This is the author's version of a work that was submitted/accepted for publication in the following source:


This file was downloaded from: http://eprints.qut.edu.au/41823/

**Notice**: Changes introduced as a result of publishing processes such as copy-editing and formatting may not be reflected in this document. For a definitive version of this work, please refer to the published source:
Injuries across adolescence: an investigation using the
Extended Adolescent Injury Checklist (E-AIC).

Rebekah Chapman, Lisa Buckley and Mary Sheehan.

Centre for Accident Research & Road Safety – Queensland (CARRS-Q)

Queensland University of Technology
Abstract

**Issues addressed:** Injuries are the leading cause of death among adolescents. The aim of the current research was to examine a measure of adolescent injury in terms of whether it encompasses the diverse injury experiences of Australian adolescents, including high risk and normative adolescents, and thus determine its utility as a tool for health promotion research.

**Methods:** Grade 9 students from two Brisbane high schools (n=202, aged 13-14 years), and adolescents recruited from the Emergency Department waiting rooms of four large Brisbane hospitals (n = 98, aged 16-18 years) completed the Extended Adolescent Injury Checklist (E-AIC).

**Results:** The most common cause of injury among adolescents was a sports activity, followed by fights for all participants except school-based males, who experienced more bicycle injuries. Alcohol use was most frequently reported in association with interpersonal violence injuries.

**Conclusions:** A broad variety of injuries, occurring in context of multiple risk as well as normative behaviours, were reported by adolescents in both school and ED settings, and were captured by the E-AIC.

**So what?** Findings suggest that the E-AIC is a useful measure that captures the injury experiences of adolescents in different contexts. The high occurrence of injuries that do not result in formal medical treatment also indicates scope for interventions to be based around lessons in first aid, while also incorporating injury prevention components.
Injury is the leading cause of death among adolescents, and in many countries, accounts for more deaths than all other causes combined\textsuperscript{1,2}. Rates of death due to injury also increase dramatically across adolescence. The Australian Institute of Health and Welfare reported that, in 2005, there were 954 deaths of young Australians due to injury, which is a rate of 26 deaths per 100,000 young people. Of these deaths, 4\% were among adolescents aged 12 – 14, 17\% were among those aged 15 – 17, and 80\% were among young people aged 18 – 24 years\textsuperscript{1}.

The cumulative burden of nonfatal injuries can be considerable for individuals, their families, the health care system and society at large\textsuperscript{3}. Such injuries are of particular concern considering their prevalence; for every unintentional injury death among adolescents aged 10-19 years in the United States, there are approximately 12 hospitalisations and 641 Emergency Department (ED) visits\textsuperscript{4}. This estimate does not even touch upon injuries treated by General Practitioners, those that are treated at home, or those that are left untreated.

The significance of adolescent injury as a health problem has led to an increasing number of injury prevention programs for young people. The development of reliable, self-report injury measures is essential to meet the growing need for evaluation of such programs.

*Causes of injury in adolescence*

Transport accidents are the primary cause of adolescent injury fatalities and hospitalisations\textsuperscript{1,2,5,6}. While transport accidents account for a similar proportion of hospitalisations among young males and females, the overall rate of hospitalisation due to transport accidents is lower for females than for males\textsuperscript{1}. One study has shown that the majority of transport deaths among adolescents aged 15 and under are pedestrian and bicycle-related; however underage driving also contributes to injury fatalities\textsuperscript{7}. Motorcycle crashes also contribute to adolescent injury: one study found that 3,163 children aged 16 years and younger attended Victorian EDs with motorcycle-related injuries during 2000-04, at rates
ranging from 62 per 100,000 to 82 per 100,000 per year\(^8\). These rates were found to increase by an average of 9.6% per year\(^8\).

Interpersonal violence is another leading cause of adolescent fatalities and hospitalisations, with 9% of hospitalisations of Australians aged 12-24 during 2005-06 being due to assault\(^5\). Rates of injury due to assault are lower among females than males across all ages in adolescence\(^1\).

When injuries of lesser severity are considered, a different causal pattern emerges, with the majority resulting from sporting activities\(^6\,9\,10\). Data from a study examining ED attendance at 50 Australian hospitals from 1986-1994 revealed that sport accounted for 23% of injuries among males aged 15-29 years, with transport constituting 13%\(^11\). Almost three-quarters (73.9%) of hospitalised sports injuries in Australia occur in males\(^12\).

