students (13-14 years) completed questionnaires relating to their perceptions of risk and recent injury experience (specifically those transport behaviours that were medically treated and those that were not medically treated). The transport related risk behaviours captured in the survey were bicycle use, motorcycle use and passenger safety (riding with a drink driver and riding with a dangerous driver). The results are explored in terms of the prevalence of engagement in risky transport related behaviour among adolescents' of Pacific Islander background compared to others of the same age. The results of this study provide an initial insight into the target participants' perspective of risk in a road safety context as well as their experience of such behaviour and related injuries. This information may benefit future intervention programs specific to adolescents' of Pacific Islander background.

### **Keywords**

Early adolescents, Pacific Islander descent, Risk perceptions, Transport related injury

## **1. Introduction**

### **1.1 Background**

Unintentional injury is an ongoing public health concern in that it represents the leading cause of mortality among young people in Australia. Transport related incidences (i.e., passenger, motorcycle, and driving-related risk behaviours) represent 38% of injuries and fatalities of Australian 15 to 20 year olds (AIHW, 2008). Adolescents' engagement in alcohol use has also been determined as a contributing factor for high injury rates and is often used in the context of such transport related behaviours. An Australian survey revealed that eight out of ten high school students reported having used alcohol previously and one third reported having used alcohol in the week prior to the survey (Healey, 2006).

Adolescents' perceptions of risk appear to influence their engagement in risk behaviours and consequent injury. Researchers have suggested that young people may differ in the way they define safe road behaviours and are more likely to engage in risks when they have a greater misunderstanding of the consequences (Fergusson, 2003). A study conducted in the United

States by Lavery and colleagues (1993) found that students were more likely to engage in risk behaviours when they perceived low levels of risk to their health and safety. Researchers have found that adolescent males are more likely to report lower perceptions of risk associated with risk behaviours compared to females (Hillier & Morrongiello, 1998). Further, a study by Jelalian and colleagues (1997) indicated that students who reported higher levels of risk taking, including road related risks and previous injury reported significantly higher perceptions of the likelihood of future injury. Such findings suggest that adolescents who report engaging in risk taking behaviour are likely to perceive risks as being less serious, however if adolescents have previously been injured while engaging in risk behaviours they report a greater likelihood of being injured in the future. This study seeks to understand the relationship between risk perception and adolescents' experience of a cluster of transport related injuries.

## **1.2 Specific transport injury experiences**

While transport related adolescent fatalities typically involve motor vehicles, and for early adolescents this is primarily as a passenger (CDC, 2010), a number of other transport methods are commonly used by adolescents. These include riding a bicycle, riding a motorcycle, riding a skateboard and rollerblading.

### **1.2.1 Passenger related injuries**

Young passengers are at substantial risk in road related crashes particularly when travelling with a young driver (Chen et al. 2000). In a study of New Zealand high school students, 27% reported having been a passenger of a potentially intoxicated driver at least once in the past month (Adolescent Health Research Group, 2003). Further research has found that adolescent drivers face an increased risk of crashing when carrying passengers of their own age and gender (Fu & Wilmot, 2008).

### **1.2.2 Bicycle related injuries**

Similarly, cycling represents a serious safety concern for young people. Among 11 to 14 year old Australians bicycle accidents account for roughly 11% of transport deaths and are consequently the fourth leading cause of death among this age group (Berry & Harrison, 2008). Between 2005 and 2006 young people within the pre and early driving age of 12-17 years were three times more likely to be hospitalised as a result of bicycle injuries when compared to 18 to 24 year olds. Hospitalisations were found to be more common among young males than females (AIHW, 2008).

### **1.2.3 Motorcycle related injuries**

Motorcycling also contributes to adolescent injury, although there are few studies examining rates. Over the three year period 2002-04 in Victoria, Australia researchers reported that there were nine deaths, 1570 hospitalisations and 2097 emergency department presentations of motorcyclists under 18 years old. This research indicated that the majority of fatalities were a result of on-road motorcycle use (7 out of 9), while the majority of hospital admissions (73%)

and emergency department presentations (81%) were associated with off-road motorcycling (Cassell et al. 2006).

