Drinking history, current drinking and problematic sexual experiences among university students

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Abstract

Objective: To estimate the prevalence of potentially harmful sexual experiences attributed to drinking in university students, their association with current drinking, and the influence of past high school binge drinking and age at first drink.

Method: A web-based survey of undergraduates on six university campuses in New Zealand (n=2,548; response rate 63%) measured self-reported alcohol consumption and harms from own or others' drinking in the preceding four weeks, previous binge drinking and age of drinking onset.

Results: Among drinkers during the four weeks, 5% of women and 8% of men reported unsafe sex due to drinking, 3% of women and 4% of men had sex they were unhappy about at the time, and 8% of women and 9% of men had sex they later regretted. Unwanted sexual advances due to someone else's drinking affected 21% of women and 12% of men, with 0.5% of both men and women reporting sexual assault. Current level of drinking was positively associated with all outcomes, but most strongly with unsafe sex. Binge drinking at high school and early drinking onset were also associated with each outcome, and only partly explained by current drinking.

Conclusion: Unsafe, unhappy and unwanted sexual experiences attributed to drinking are common at university and associated with heavier drinking, previous high school binge drinking and early drinking onset.

Implications: Despite an incomplete understanding of contributing causes, reduction in hazardous drinking among university students is likely to reduce risky and unwanted sexual experiences along with other alcohol-related harm. Strategies to reduce drinking at earlier ages are also warranted.

Key words: alcohol, alcohol-related harm, students, sex, sexual behaviour.

Aust NZ J Public Health. 2010; 34:487-94

doi: 10.1111/j.1753-6405.2010.00595.x

University students in New Zealand, as in a number of other countries, have a high prevalence of hazardous drinking and drink more than their non-student peers.[1] A range of consequent harms have been documented, from the common and relatively minor, such as vomiting or missing classes due to one's drinking[2,3] to the less common and more serious, such as being arrested for drunken behaviour or being sexually assaulted due to someone else's drinking.[4]

In New Zealand, students often live in environments such as residential halls and shared houses where heavy drinking is the norm and encouraged.[5] The minimum legal purchase age for alcohol (MLPA) is 18 years and so most university students can obtain alcohol legally. Binge drinking is already common in high school and many students have been drinking from their early teens. Approximately 55% of boys and 40% of girls have had a full drink by the age of 13.[6] The mainstream drinking culture is of a northern European, or 'dry' pattern of alcohol use, characterised by heavy episodic drinking and drunkenness, and alcohol is very easy to access.

As well as inhabiting a pro-alcohol environment, university students are commonly in the process of learning about their sexuality and managing their sexual relationships. For many it is a period of their lives where they are sexually active but not in long-term stable partnerships.[7] A number of cross-sectional and longitudinal studies of students have shown associations between heavy alcohol use and risky sexual behaviour[8-11] or experiencing sexual assault.[8,12] A review of college studies in 2002[9] concluded that drinking was strongly related to the decision to have sex and to have multiple or casual partners, but did not have a consistent relationship with condom use. In the only previous New Zealand study, we reported the strong association of risky and unwanted sex with hazardous patterns of drinking as measured with AUDIT scores in a single university campus.[8] The consequences of these risky and unwanted sexual experiences can be substantial, and include regret, shame and emotional distress, sexually transmitted infections (with possible impacts on future fertility), and unwanted pregnancies.

Students come into the university environment with variable prior experience of alcohol, including the age they started drinking and their drinking behaviour in high school. Starting to drink at an early

Submitted: September 2009 **Revision requested:** January 2010 **Accepted:** February 2010

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age has been associated with heavier drinking in adolescence and later life[13-16] and with some specific alcohol-related harms, such as unintentional injuries, drink-driving crashes and fights after drinking.[16-19] Analysis from the 1999 Harvard Campus Alcohol Study showed an association between early age at first drunkenness and unplanned and unprotected sex at university. Students who reported being first drunk before age 13 had twice the odds of unplanned sex and 2.2 times greater odds of unprotected sex because of drinking compared with those who never drank until age 19, after controlling for current pattern of drinking and a range of other demographics and risk behaviours.[17]

Adolescent binge drinking has also been associated with heavy drinking trajectories in later life and a range of poor health and social outcomes.[20] With respect to sexual behaviour, longitudinal research on alcohol and other substance use between age 10 and age 21[10] showed that early-onset binge drinkers had significantly more sexual partners than non-binge drinkers at age 21.

The degree to which early onset of drinking, adolescent binge drinking and hazardous current drinking are contributing causes of risky sexual behaviour and unwanted sexual experiences is unclear. There is a wealth of personal and environmental influences that might confound these relationships, and the importance of these will vary by population group and context. However, the contribution of alcohol is potentially modifiable and could be reduced over a time-frame shorter than for other putative contributing causes. Thus, there may be potential to reduce harm and improve sexual health through interventions related to drinking.