Experimentation with alcohol also often begins and increases during adolescence\(^13\,14\), despite current Australian NHMRC guidelines recommending that no alcohol be consumed at all by young people aged under 18\(^15\). Alcohol use is also considered to be one of the most significant risk factors for injury\(^16\). In Australia in 1998, transport accidents were the leading cause of alcohol-related injury deaths and hospitalisations among males aged 15-19 years, while interpersonal violence was also highly related to alcohol deaths\(^17\).

**Injury across adolescence**

The proportion of deaths attributable to injury increases substantially during adolescence\(^1\). The causes of injury also vary with age across adolescence. One US study using hospital discharge and death certificate data for young people aged 0-19 years showed that transport injuries peaked at 18 years\(^18\). Within this category however, motor vehicle occupant injuries increased substantially with age, while bicycle injuries decreased after peaking at 14 years\(^18\).
The rate of interpersonal violence injuries also increases throughout adolescence. In Australia, the rate of hospitalisations due to assault increases from 56 per 100,000 among 12–14 year old males, to 247 among 15–17 year old males and 477 among 18–24 year old males. Figures relating to sports injuries are less consistent, however, and it appears that injury risk increases in association with exposure to various sports rather than with age.

Research aim

The aim of the current research was to examine a measure of adolescent injury in terms of whether it encompasses the diverse injury experiences of Australian adolescents, including both high-risk and normative adolescents, and thus determine its utility as a tool for health promotion research. In doing so, this research builds upon a previously established measure, the Adolescent Injury Checklist (AIC). This measure records injuries experienced by adolescents in the past 6 months, whether any required medical attention, and whether they occurred in the context of alcohol or other drug use. This measure has been developed and used in both hospital and high school research in the United States.

The utility of the AIC lies in its capacity to measure both minor injuries that are untreated or treated at home and injuries of greater severity that require formal medical treatment. Nonfatal injury research is primarily based on hospitalisation or ED data, or on self-reports of injuries that required medical treatment. However, social class differences have been identified in decisions to present for medical treatment, with data based on medical records tending to under-represent the true incidence of injury. Additionally, a focus on medically treated injuries fails to provide information about injuries, which, while not formally treated, may require first aid. While prevention strategies targeted toward severe injuries will always be a primary concern, there is an emerging need for prevention approaches to address more common injuries that contribute fundamentally to the total injury burden.
Previous research by the authors described the first steps in developing an Extended Adolescent Injury Checklist (E-AIC)^27. In this prior research, focus groups were conducted with high-risk adolescents and hospital staff to determine appropriate item terminology. The measure was then piloted with 498 Grade 9 students in Brisbane, Australia, with further changes being made based on pilot responses (see authors^27). This research extends upon the previous study by testing the utility of the revised E-AIC with two different samples of adolescents: a student sample of adolescents aged 13-14 years, and a sample of older adolescents (aged 16-18) recruited from the waiting rooms of hospital EDs. EDs provide the opportunity for contact with a community sample of adolescents who may still be in or have left school. As deaths due to injury increase dramatically from 14 years of age (with 38% of deaths being attributable to injury at 13-14 years, and 66% at 15-17 years)^1, this research will also examine the utility of the measure for adolescents both before and after this increase.

Method

Participants

Student sample. A total of 202 Grade 9 students (87 male), with a mean age of 13.6 years (range: 13-14 years) from two high schools in Brisbane were given surveys. Analysis indicated that participants from the two schools did not differ on age, t(200) = 1.11, ns, or sex, χ²(1, N = 202) = 1.65, ns.

The Index of Relative Socio-Economic Advantage/ Disadvantage was obtained for the two schools. The Index is constructed from attributes of the population in the area, such as educational attainment, income, employment and occupation, and ranges from 1-10. One of the schools is located in a somewhat advantaged area (Index score of 8) and the other school is located in a disadvantaged area (Index score of 1)^28.

Hospital sample. Ninety-eight adolescents aged 16-18 years (38 males; mean age = 17.2 years) were recruited from the outpatient ED waiting rooms of four large Brisbane hospitals.
Analysis indicated that participants recruited from the four hospitals did not differ on age, $F(3, 94) = 1.88, ns$, or sex, $\chi^2(3, N = 98) = 0.56, ns$. Male and female participants were also not found to differ by age, $t(96) = 0.33, ns$.