### **1.2.4 Skateboard and rollerblade related injuries**

Researchers from the Monash University Accident Research Centre (MUARC) reported that in 2003, the number of combined skateboarding and rollerblading injuries resulting in hospitalisations was almost double that reported annually in the previous six years. Skateboarding injuries had a large role to play in this dramatic increase with a four-fold increase. While in Victoria there is less than one fatal injury resulting from skateboarding and rollerblading per year, it is estimated that the number of hospital emergency department presentations is greater than 1000. Young males aged 10-14 years are most at risk of skateboard and rollerblading injuries as they typically have less experience, are more likely to skate in dangerous locations and fail to wear protective equipment (MUARC, 2003).

Transport related behaviours, defined in this study as passenger, bicycle, motorcycle, skateboard and rollerblade risks, substantially influence adolescent injuries, and in Australia, associated injuries account for the majority of injury deaths among young people (AIHW, 2008). Research is yet to explore the differences and commonalities facing Australian young people from diverse ethnic backgrounds who may not be able to make the same use of road safety strategies. It is important to ensure that safety interventions are not only targeting the majority of the population but are specifically designed to meet the needs of different cultural groups. The current research is interested in understanding the transport related experiences and self reported injuries of Pacific Islander adolescents in Queensland.

### **1.3 Pacific Islander adolescents' transport experiences**

According to the 2006 Census, Pacific Island and New Zealand populations are fast growing in Queensland with an approximate 30% increase between 2001 and 2006. In total, more than 30,000 people in Queensland self-identify as being from Maori background and more than 35,000 people self-identify as being from Pacific Islander background (Australian Bureau of Statistics, ABS, 2008). Therefore, the health needs of Pacific Islander youth are becoming a rapid priority for policy, programs, research and services. In the current study, young people self-identified as being of a Pacific Islander background. Typically this includes those who identify as members of the Polynesian, Micronesian and Melanesian communities, referred to by the Pacific Islands Forum Secretariat as Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Nauru, New Zealand (Maori), Niue, Palau, Papua New Guinea, Republic of Marshall Islands, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu.

Much of what we know about the transport related experiences of Pacific Islander adolescents comes from research conducted in New Zealand. For instance, Sullman and Mann (2009) examined road behaviours among New Zealand adolescents and reported that young males who self-identified as being from Maori or part-Maori descent were more likely to report greater pedestrian risks including playing on the road more often and crossing the road dangerously compared to Caucasian and Asian adolescents.

A study by Coggan and colleagues (1997) investigated the transport related risks of almost 13,000 students in New Zealand aged 13 to 17 years (male 46.2%). The findings indicated that failure to wear a helmet while riding a bicycle was significantly higher among adolescents of Maori descent, while non-Maori adolescents were more likely to not wear a helmet while riding a motorcycle. Further, adolescents who self-identified as Maori descent were more likely to report driving without a license, riding with a drink driver, being involved in a crash and drinking alcohol compared to non-Maori students.

While Sullman and Mann (2009) and Coggan et al.'s (1997) research provides evidence that Pacific Islander adolescents are over-represented in certain transport risk behaviours, the researchers did not examine the relative injury outcomes. Using hospital admission data, a recent report found that in New Zealand during 2003-2007, Pacific Islander youth experienced significantly less land transport, passenger, motorbike and bicycle injuries than Maori and European young people under 14 years. Whereas pedestrian injuries were significantly higher for Pacific Islanders compared to Maori, European and Asian youth (Alatini, 2009). While research has shown that Pacific Islander youth are vulnerable to a number of transport related risks, particularly as a pedestrian, riding a bike without a helmet, driving without a license, being a passenger of a drink driver and being involved in a crash, research has indicated that Pacific Islander youth experience fewer transport injuries than adolescents who did not identify as Pacific Islander.