The aim of this study was to measure the prevalence of risky and unwanted sexual experiences that university students attribute to their own or other people's drinking, and examine how strongly these experiences are associated with current and past drinking experiences in order to consider options for intervention.

Methods

A random sample of 4,071 full-time undergraduate university students aged between 17 and 25 years was taken from enrolment records of six New Zealand university campuses. All eight New Zealand universities had been invited to participate in the study and of the five that agreed, one had two campuses that took part. Māori (indigenous) students make up only 8% of the university population, so oversampling of students who had specified this ethnicity on enrolment was used at each campus to increase the power of the study for this population. Further details of sampling methods have been published.[3]

Selected students received a letter which invited them to participate in an internet-based survey as part of the Tertiary Student Health Project, and provided a web address for the survey form. Details of the recruitment and data collection methods have been described in detail previously.[21,22] Data were collected via a confidential online computerised survey that was completed at a time and place of the respondent's choice.

Measures

The questionnaire included the definition of a standard drink (10 g of ethanol in New Zealand). Illustrations of the number of standard drinks in commonly encountered drink containers were included on the web pages that had questions about quantities of alcohol.

The first three questions of the Alcohol Use Disorders Identification Test (AUDIT) questionnaire[23] were used to assess alcohol consumption, using a four week time frame. Students were asked about the number of drinking days, the average number of drinks per drinking day, and number of heavy drinking days (six or more standard drinks). We combined these questions to derive an AUDIT-Consumption score (AUDIT-C) on a scale of 0-12.[24] A score of four or more has high sensitivity and specificity for risky drinking; reported as 93% and 86% respectively in the US adult population.[25]

Respondents were asked about the age at which they had their first full standard drink of alcohol. The responses to this question were constrained by a drop down menu where the youngest category was nine or younger, the oldest was 25 or older and between these was an option for each year of age. The frequency of binge drinking in their final year of high school (>4 drinks for women, >6 drinks for men) was collected in eight ordered categories, from "Never" to "Four or more times per week".

Under the heading "Alcohol related consequences" three items related to sexual behaviour were included in a list of 17 experiences students may have had in the past four weeks as a result of their drinking. These were "Unsafe sex", "A sexual situation you weren't happy about at the time", and "A sexual encounter you later regretted". The latter two items have been analysed together, as they relate to emotional and mental health outcomes rather than the physical risks associated with unsafe sex. The following section of the questionnaire asked about the effects of other students' drinking including whether the respondent had "Experienced an unwanted sexual advance" or "Been a victim of sexual assault or date rape".

Analysis

Sample weights were constructed for the six campuses and were applied in all descriptive and inferential statistics using the survey procedures in STATA 10.[26] Multivariable logistic regression models, employing fractional polynomials, were used to estimate associations between variables while adjusting for the effects of potential confounders (age, sex ethnicity, residence type and campus). A second set of models assessed the contribution of current drinking to the associations between past drinking variables and the outcomes of interest. Analyses were adjusted for potential clustering within campuses. Participants who reported not having had a drink of alcohol in the past four weeks were excluded from analyses involving the consequences of one's own drinking, but included in analyses of effects of the drinking of others.

Results

Overall, 2,548 students took part (response rate 63%). The response rates for different campuses ranged from 53% to 72%, but did not differ by age or gender.

Table 1 summarises relevant characteristics of the study population. The mean age of students was 20.2 years, and 65% were of New Zealand European ethnicity, with 15% Chinese and 8% Māori. Most participants were living with other students: 56% lived in shared rental accommodation and 17% in residential halls administered by, or affiliated with, the University. A further 19% lived with their parents, and less than 10% in all other situations.

Table 1: Characteristics of the study population, weighted for sampling design.

	Whole sample (N=2,548)	Men (n=1,006)	Women (n=1,542)
Age group (%)			
17-19	39.7	33.9	43.5
20-22	49.9	54.2	47.1
23-25	10.4	11.9	9.4
Ethnicity (%)			
NZ European	65.5	61.6	68.0
Māori	8.0	7.2	8.5
Chinese	14.9	18.3	12.6
Other	11.7	12.9	11.0
Place of residence (%)			
Residential Hall	16.9	15.4	17.9
Share flat/house	55.8	56.1	55.6
With parents	18.9	20.4	17.9
With partner and/or children	2.9	2.0	3.5
Alone	1.7	2.5	1.1
Private board	2.6	2.4	2.8
Other/missing	1.3	1.3	1.2
Age at first full drink (%)			
10 or less	5.4	8.5	3.4
11-12	11.4	12.4	10.7
13-14	31.3	27.2	34.0
15-17	40.0	39.6	40.2
18 or more	11.9	12.4	11.7
Binge drinking in last year of high school (%)			
None	26.9	26.7	27.1
Less than monthly	20.8	20.6	20.9
1-3 times a month	28.8	28.0	29.4
At least once a week	23.4	24.8	22.6
Any alcohol use in past year (%)	88.0	88.4	87.7
Any alcohol use in past four weeks (%)	81.1	81.2	81.1
Current drinking (AUDIT-C score)			
0-3	31.6	31.1	32.0
5-8	44.7	41.5	46.8
9-12	23.7	27.5	21.3