**Measure**

The E-AIC is a self-report measure of injury. The 23 items are separated into a set of injury types (e.g. burns, sprains) and a set of injury situations (e.g. fights, driving). For all items, adolescents initially indicate whether they had the injury in the past 6 months, and then if experienced, they indicate whether this occurred in the context of alcohol use, drug use, and whether the injury required treatment by a doctor or in hospital. The measure has been shown to have good internal consistency as well as consistency in adolescent responses over time\(^2\). See authors\(^2\) for further information on the measure and its development.

**Procedure**

Ethical approval was obtained from the University Human Research Ethics Committee, Education Queensland and from hospital Ethics Committees. Individual school principals and ED directors were then contacted for permission to conduct the research in these settings.

**School sample.** Parental consent was obtained prior to students’ participation by sending an information sheet home. The E-AIC was administered during health classes. Students were given an information sheet outlining the research and were asked to sign an attached consent form before participating. A researcher then read each question aloud, before allowing students to continue individually and remaining available for questions.

**Hospital sample.** Adolescents recruited through hospitals were administered the E-AIC while in ED waiting rooms. Notices advertising the research were placed around the waiting rooms and distributed by ED staff. Through these notices, adolescents aged 16-18 years were invited to approach researchers in the ED waiting rooms. Adolescents were not required to be
presenting for their own injury to participate, although 36.7% (39.5% of males and 35.0% of females) were found to be.

Two researchers were present in each ED waiting room during specific hours, chosen for their high adolescent presentation rates. Following verification of an adolescent’s age, information sheets and consent forms were provided. Active parental consent was required for all adolescents aged 16 years. The E-AIC was administered in a private area of the ED waiting room, without parents or others present. Adolescents were read all questions aloud and researchers entered responses on the questionnaire. These participants were given a food voucher for their time.

Results

Types of injuries experienced

Table 1 shows the proportion of adolescents from both the school and hospital settings who reported having experienced each of the different types of injuries in the past 6 months. The pattern of injuries experienced was comparable across the two samples, with the most commonly reported injury being cut, bruised or bleeding, followed by sprains and burns. Almost all females in the student sample reported being cut, bruised or bleeding (98.2%), along with greater than 95% of the male students and hospital-based females. Sprains were also reported by greater than 50% of the students and the hospital-based males, while 38.3% of the hospital-based females reported this injury. Chi-square tests revealed that there were no sex differences in reports of each of the injuries within either of the two samples.

INSERT TABLE 1

For all participants except the hospital-based males, alcohol use was most commonly associated with concussion injuries or being knocked out. Males in the hospital sample reported more alcohol use in association with cuts, bruises and bleeding injuries. Among all
participants, medical treatment was most commonly reported for broken bones. Table 2 shows the proportions of participants in both samples who reported having had at least one type of injury associated with alcohol or drug use, or medical treatment. Among the school sample, 13.3% of males and 18.2% of females reported at least one injury while drinking alcohol, while among the hospital sample 40.0% of males and 31.6% of females reported injuries associated with alcohol use. Chi-square analyses showed that there were no sex differences in reports of alcohol use, drug use or medical treatment in association with injuries among either the school students or hospital-recruited adolescents.

INSERT TABLE 2

**Sports, interpersonal violence and transport related injuries**

Table 3 presents the proportions of participants in both samples who reported experiencing sports, violence or transport-related injuries in the past 6 months. Injuries sustained during sports or athletic activities were the most commonly reported injury situations for all participants across both samples and genders. Among all participants except the school-based males, fight-related injuries were the next most commonly reported, and were experienced by 44.6% of the female school students, 36.8% of the hospital-based males and 25.0% of the hospital-based females. Among male school students, bicycle related injuries were more commonly reported (52.3%) than fighting injuries (33.7%). Chi-square tests were conducted to determine sex differences in reports of these injuries. Significant differences were only found among the school-based sample. Among the students, more males than females reported bicycle injuries, \( \chi^2(1, N = 200) = 5.35, p < .05 \), with 52.3% of males and 36.0% of females reporting injuries while riding a bicycle. Additionally, more males reported motorcycle injuries, \( \chi^2(1, N = 199) = 6.40, p < .05 \) (18.8% c.f. 7.0% of the female students), and injuries from any type of gun \( \chi^2(1, N = 200) = 7.16, p < .05 \) (10.5% c.f. 1.8% of female students).
The proportion of participants who had sustained a sport injury, at least one of the four interpersonal violence injuries or at least one of the five transport injuries are shown in Table 4. Chi-square analyses revealed that overall there were no sex differences in reports of sports, violence or transport-related injuries, within either sample. Table 4 also shows the proportion of students, among those who experienced one of these injuries, who reported associated alcohol or drug use, or medical treatment. Among all participants, alcohol use was most frequently reported in association with interpersonal violence-related injuries. Also consistently across the samples, medical treatment was most commonly reported for sports-related injuries, while reports of alcohol and drug use in conjunction with sports injuries were relatively infrequent. Again, chi-square analyses revealed that there were no sex differences in reports of injury situations associated with alcohol use, drug use or medical treatment, within either sample.