### **1.5 Summary and research aim**

Despite its likely difference on participation in risk behaviour, ethnicity is rarely considered in the development of injury prevention programs. Programs which fail to acknowledge the participants' cultural differences may leave them feeling out of touch with their peer group and potentially result in the individual feeling pressured to not accept the changes prompted by the program. Further cultural insensitive programs may not have community approval within the cultural group and therefore the individual may not have access to supportive community resources (Dumas et al. 1999). While it is well established that transport related injuries are a major concern for young people in Australia, little is known about the transport related risk involvement, perceptions of risk and self-reported injury outcomes of Pacific Islander young people living in Australia. While previous research (i.e., Alatini, 2009) has examined Pacific Islander youth injuries using official hospital data there are benefits to collecting self-report injury data (i.e., cost, time-efficiency and the potential to capture more injuries than those that are reported through the formal medical system). Building on previous research, this study aimed to examine transport related risk behaviours, patterns of self-reported injury and perceptions of risk among early adolescents who self-identify as being from a Pacific Islander background. Based on previous research (Alatini, 2009) adolescents of Pacific Islander descent are predicted to have significantly less transport (i.e., passenger, motorbike and bicycle) injuries than adolescents who did not identify as Pacific Islander.

## **2. Method**

### **2.1 Participants**

In total, 498 (49% male) Year 9 students from five high schools in South-East Queensland participated in this study (540 were initially approached). From each school all Year 9 students were recruited as part of an injury prevention program and the current study reports on the baseline data of the research project. Forty-one students (64% male) self-identified as being from Pacific Islander background. Parental consent was obtained for the students and students provided written consent prior to their participation. While no personal questions related to socio-economic status were included, the Index of Relative Socio-Economic Advantage/Disadvantage, as derived from the 2006 Australian Census, was noted for the five schools. 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. Three of the schools are located in relatively advantaged areas, with Index scores of 7 or 8 and the other two schools are located in disadvantaged areas, with Index scores of 1 (ABS, 2008).

### **2.2. Measures**

#### ***2.2.1. Demographics***

Students were asked to provide their demographic information including age, sex and ethnic background. Socio-economic index for school areas was also collected.

#### ***2.2.2. Self-reported injury***

Self-reported injury was assessed using the Extended Adolescent Injury Checklist (E-AIC) (Chapman, Buckley & Sheehan, 2011). The items describe either an injury type or an injury situation and students answer how many times they had been injured in each way in the past three months. Then, for each injury, students answer yes or no to whether they went to a doctor or hospital. Included are five transport related injuries (e.g., injured while riding as a passenger in a car, riding a bicycle). Based on the sample size of the target group, the results of this study do not report on medically treated injuries and instead report injuries of all severity.

#### ***2.2.3. Perceptions of risk***

Based on Western and colleagues (2003), the perceptions of risk scale included six items whereby participants responded strongly disagree to strongly agree as to whether they perceived risks to be favourable. Higher scores indicated more favourable attitudes towards risk. The questions were designed using the stem from past research and the descriptor and behaviour were altered to the target research objectives (e.g., “I think it is cool to do risky things” and “I think you can have fun doing risky things”).

#### 2.2.4. Alcohol use

Alcohol use was measured using a single item. Students were asked to respond to how often they had drunk a glass or more of an alcoholic drink in the previous three months.

### 2.3 Procedure

Ethical approval for the conduct of this research in the selected high schools was obtained from University Human Research Ethics Committee and the relevant education department. Individual school principals were then contacted for permission to conduct the research in their schools. Written parental consent was obtained prior to students' participation by sending out an information sheet and consent form outlining the aims and procedures of the research. Finally, students were given an information sheet and were asked to sign an attached consent form in order to participate. Year 9 students were administered self-report surveys during health classes. The measures investigated recent injury experiences and perceptions of risk. Individual names were not collected to maintain confidentiality. Students' were read out the instructions for completing the questionnaire and were assisted through the first questions. The researchers and/or a class room teacher remained in the room to ensure that the surveys were completed correctly and to assist students who had any questions or difficulties in filling out the survey.