Eighty-eight per cent of respondents reported having drunk alcohol in the past year and 59% in the week before the survey, with no evidence of a difference between men and women. Almost 50% of both male and female students recalled having had their first full alcoholic drink before the age of 15 years, with more boys than girls doing so before age 10. When asked about heavy drinking occasions in their final year of high school (>4 drinks for women, >6 drinks for men), about 27% of students reported none, but half were drinking heavily once a month or more.

Among both men and women, 37% of respondents reported at least one episode of heavy drinking in the past week. The AUDIT-C scores of participants are summarised at the foot of Table 1, with 68% scoring more than 3, indicating a hazardous level of drinking.

Of the students who had done any drinking in the past four weeks, at least one episode of unsafe sex due to drinking was reported by 8.3% of men and 5.3% of women in that time (Table 2). As well as this, 3.1% of women and 4.1% of men reported having been in a sexual situation they weren't happy with due to their drinking in this same period, and 8.4% of women and 9.1% of men reported a sexual encounter that they later regretted. While some single experiences may have met more than one of these criteria, 12.3% of women and 16.1% of men reported at least one of these experiences in the past four weeks.

When asked about the second-hand effects of other people's drinking, 12.0% of men and 21.1% of women had experienced unwanted sexual advances, and 0.6% of men and 0.5% of women reported sexual assault or date rape in the past four weeks that they attributed to the drinking of others.

Reporting at least one episode of unsafe sex in the past four weeks attributed to drinking was strongly associated with level of current alcohol consumption, as shown in Table 3. The odds ratio of 1.33 per unit on the AUDIT-C scale equates to an odds ratio of 10.7 when comparing those with a nonhazardous drinking score (0-3) with those who scored 9-12. These events were more common in men even after adjustment for drinking pattern, in Māori students, and in students living in shared houses. Unhappy

Table 2: Prevalence of alcohol-related adverse sexual experiences in the four weeks preceding the survey.

	Whole sample		Men		Women	
	%	(95% CI)	%	(95% CI)	%	(95% CI)
Risky and unwanted sexual experiences as a result of drinking alcohol[a]						
"Unsafe sex"	6.4	(3.9, 9.0)	8.3	(5.1, 11.5)	5.3	(3.2, 7.4)
"A sexual situation you weren't happy with at the time"	3.5	(2.4, 4.6)	4.1	(2.5, 5.8)	3.1	(1.0, 5.2)
"A sexual encounter you later regretted"	8.7	(6.2, 11.1)	9.1	(7.6, 10.5)	8.4	(5.0, 11.8)
One or more of these experiences	13.8	(11.5, 16.0)	16.1	(13.9, 18.3)	12.3	(9.0, 15.7)
Unwanted sexual experiences as a result of someone else's drinking						
Experienced unwanted sexual advance	17.6	(14.2, 21.0)	12.0	(10.2, 13.8)	21.1	(16.5, 25.6)
Been a victim of sexual assault or "date rape"	0.6	(0, 1.3)	0.6	(0, 1.4)	0.5	(0, 1.2)

Note: a) Limited to students who reported some drinking in past four weeks.

and regretted sexual encounters were also strongly associated with heavier drinking, but there was less variation by demographic characteristics.

Reporting of unwanted sexual advances due to others' drinking was twice as common in women as men, and less frequent among students of Chinese and less common ethnic groups. The experience of unwanted sexual advances due to other people's drinking was significantly associated with the drinking level of the respondent but less strongly than for other outcomes.

The two measures of drinking history, binge drinking frequency in the final year of high school and age at first full drink of alcohol, were both associated with current drinking pattern at university, as seen in Figure 1.

Table 4 shows the models for the relationship between high school binge drinking and alcohol-related adverse sexual experiences at university. High school binge drinking was a significant predictor of all of these outcomes, whether attributed to the respondent's own drinking or the drinking of others (Table 4, Model 1). The association was particularly strong for unsafe sex. Despite the inclusion of the AUDIT-C score in the unsafe

Table 3: Association of current drinking with alcohol-related adverse sexual experiences.

