High rates of alcohol consumption and related harm at schoolies week: a portal study

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Abstract

Objective: To investigate alcohol consumption, substance use and risky and harmful behaviour among young people attending 'schoolies' week in Victoria.

Methods: Breathalyser tests and brief surveys (n=558) measuring alcohol, energy drink and illicit drug use, and experience of aggressive incidents, alcohol-related injury and unprotected sex, were undertaken with young people attending schoolies week in Lorne and Torquay.

Results: Schoolies reported consuming a mean of 8.8 drinks in the current session, with a mean blood alcohol count (BAC) of 0.05; 18.3% recorded a BAC of greater than 0.08. One in six participants had consumed alcohol with energy drinks; 7.7% reported using illicit substances. Participants who co-consumed alcohol and energy drinks recorded a higher BAC than alcohol-only users. One in five participants had experienced alcohol-related harm at schoolies week, including aggressive incidents, alcohol-related injury and engagement in unprotected sex. Each alcoholic drink consumed increased the potential for involvement in aggressive incidents by 8% and alcohol-related accidents/injuries by 5%; illicit drug use was associated with six times the likelihood of engaging in unprotected sex with a non-partner.

Conclusions and implications: Excessive alcohol consumption and experience of related harms are common among young people attending schoolies week. Harm reduction initiatives targeting schoolies week should focus on the consequences of excessive alcohol consumption, illicit drugs and the co-consumption of alcohol and energy drinks.

Key words: alcohol, youth, adolescents, Australia, schoolies, school leavers, harms, energy drinks

Schoolies week is an annual celebration in November involving young people aged 17–18 years, following the completion of secondary school. It is an important and anticipated rite of passage for many young 'schoolies' as it marks the end of their years at school and is associated with the excitement of new beginnings. For many, schoolies week offers an opportunity for extended socialisation with friends without parental or teacher supervision for the first time and, importantly, takes place around the time when many young people are reaching the legal age at which they can purchase alcohol and drive unsupervised (18 years in Australia). While it is difficult to monitor exactly how many people attend schoolies week, conservative estimates indicate that the Gold Coast is the most popular destination, attracting more than 40,000 young people over a 14-day period, with the Surf Coast of Victoria (primarily Lorne and Torquay) each attracting more than 5,000 attendees over nine days.[1]

Schoolies week has been likened to other 'rite of passage' celebrations in Western countries, such as 'spring break' in the US.[2] However, while significant resources have been devoted to understanding patterns and drivers of consumption, risk-taking and experiences of harm at spring break in the US, much less is known about schoolies week in the Australian context. For example, US research has demonstrated that young people drink more alcohol, engage in more sexual activity and have more new sexual partners during spring break than at other times of the year,[3,4] with alcohol consumption strongly correlated with a range of negative consequences.[5,6] Although some research has been undertaken at selected schoolies week locations, it is has not been as detailed or rigorous as that conducted overseas, and the international literature is limited by differences in the age range, legal frameworks (e.g. minimum legal purchase age) and environmental and social contexts in which schoolies week occurs in Australia.

Previous research at schoolies week has demonstrated that most young people expect to excessively consume alcohol and engage in a range of risk-taking behaviours during the event, and do.[1,7-9] For example, a Victorian study involving interviews with 1,116 schoolies in 2009 found that just under half of schoolies (46%) reported consuming five or more drinks in a session at schoolies week, with most reporting that they consumed more alcohol at schoolies week than they typically drink.[1] Similarly, studies

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Submitted: March 2014; Revision requested: April 2014; Accepted: May 2014
The authors have stated they have no conflict of interest.
Aust NZ J Public Health. 2014; Online; doi: 10.1111/1753-6405.12266

undertaken on the Gold Coast have found that 56% of 658 schoolies reported getting drunk in the previous 24 hours[8] and, of 1,796 schoolies, more than half of males and nearly 40% of females reported getting drunk every night at schoolies week.[7] More recently, interviews undertaken with 405 schoolies at Rottnest Island found that males consumed an average of 18 drinks and females consumed 13 drinks a day during schoolies week.[9] These studies also found that up to 58% of young people reported blacking out, 41% reported being injured, 40% reported having unprotected sex, 39% reported illicit drug use, 16% reported passing out drunk, 10% reported being involved in a fight and 7% reported driving after drinking at schoolies week.[1,7-9]