### 3. Results

All analyses were conducted using the computer software program, SPSS. The significance level was set at  $p < .05$ . Table 1 shows the types of transport related injuries experienced by adolescents who self-identify as being from a Pacific Islander background and adolescents who did not identify as being of Pacific Islander background. The most frequent types of injuries experienced in the preceding three months by adolescents of Pacific Island descent were 'riding bike' (45.2%) followed by 'passenger in a vehicle' (29%). Similarly, adolescents who did not identify as being of Pacific Island descent most frequently reported situations in which injuries were experienced to include 'riding bike' (33.3%) followed by 'riding skateboard' (17%).

**Table 1: The proportion of transport related injuries reported by adolescents of Pacific Islander and non-Pacific Islander background**

Injury types	Pacific Islander (n=31)		Non-Pacific Islander (n=364)	
	n	%	n	%
Passenger in a vehicle	9	29.0	44	12.1
Riding bike	14	45.2	121	33.3
Riding motorcycle	7	22.6	55	15.1
Riding skateboard	6	19.4	62	17.0
Rollerblading	7	22.6	33	9.1

Note. Reported injuries in the preceding 3 months  
N=395 completed injury items (31 Pacific Islander)

### 3.1 Transport related injuries differences

Differences between adolescents of Pacific Island and adolescents not of Pacific Island descent for each transport related injury category were examined using Chi-square analyses. Adolescents of Pacific Island background reported significantly more injuries as a passenger in a vehicle [ $\chi^2(1, N = 395) = 7.06, p < .05$ ], and rollerblading [ $\chi^2(1, N = 394) = 5.69, p < .01$ ].

Chi-square analyses were also conducted to compare adolescents of Pacific Islander and adolescents not of Pacific Islander background who reported bicycle, motorcycle and skateboard injuries. These analyses revealed that there were no differences between the two groups for injuries related to riding a bike [ $\chi^2(1, N = 394) = 1.75, p = .183$ ], motorcycle [ $\chi^2(1, N = 395) = 1.21, p = .272$ ] or skateboard [ $\chi^2(1, N = 395) = .108, p = .742$ ].

Chi-square analyses were also conducted to investigate the association between alcohol and transport related injuries. Alcohol consumption was not related to injury situations among Pacific Island adolescents and adolescents of Pacific Island background reported drinking significantly less alcohol consumption [ $\chi^2(1, N = 498) = 13.45, p < .001$ ] than adolescents who did not identify as Pacific Islander background.

### 3.2 Perceptions of risk

An independent-samples t-test was conducted to compare perceptions of risk for adolescents of Pacific Island and adolescents not of Pacific Island descent. There was a significant difference in the scores for adolescents of Pacific Island descent ( $M=20, SD=10.9$ ) and adolescents not of Pacific Island descent ( $M = 24.4, SD = 13.4$ );  $t(48.6) = 2.39, p < .05$ . The results suggest that adolescents' who did not identify as being from Pacific Islander background have more favourable perceptions of risks than adolescents of Pacific Islander background.

## 4. Discussion

The results of this study indicate that adolescents who self-identify as being from Pacific Islander background typically report having more transport associated injury experiences than adolescents who did not identify as being Pacific Islander, across a number of transport related behaviours. The results differ from the previous research by Alatini (2009) who analysed hospital injury data from New Zealand and found that Pacific Islander youth experienced significantly less land transport, passenger, motorbike and bicycle injuries than Maori and European young people under 14 years. Differences between countries (Australia and New Zealand), measurements (self-report and official hospital data) and/or age (13-14 years and under 14 year olds) may potentially account for discrepancies in the findings. Additional research is required to examine such differences and possible differences across ethnic backgrounds.