Discussion

Sport is the most common cause of injury among adolescents. This was found to be true for males and females recruited in both school and hospital settings, supporting the claim that sports injury risk is related to exposure to specific sports and not to an adolescents’ age\textsuperscript{10}. Contrary to Australian hospitalisation data\textsuperscript{12}, however, there were no sex differences in reports of sports-related injuries, whether treated or untreated. The sample sizes used in the current study may have been insufficient to establish power to detect sex differences however, with just 23 of the students and 12 of the hospital-based adolescents reporting treatment for sports injuries over the past 6 months.

Again in contrast to established fatality and hospitalisation findings, there were few sex differences in reports of transport or interpersonal violence injuries. More male than
female students reported bicycle and motorcycle injuries, as well as gun-related injuries, however these findings did not hold for the older hospital-based sample. Again, the size of the ED sample may have been insufficient to detect any statistical differences, as results trended to greater reporting of these injuries by males than females within this group. One notable result, however, was that approximately 1 in 10 of the male students reported injuries resulting from ‘shotguns, BB guns or other types of guns’. Future qualitative research may be useful to determine the injuries that students classify within this category, with the E-AIC possibly incorporating clearer items to allow students to more accurately identify these violence-related injuries.

Although the aim of this research was not to compare across samples, an interesting finding was the overrepresentation of reports of transport injuries within the school sample (61.6% of males and 48.7% of females reported at least one transport injury, c.f. 23.7% of males and 16.7% of females in the ED sample). This seems largely attributable to their more frequent experience of bicycle and motorcycle injuries. Bicycle injuries, in particular, were reported much more frequently among the student sample (and particularly among male students), a finding that supports studies of injuries by individual year of age. Male students’ reports of motorcycle injuries are of particular concern, considering their potential for greater severity, and the fact that these adolescents are below licensing age. It is evident that road safety programs aimed at early adolescents should include components on motorcycle safety.

The types of injuries reported by both students and hospital-based adolescents were mainly soft tissue, including cuts, bruises and other wounds. Sprains and strains, as well as burns, were also frequently reported. One interesting result was the proportion of adolescents, particularly in the ED sample, who reported having concussions or being ‘knocked out’ (with 28.9% of male and 13.3% of female hospital-based participants reporting this injury). Future
qualitative research may be useful to explore what these young people include within this category of injuries. It may be, considering the relatively high proportion that were said to be associated with alcohol use, that alcohol-related violence may lead to concussions, or even that adolescents interpret passing out as a result of alcohol intoxication as a form of being ‘knocked out’. Those that are not reported as being associated with alcohol however may also be sport-related concussions.

The results of this research show that alcohol use among adolescents continues to be an issue of concern, particularly as it relates to interpersonal violence and associated injuries. Almost two-thirds of the hospital-based males and just fewer than 40% of the hospital-based females who reported an interpersonal violence injury indicated that they had been consuming alcohol at the time. Additionally, just over one in every ten students who reported a transport or violence injury indicated that they had been drinking alcohol at the time.

The utility of the AIC lies in its capacity to measure all injury experiences, including those requiring medical treatment. Reports of medical treatment for specific injuries were compared with data from a study utilising the AIC with 1,983 US adolescents aged 14-18 years.22 The data from this US study closely resembled results for the older hospital-based sample in the current research. In the AIC research, 13.9% of cuts reported by the US adolescents resulted in medical treatment (c.f. 14.8% in the current research) and 11.0% of burn injuries reported by US adolescents requiring treatment (c.f. 12.9% in this study). Overall, medically treated injuries were reported by at least one-third of adolescents within each participant group (ranging from 33.3% of the female students to 44.4% of the hospital-based males).