While these studies provide important information regarding young people's behaviour at schoolies week, they are limited by their use of retrospective surveys, lack of objective measures of alcohol consumption or intoxication, and limited information about specific consumption practices that have been of community concern, such as combining alcohol with energy drinks (AEDs) or illicit drugs.[10,11] As such, we have limited data that provide robust indicators of alcohol and drug use and related harms among young people attending schoolies week.

One approach gaining increasing traction internationally in terms of assessing actual drinking behaviour is the collection of brief surveys with patrons in or outside licensed venues or busy entertainment districts.[12-15] Voas and colleagues[15] labelled such interviews 'portal studies', highlighting advantages over traditional surveys in terms of reducing recall bias and allowing survey teams the opportunity to collect more objective data. A further benefit of such a targeted design is access to a specific cohort of patrons who are difficult to recruit using traditional survey methodologies, such as mail, telephone and online.

In this study, we used this targeted approach across the two most popular schoolies week sites in Victoria to investigate: 1) alcohol consumption and the level of intoxication among schoolies; 2) the types of substances being used by schoolies, including energy drinks and illicit drugs; and 3) engagement in risky behaviour and experience of harms among schoolies, as well as the relationship between particular consumption practices and harmful or risky behaviour.

Methods

Procedure

Two teams of 8–10 trained researchers attended two popular destinations on Victoria's surf coast: Lorne and Torquay. Both coastal towns, with small populations, have a large influx of young people for schoolies week each year.

Surveys were conducted in November 2012 on four nights over two weekends, 'bookending' schoolies week. Teams collected data between 7 pm and 11 pm in an attempt to target the busiest times (based on information from planning meetings with key stakeholders in both towns). Each team was allocated a team leader who was responsible for liaising with venue staff, police and local community workers, identifying survey locations, managing the behaviour and performance of the interviewers, and monitoring safety. Team leaders operated calibrated Andatech Alcosense Prodigy breathalyser equipment and Securetec DrugWipe 6S saliva drug swabs. Breathalysers provided an estimated reading of blood alcohol concentration (BAC), and saliva drug swabs tested for the presence of opiates, cannabis, cocaine, and ecstasy/amphetamine/methamphetamine type substances. Staff were trained in survey techniques and basic safety awareness. All data was collected using Tap Forms Software on Apple iPhones and iPod Touches.

Participants were drawn from people attending or queuing outside licensed venues, and public areas in and around schoolies hotspots, such as caravan parks, accommodation resorts and beaches. All interviews were conducted in publicly accessible areas or common areas of accommodation properties. No interviews were conducted inside licensed venues. Each member of the research team randomly approached participants, briefly explained the study and invited them to participate in a three-minute survey. An information card was provided to each respondent containing plain language ethics and consent information, and verbal consent was obtained before proceeding with the interview.

Participants were breathalysed at the conclusion of the survey. Twenty-five saliva drug swabs (5% of sample) were offered randomly to participants in order to validate self-report, and were offered and completed at the conclusion of the interview if participants consented. All participants were offered a lollipop as incentive for participation. Ethics approval for the study was obtained via the Deakin University Human Research Ethics Committee.