In the present Australian study Pacific Islander adolescents reported significantly more injuries as a passenger in a vehicle and while rollerblading. In total 45% of the Pacific

Islander adolescent sample reported that they had been injured in the past three months while riding a bicycle. Further, it was found 29% of the 13 to 14 year old adolescents who self-identified as Pacific Islander indicated that in the past three months they had been injured as a passenger in a vehicle. Consequently, bicycle use and riding as a passenger in a car were the most common injury situations among adolescents of Pacific Islander background compared with the other transport injury situations measured.

In comparison, fewer (33%) adolescents who did not identify as Pacific Islander reported that they had been injured in the past three months from bicycle use. The next most common cause of injury for adolescents who did not identify as Pacific Islander was from skateboarding. Such findings suggest that injuries resulting from bicycle use are the most common injury experienced by all young people, from the behaviours sampled. Analyses revealed that there were no statistically significant differences between the two groups for injuries related to riding a bike, motorcycle or skateboard. Notably, adolescents who self-identify as being from Pacific Island background reported drinking significantly less alcohol than adolescents who did not identify as Pacific Islander background.

Despite being injured more often in terms of the percentage of all transport related injuries reported in the current study, adolescents who self-identified as being from a Pacific Islander background typically perceived risks as being less favourable compared to others of the same age. This suggests that the sample of Pacific Islander adolescents perceive risk taking as being less cool, fun or accepted compared to young people who did not identify as Pacific Islander. Jelalian and colleagues (1997) research may explain this finding in that if adolescents have previously been injured while engaging in risk behaviours they perceive a greater likelihood of being injured in the future in the same context and potentially perceive risks as being less favourable. The findings regarding Pacific Islander adolescents' negative perceptions of risk behaviour have important implications for prevention strategies. Accordingly, targeting Pacific Islander adolescents' perceptions of risk, and challenging their acceptance of certain transport related behaviours (i.e., risky bicycle use and being a passenger in a vehicle of a potentially dangerous driver) may be effective and relevant objectives for safety messages.

There are a number of limitations in the current study. The first is the small size and homogeneous nature of the sample. There were 41 Year 9 students who identified as being from Pacific Islander background in the survey. The results of the current study may therefore not generalise to the wider Pacific Islander adolescent population across Queensland. Another associated limitation is that the sample size was not sufficient to analyse differences between genders. Further, in some measures data was not available for all students. The researchers also acknowledge that students were not asked to report their actual transport behaviours including their use of bicycles. The Pacific Islander students were not asked to specify their particular ethnic group, however this is common to previous research which has generally only reported students who identify as Maori (e.g., Sullman & Mann, 2009).

The present study relied on self-report measures of injury, which may be biased by participant recall or inaccuracy. In this study, it was not possible to use independent confirmation or external sources. Despite this, a number of studies have supported the reliability and validity of self-report data (Begg, Langley, & Williams, 1995; Grimmer, Williams, & Pitt, 2000) particularly when confidentiality is assured and items focus on recent events (Nurco, 1985), such as the last three months. Further, many Pacific Islander people migrate to Australia as New Zealanders and therefore self-reported data may be more accurate than official data in capturing their injury rates. However, self-reported injury provides additional data that may capture injuries that are not recorded in official databases.

#### **4.1 Summary and conclusions**

Despite these limitations, the results provided evidence of the self-reported injury experiences of Pacific Islander adolescents associated with transport related behaviours. Specifically, there is evidence that young people of Pacific Islander background face greater risks as the result of being a passenger in a vehicle, particularly compared to those who did not identify as being from a Pacific Islander background and are of the same age. However, cycling was found to be the most common cause of transport related injuries among both groups of young people and may be attributed to increased exposure. Prevention strategies for Pacific Islander youth should therefore target passenger and bicycle safety. This study also provided a preliminary understanding of the difference between alcohol use among adolescents of Pacific Islander and adolescents not of Pacific Islander background and there is impetus for this effect to be explored in further research. There is a clear need for a greater understanding of the health risks relevant to adolescents of minority groups in both Australia and New Zealand, including youth of Pacific Islander background. Injury prevention programs targeting Pacific Islander youth might be most effective if they address relevant cultural issues and are combined with support from community groups in order to access supportive resources.

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