Interestingly, just 57.1% (hospital-based males) to 76.9% (school-based females) of adolescents who reported broken bones indicated that they had received medical treatment for these injuries. It may be that those adolescents who did not seek formal medical treatment
were referring to suspected breaks of fingers or toes which they may have strapped themselves or even left untreated. In an article commenting on methodological challenges in injury research, the authors indicate that many patients do not seek medical care for contusions or sprains, and in some cases, lacerations and some kinds of fractures also go untreated. Future research may be required to further explore injuries that adolescents are reporting as breaks, and their treatment-seeking behaviour relating to these injuries.

There are several limitations to the present study, including small sample sizes and the utilisation of differing methodologies for the participant samples, the self-report nature of the questionnaire and, as reported in past studies utilising the AIC, the lack of definitions of specific injuries which may have resulted in variability in interpretation across adolescents.

As previously noted, in some cases small sample sizes may have reduced the power required to detect possible sex differences, especially among the hospital-based adolescents. However, in many cases sex differences were found. Also, although key aspects of the methodology remained consistent across the two samples, some variations may have introduced biases in responses. Most evident is the recruitment of younger adolescents from high schools and older adolescents from hospital EDs. The aim of this study was not to compare injury experiences across the participant groups, however, but to assess the utility of the measure for adolescents of different ages and different risk categories. Adolescents who have one type of injury are more likely to have also experienced others, and so sampling of adolescents presenting to EDs enables representation of higher-risk adolescents.

Students were also administered the E-AIC in a self-complete paper and pencil format, while the hospital-based adolescents were read the survey aloud by a researcher, responding to items verbally. While this may have had potential to impact on some responses, for example to items involving alcohol and drug use, it is evident that older adolescents still reported high-risk behaviour to the researchers (e.g. high proportions
reported alcohol use in conjunction with violence injuries). The use of these different data collection methodologies was in fact useful, in that it shows that the measure is able to be administered in a variety of ways in future research.

The E-AIC is a self-report measure, which may be biased by participant recall or inaccuracy. The validity of responses to self-report questionnaires involving risk behaviours such as drug and alcohol use has been contested with arguments that adolescents may not want to report sensitive issues and may give socially desirable responses. However, a number of studies have demonstrated the reliability and validity of adolescent self-report responses to interviews and school-based questionnaires involving both injury and risk behaviours such as alcohol and other drug use.

The results of this study have implications for future research and the development of injury prevention programs. The prevalence among both younger and older adolescents of injuries that do not receive formal medical treatment indicates that there may be scope for school-based injury prevention programs to be based around lessons in first aid, while also incorporating prevention components. This research provides a basis for such programs through an initial indication of the most common injuries reported by adolescents, around which first aid lessons may be developed. Targeting the most common types of injuries (e.g. lacerations, sprains and strains, and burns) and situations in which these injuries occur (e.g. sports, physical fights, and bicycle and motorcycle riding) may be a useful prevention and control strategy. In such a program, a form of which is currently being developed and trialled by the researchers, adolescents may be taught first aid techniques for dealing with injuries when they do occur, while also acquiring strategies for preventing such injuries. First aid programs may also be beneficial in order to educate young people about injuries about which they may not be so knowledgeable, for example, fractures and concussions.
The current research has also demonstrated that the E-AIC is an effective injury measure for use with both high-risk and normative adolescents, in both hospital and school settings. Its utility in terms of being a relatively inexpensive, comprehensive and time-efficient measure of injury also supports its use in future health promotion research.
References


27. Identifying information for this reference has been removed for the anonymous review process.


Wellington, 2005.