Measures

The patron survey consisted of seven domains:

- Demographics: Gender, age, postcode of residence.
- Alcohol use: Current session consumption (in standard drinks; 10 grams of alcohol).
- AED Use: Current session consumption (in standard drinks; 10 grams of alcohol and one standard 250 mL energy drink can. AEDs included premixed caffeinated alcoholic drinks or drinking an energy drink in the same session as alcohol).
- Illicit drug use: Current session illicit drug use (substance type).
- Experience of harm and risk taking: Witnessed/involvement in aggressive incident(s), self-defined experience of alcohol-related injury/accident(s), and/or involvement in unprotected sex (without a condom) in the past month or at schoolies week. Participants were also asked about risky sex, defined as unprotected sex with someone who is not a long-term partner.
- Patron intoxication: BAC (measured as mg of alcohol per 100 mL of blood) was recorded and, if participants were offered a drug swab, the result was also recorded. Prior to the breathalyser test, participants were asked to estimate their own intoxication on a scale of 0–10, with 10 being most intoxicated. At the conclusion of the survey, interviewers entered their own 0–10 rating of participant intoxication, based on the presence of observable symptoms such as loss of coordination, slurred speech, staggering/falling over, glassy or red eyes, confusion or disjointed responses, loud or boisterous behaviour, giggling, hyperactivity or talking very quickly, or slow/dopey responses.

Questions about the 'current session' referred to the 12 hours preceding the interview.

Analysis

Survey data were directly entered into the electronic survey tool, and then extracted into IBM SPSS Statistic v.21.[16] Frequency and percentage descriptive statistics were calculated for all categorical variables. Mean, standard deviation (SD) and range figures

were calculated for numerical and scale variables. Paired sample t-tests, independent sample t-tests, and chi-square tests were used to test the statistical significance of differences between and within sample groups. Effect size of differences is represented using Cohen's *d* statistic. Group differences (such as involvement in aggressive incidents, substance use behaviour and intoxication levels) were explored using logistic regression to determine the predictive value of experiencing harms, reported as odds ratios. Assumptions of homogeneity of variance and multicollinearity were tested prior to analysis.

Results

Participants

A total of 752 attendants were approached and 96.0% agreed to participate, resulting in 722 completed interviews. Final analyses were restricted to schoolies, i.e. participants aged 19 and over were excluded (n=131), as were participants who reported that they were not attending schoolies week (n=33), resulting in a final sample of n=558.

The sample consisted of schoolies from Lorne (n=310) and Torquay (n=248). About half (54.5%) were male, with all participants aged either 17 (18.1%) or 18 years (81.9%). According to Australian Statistical Geography Standard (ASGS) categories,[17] 47.8% of the sample were from major cities, 36.4% from inner regional areas, 14.3% from outer regional areas and 0.2% from remote areas. Almost all (97.5%) were Victorian residents.

Level of intoxication and substance use in the current session

Table 1 shows the levels of intoxication and substances consumed by the sample while at schoolies week. In the 12 hours preceding interview, 92.7% of participants had consumed alcohol, and 15.6% had consumed AEDs. Independent sample t-tests indicate that male and female participants reported significantly different levels of current session alcohol use and self-rated intoxication, and interviewers recorded significantly different levels of BAC and interviewer-rated intoxication for males and females.

There was a positive correlation between level of self-reported intoxication and the interviewer rating of intoxication (r=0.63, p<0.001). Further, there was a positive correlation between level of self-reported intoxication and BAC reading (r=0.59, p<0.001). Average recorded BAC amongst participants who had consumed alcohol was 0.05 (range: 0.00 to 0.19); however, 18.3% of the sample recorded BAC readings of greater than 0.08.

Figure 1 illustrates the mean hourly distribution of self-reported number of drinks and BAC at time of interview among participants who reported having consumed alcohol during the current session (n=515). The highest number of drinks were reported during the hours of 8 pm and 9 pm, whereas mean BAC peaked at 11 pm at 0.054.

Participants who had used AEDs at time of interview had consumed significantly more standard drinks than alcohol-only users (11.34 versus 8.30; t=4.36, p<0.001; moderate effect size, d=0.38). Participants who reported consuming AEDs prior to interview reported feeling more intoxicated than alcohol-only users (4.70 versus 4.13; t=2.23, p<0.05, d=0.20), were rated as more intoxicated by interviewers (4.00 versus 3.22; t=2.81, p<0.01, d=0.26), and recorded a higher BAC (0.059 versus 0.045; t=2.66, p<0.01, d=0.23).

In total, 43 participants (7.7%) reported using illicit substances in the current session, including cannabis (7.0%), methamphetamine (1.3%), ecstasy (0.7%), and heroin/opiates (0.2%). Two participants refused to answer illicit substance items. Of the 25 saliva tests, three tests returned positive results for cannabis, each confirming self-reported substance use. No other swabs returned positive results for any substances, supporting self-report data.

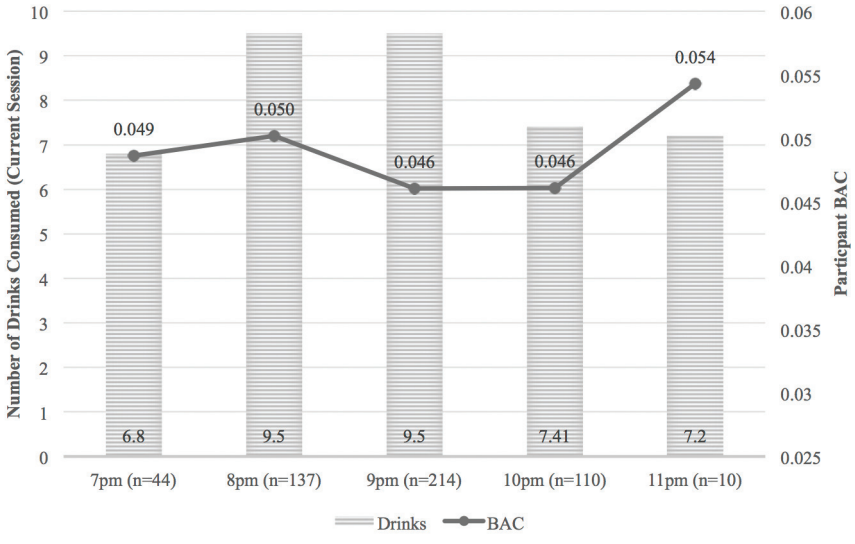
Participants who reported using illicit drugs at time of interview rated themselves as more intoxicated than consumers who had not (5.14 versus 3.90; t=-4.60, p<0.001; moderate/strong effect size, d=-0.53), and were also rated as more intoxicated by interviewers (4.45 versus 3.02; t=-3.84, p<0.001; moderate effect size, d=-0.35). Further, illicit substance users had consumed significantly more alcoholic drinks in the previous 12 hours (11.86 versus 7.90; t=-4.09, p<0.001; moderate effect size, d=-0.35), however this did not translate into significant differences in BAC.

Table 1: Alcohol use and intoxication in current session.

Variable	Male Mean (SD)	Female Mean (SD)	Total Mean (SD)	t	Effect Size (d)
Drinks in Current Session (Range 1-35)	10.72 (6.61)	6.44 (3.80)	8.80 (5.91)	8.71**	0.77
AEDs in Current Session (Range 1-17)	2.24 (1.53)	2.70 (3.10)	2.39 (2.26)	0.89	-
BAC (Range 0-0.19)	0.05 (0.05)	0.04 (0.04)	0.05 (0.04)	4.01**	0.36
Self-Rated Intoxication (Range 0-10)	4.58 (2.00)	3.78 (2.15)	4.22 (2.10)	4.31**	0.38
Interviewer-Rated Intoxication (Range 0-10)	3.68 (2.18)	2.94 (2.20)	3.34 (2.21)	3.60**	0.34

***=p<0.001*

Figure 1: Hourly distribution of mean number of alcoholic drinks consumed in current session and mean BAC at time of interview (n=515).



Risky behaviours and harms experienced

Rates of experiencing harm over the past month as well as during schoolies week are reported in Table 2. Using a composite summed count of aggressive incidents, unprotected sex and alcohol-related injuries/accidents, one-third (33.3%) of participants reported experiencing any type of alcohol-related harm in the past month. Overall, more than one-fifth (21.1%) of schoolies had experienced alcohol-related harm at schoolies week.