<table>
<thead>
<tr>
<th>Sample/ Injury</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Reported injury</td>
<td>Associated with alcohol</td>
</tr>
<tr>
<td>School sample (n=202)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cut, bruised or bleeding</td>
<td>95.3</td>
<td>9.8</td>
</tr>
<tr>
<td>Sprain or pulled muscle</td>
<td>74.4</td>
<td>7.8</td>
</tr>
<tr>
<td>Burn</td>
<td>45.3</td>
<td>7.9</td>
</tr>
<tr>
<td>Concussion/knocked out</td>
<td>14.0</td>
<td>25.0</td>
</tr>
<tr>
<td>Broken bone</td>
<td>15.3</td>
<td>-</td>
</tr>
<tr>
<td>Other type of injury</td>
<td>25.0</td>
<td>19.0</td>
</tr>
<tr>
<td>Hospital sample (n=98)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cut, bruised or bleeding</td>
<td>89.5</td>
<td>40.6</td>
</tr>
<tr>
<td>Sprain or pulled muscle</td>
<td>57.9</td>
<td>4.5</td>
</tr>
<tr>
<td>Burn</td>
<td>36.8</td>
<td>14.3</td>
</tr>
<tr>
<td>Concussion/knocked out</td>
<td>28.9</td>
<td>36.4</td>
</tr>
<tr>
<td>Broken bone</td>
<td>18.4</td>
<td>14.3</td>
</tr>
<tr>
<td>Other type of injury</td>
<td>13.5</td>
<td>-</td>
</tr>
</tbody>
</table>

\(^a\) Proportions based on those who reported injury.
Table 2. Reports of injuries associated with alcohol, drugs and medical treatment, by sample and sex.

<table>
<thead>
<tr>
<th></th>
<th>School sample (n=202)</th>
<th>Hospital sample (n=98)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Males</td>
<td>Females</td>
</tr>
<tr>
<td>At least one injury type associated</td>
<td>13.3</td>
<td>18.2</td>
</tr>
<tr>
<td>with alcohol use</td>
<td></td>
<td></td>
</tr>
<tr>
<td>At least one injury type associated</td>
<td>4.9</td>
<td>5.5</td>
</tr>
<tr>
<td>with drug use</td>
<td></td>
<td></td>
</tr>
<tr>
<td>At least one injury type associated</td>
<td>34.1</td>
<td>33.3</td>
</tr>
<tr>
<td>with medical treatment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Injury</td>
<td>School sample (n=202)</td>
<td>Hospital sample (n=98)</td>
</tr>
<tr>
<td>-------------------------------------------------</td>
<td>-----------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Sport or athletic activity</td>
<td>62.8</td>
<td>61.4</td>
</tr>
<tr>
<td>Interpersonal violence injuries</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical fight</td>
<td>33.7</td>
<td>44.6</td>
</tr>
<tr>
<td>Physically attacked</td>
<td>22.4</td>
<td>35.1</td>
</tr>
<tr>
<td>Stabbed</td>
<td>5.8</td>
<td>4.4</td>
</tr>
<tr>
<td>Shotgun, BB gun or other gun</td>
<td>10.5*</td>
<td>1.8*</td>
</tr>
<tr>
<td>Transport injuries</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Riding bike</td>
<td>52.3#</td>
<td>36.0#</td>
</tr>
<tr>
<td>Riding motorcycle</td>
<td>18.8^</td>
<td>7.0^</td>
</tr>
<tr>
<td>Passenger in vehicle</td>
<td>14.1</td>
<td>15.9</td>
</tr>
<tr>
<td>Pedestrian hit by vehicle</td>
<td>7.0</td>
<td>4.4</td>
</tr>
<tr>
<td>While driving</td>
<td>7.1</td>
<td>4.4</td>
</tr>
</tbody>
</table>

*#^ p < .05, difference between males and females in reports of each injury
Table 4. Reports of sports, transport and interpersonal violence injuries associated with alcohol, drugs and medical treatment.

<table>
<thead>
<tr>
<th>Sample/ Injury</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Reported injury</td>
<td>Any associated with alcohol</td>
</tr>
<tr>
<td>School sample (n=202)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sports/athletic activity</td>
<td>62.8</td>
<td>1.9</td>
</tr>
<tr>
<td>Transport</td>
<td>61.6</td>
<td>13.2</td>
</tr>
<tr>
<td>Interpersonal violence</td>
<td>48.2</td>
<td>14.6</td>
</tr>
<tr>
<td>Hospital sample (n=98)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sports/athletic activity</td>
<td>60.5</td>
<td>4.5</td>
</tr>
<tr>
<td>Transport</td>
<td>23.7</td>
<td>22.2</td>
</tr>
<tr>
<td>Interpersonal violence</td>
<td>39.5</td>
<td>60.0</td>
</tr>
</tbody>
</table>

* Proportions based on those who reported injury.