Figure 2 shows prevalence rates of key risk and harm behaviours at schoolies week with columns representing male and female participants, and participants who recorded BAC >0.08. The most common risky behaviours engaged in were drinking above risky levels (5+ drinks),[18] as well as AED co-consumption. Chi-square analyses indicate that BAC level, alcohol consumption, AED use and measures of harm and risk taking did not vary significantly between 17 and 18-year-old schoolies.

Table 2: Harms experienced in the past month and at schoolies week.

Variable	Past Month	At Schoolies Week
Any Harm*	33.3%	21.1%
Male	35.9%	19.4%
Female	29.4%	22.4%
Any Assault	9.3%	3.2%
Male	12.8%	3.9%
Female	5.2%	2.4%
Physical Assault	4.8%	2.0%
Male	8.2%	3.0%
Female	0.8%	0.8%
Verbal Assault	5.7%	2.0%
Male	6.6%	2.0%
Female	4.8%	2.0%
Sexual Assault	0.5%	0.4%
Male	1.0%	0.7%
Female	0.0%	0.0%
Unprotected Sex	22.2%	5.9%
Male	25.3%	5.3%
Female	18.1%	6.5%
Unprotected Sex not with Partner	10.0%	3.6%
Male	13.2%	3.0%
Female	6.0%	4.0%
Alcohol Related Injury/Accident	22.8%	17.0%
Male	21.1%	15.5%
Female	23.0%	18.1%

** Composite variable: all reported aggressive incidents, unprotected sex, and alcohol-related injuries/accidents*

Table 3 lists the significant predictors and associated odds ratios of experience of aggressive incidents, unsafe sex with a non-partner and alcohol-related accidents/injuries at schoolies week. Number of alcoholic drinks consumed in the 12 hours before interview was most predictive of involvement in aggressive incidents at schoolies week (χ^2=11.652, *df*=5 *p*=<0.05). Results indicate that for each standard drink consumed, risk of involvement in an aggressive incident increased by about 8% (95%CI 1%-15%).

In a second regression analysis, illicit drug use was found to be predictive of unprotected sex with a non-partner at schoolies week (χ^2=18.916, *df*=5 *p*=<0.01). Results indicate that if the participant reported consuming illicit drugs at the time of interview, risk of involvement in unprotected sex at schoolies week increased about six times (OR=6.283, 95%CI 2.14-18.76).

In a third regression analysis, the number of alcoholic drinks consumed in the past 12 hours was predictive of increased risk of accident/injury (χ^2=24.495, *df*=5 *p*≤0.01); and for each standard alcoholic drink consumed, risk of involvement in an alcohol related accident/injury increased by about 5% (95%CI 1%-9%). On the other hand, illicit drug use and identifying as male were associated with reduced likelihood of alcohol-related injury/accident at schoolies week.

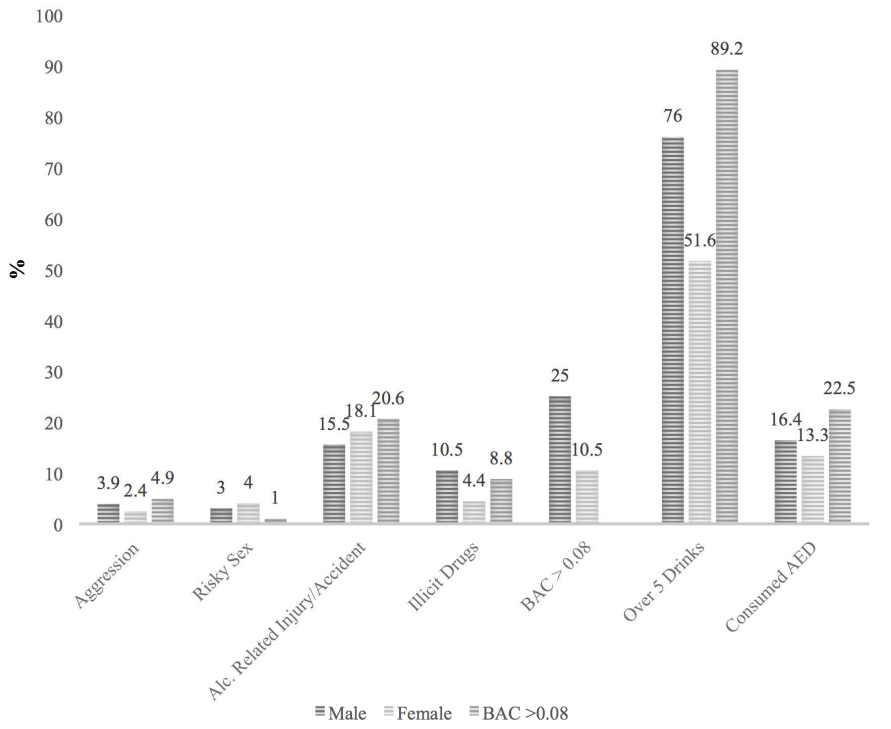
Discussion

This study provides novel information on the consumption practices and behaviours of young people attending schoolies week. It builds on previous schoolies research by incorporating objective measures of alcohol and drug use, investigates consumption practices of concern, such as alcohol and energy drink use, and reports on schoolies data collected for the first time in Victoria since 2009.

Consistent with previous research, our study confirmed the normative nature of excessive alcohol consumption at schoolies week, with more than 90% of young people interviewed consuming alcohol, with an average consumption of more than 8 standard drinks in the previous 12 hours (and more than 10 drinks for males). About one in five participants was highly intoxicated, with a BAC of greater than 0.08.

The intoxication levels of this sample were lower than other studies, such as that of Hughes et al., who found that participants aged 16–35 in the UK had a median BAC of 0.10.[19] However, the UK data were collected in the night-time economy, with an older sample, at a time much later in the night (up to 5 am). Our study is the first schoolies research to objectively measure BAC. Given the high number of self-reported drinks

Figure 2: Prevalence of key risk/harm behaviours at schoolies week (%).



among the sample, it was surprising that the mean BAC was not higher than 0.05, and suggests that participants may have either over-reported their alcohol consumption or consumed these drinks over a substantial time period. Further, those with the highest BAC (at 11 pm) self-reported fewer standard drinks, indicating that our data may have teased out two distinct drinking patterns at schoolies – those who consumed alcohol during the day over a longer period of time (and consumed more drinks but had a lower BAC), and those who began drinking alcohol in the evening and consumed alcohol faster, so had a higher BAC. These findings suggest that prevention and harm reduction initiatives targeted at schoolies may need to consider the different ways in which young people drink in and around popular schoolies destinations.

For the first time among schoolies populations, our data reported on combined alcohol and energy drink consumption, and we found that one in six participants had consumed AEDs, with those participants exceeding the daily recommended limit of two energy drinks per day.[20] Importantly, AED consumption was significantly correlated with number of drinks consumed, intoxication and BAC, consistent with international research among college populations, which has found that patrons leaving licensed venues who had consumed AEDs were more then three times more likely to have a BAC of 0.08 or more compared to non-AED consumers.[21] It has been suggested that AEDs may facilitate alcohol consumption because the caffeine in energy drinks reduces sedation and increases stimulation, thereby masking signs of intoxication (meaning the drinker is more likely to be involved in risk-taking activities).[10]

Given the clever and appealing marketing of AEDs towards young people and their sweet, palatable taste,[22,23] it is not surprising to find such high levels of use at schoolies. However, AED use may have been elevated by the presence of a Red Bull promotional team at the Lorne site offering free Red Bull cans to schoolies.

More than one in five young people had been involved in an aggressive incident at schoolies week. The number of drinks in the current session correlated with aggressive incidents, with each drink increasing the potential for involvement in aggressive incidents by 8%. Approximately 6% of participants engaged in unprotected sex at schoolies week. While drug use was lower among the sample than some other previous schoolies research,[1,8,24] it was associated with six times the likelihood of engaging in unprotected sex with a non-partner. Finally, more than one in six participants reported an alcohol-related accident or injury during schoolies week. Number of drinks predicted involvement in alcohol-related injury/accidents, with each drink increasing the risk by 5%. Interestingly, drug use and male gender predicted reduced involvement in alcohol-related accidents/injuries; this might be explained by the question pertaining specifically to alcohol (rather than substance use) and females being more likely to report accidents/injuries that males may have considered non-severe; however, more research is needed to confirm this interpretation.

There are several limitations of the study that warrant consideration. First, data collection finished at 11 pm, meaning that we did not capture the full daily episode of consumption. Second, although portal or patron interviews have substantial benefits in terms of capturing hard to reach populations, our survey does not represent all young people who attended schoolies in Victoria, for example, participants who were congregating in private spaces were not interviewed. Further, because interviews were conducted on two consecutive weekends, the possibility exists for participants to have been interviewed twice. Finally, our findings cannot be generalised outside of Victoria, as previous research has identified that many more people travel interstate for schoolies week to the Gold Coast.[24] The range of consumption practices and risky behaviours engaged in are likely to differ between locations, highlighting the importance of conducting similar research across multiple schoolies sites in Australia to better target intervention and health promotion activities.

Table 3: Binary logistic analyses predicting harms at schoolies week.

	Aggressive incident at schoolies week (yes/no)	Unsafe sex with non-partner at schoolies week (yes/no)	Alcohol-related injury/accident at schoolies week (yes/no)
Gender			
Male	1.01 (0.33-3.08)	1.86 (0.65-5.31)	0.58 (0.35-0.96)*
Female	ref	ref	ref
Illicit Drug Use			
Use illicit drugs in past 12 hours	2.57 (0.75-8.86)	6.28 (2.10-18.76)**	0.28 (0.14-0.60)**
Alcohol (past 12 hours)			
BAC	3.027 (0.00-268284.80)	0.00 (0.00-3.80)	4.496 (0.02-1206.01)
No. of alcoholic drinks consumed in past 12 hours	1.079 (1.01-1.15)*	1.07 (0.99-1.16)	1.046 (1.01-1.09)*
AED Use (past 12 hours)			
No. of AED consumed in past 12 hours	1.08 (0.84-1.38)	1.14 (0.93-1.40)	0.75 (0.41-1.37)

*Note: *= p < .05, ** = p < .001, ref= reference category.*

Conclusion

This study confirms previous schoolies research by demonstrating high levels of alcohol consumption and related harms among young people attending schoolies week in Victoria in 2012. Of particular concern is that experience of harms at schoolies week has not reduced over time, despite local and state governments initiating a range of diversionary activities and support mechanisms for young people during the event (such as increased presence of police and security staff, increased lighting, the provision of alcohol-free leisure activities and – in some locations – charitable organisations offering food, water and advice).[24] However, these strategies are reactive, rather than preventative. As such, it may be that schoolies prevention strategies are needed that occur prior to the event, before expectations about schoolies are shaped; for example, through interventions targeted at schools, parents or peers (see Quek et al.)[25] In particular, our data suggests that preventative interventions should focus on the potential consequences of excessive alcohol consumption, AEDs and illicit drug use, as these were associated with greater involvement in aggressive incidents, unprotected sex and alcohol-related injury. By shaping young people's expectations and increasing their knowledge, a well-targeted intervention has the potential to reduce harm at schoolies week, as well as having lasting benefits.

Acknowledgements

This research was funded by a research grant from the Australian Research Council (LP110200699), in partnership with VicHealth and Eastern Health. Nicolas Droste is funded by an ARC PhD scholarship (LP110200699) and Amy Pennay is funded by an NHMRC Early Career Fellowship (APP1069907). The authors would like to acknowledge the participants, Lucy Bongiorno and the fieldworkers, volunteers from Red Frogs, staff and management of the Torquay Hotel and Mantra Lorne, and the City of Greater Geelong and Surf Coast Shire Council.

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