	Unsafe sex due to own drinking			Unhappy or regretted sexual experiences due to own drinking			Unwanted sexual advances due to others' drinking		
	AdjOR	(95% CI)	*p*-value	AdjOR	(95% CI)	*p*-value	AdjOR	(95% CI)	*p*-value
Current drinking (AUDIT-C)	1.33	(1.22, 1.45)	<0.001	1.28	(1.23, 1.34)	<0.001	1.18	(1.13, 1.23)	<0.001
Age	1.04	(0.97, 1.12)	0.293	0.96	(0.86, 1.06)	0.425	0.94	(0.91, 0.96)	<0.001
Sex									
Women	1.00		0.016	1.00		0.063	1.00		<0.001
Men	1.35	(1.06, 1.73)		1.21	(0.99, 1.49)		0.48	(0.37, 0.62)	
Ethnicity									
NZ European	1.00		0.020	1.00		0.275	1.00		0.023
Māori	1.51	(1.12, 2.03)		1.06	(0.83, 1.36)		1.15	(0.95, 1.40)	
Chinese	0.58	(0.28, 1.20)		0.61	(0.25, 1.50)		0.55	(0.32, 0.95)	
Other	0.58	(0.23, 1.45)		0.83	(0.34, 2.02)		0.63	(0.40-0.98)	
Type of residence									
Residential Hall	1.00		0.066	1.00		0.628	1.00		0.036
House sharing	1.53	(1.10, 2.13)		0.93	(0.58, 1.49)		0.77	(0.47, 1.27)	
Parent/guardian	1.30	(0.77, 2.18)		0.55	(0.17, 1.78)		0.73	(0.47-1.14)	
Other	1.51	(0.48, 4.71)		0.78	(0.33, 1.83)		1.84	(1.15, 2.96)	

Note: Adjusted odds ratios (AdjOR) and 95% confidence intervals from logistic regression models.

Table 4: Association of high school binge drinking with risky and unwanted sexual experiences due to drinking at university (Model 1), and the contribution of level of current drinking (Model 2). Adjusted odds ratios (AdjOR) and 95% confidence intervals from multivariable models.[a]

	Model 1			Model 2		
	AdjOR	(95% CI)	*p*-value	AdjOR	(95% CI)	*p*-value
Unsafe sex due to own drinking						
Current drinking (AUDIT-C)	-			1.24	(1.15, 1.33)	<0.001
High school binge drinking						
None	1.00		<0.001	1.00		<0.001
Less than monthly	7.82	(1.29, 47)		6.58	(1.09, 40)	
1-3 times a month	11.87	(1.82, 77)		7.56	(1.23, 46)	
At least once a week	21.27	(3.14, 144)		10.88	(1.91, 62)	
Unhappy or regretted sexual experiences due to own drinking						
Current drinking (AUDIT-C)	-			1.24	(1.13, 1.36)	<0.001
High school binge drinking						
None	1.00		<0.001	1.00		0.435
Less than monthly	0.91	(0.45, 1.84)		0.76	(0.41, 1.41)	
1-3 times a month	1.18	(0.60, 2.36)		0.73	(0.40, 1.33)	
At least once a week	2.64	(1.81, 3.87)		1.30	(0.71, 2.40)	
Unwanted sexual advances due to others' drinking						
Current drinking (AUDIT-C)	-			1.15	(1.05, 1.26)	0.002
High school binge drinking						
None	1.00		<0.001	1.00		<0.001
Less than monthly	1.18	(0.72, 1.93)		0.86	(0.44, 1.67)	
1-3 times a month	1.98	(1.40, 2.81)		1.13	(0.59, 2.17)	
At least once a week	2.70	(1.76, 4.15)		1.32	(0.55, 3.15)	

Note: a) Logistic regression models included age, sex, ethnicity, residence type, and campus. Model 2 included current drinking status.

sex model (Model 2), the relationship between high school binge drinking and unsafe sex due to drinking remained significant, albeit weaker in association. This suggests that there is an association between the frequency of high school binge drinking and the present experience of unsafe sex, which is independent of current drinking level. However, for the other two outcomes, the association with high school binge drinking was no longer significant after controlling for current drinking.

Initiation of drinking at age 15 or above, compared with ≤10 years was associated with less unsafe sex due to drinking and fewer unwanted sexual advances at university, as seen in Table 5. After controlling for current pattern of drinking, the association with unsafe sex was no longer statistically significant but the association with unwanted sexual advances due to someone else's drinking was still apparent.

Discussion

This cross-sectional study of university students found high levels of hazardous drinking and a high prevalence of risky and unwanted sexual experiences that were attributed to the respondent's own drinking or the drinking of others. There was little difference in levels of drinking reported by men and women, but men were more likely to report unsafe sex due to their own drinking than women (8.3% vs 5.3% in the past four weeks), and women were twice as likely as men to report unwanted sexual advances due to other people's drinking (21.1% vs 12.0%).

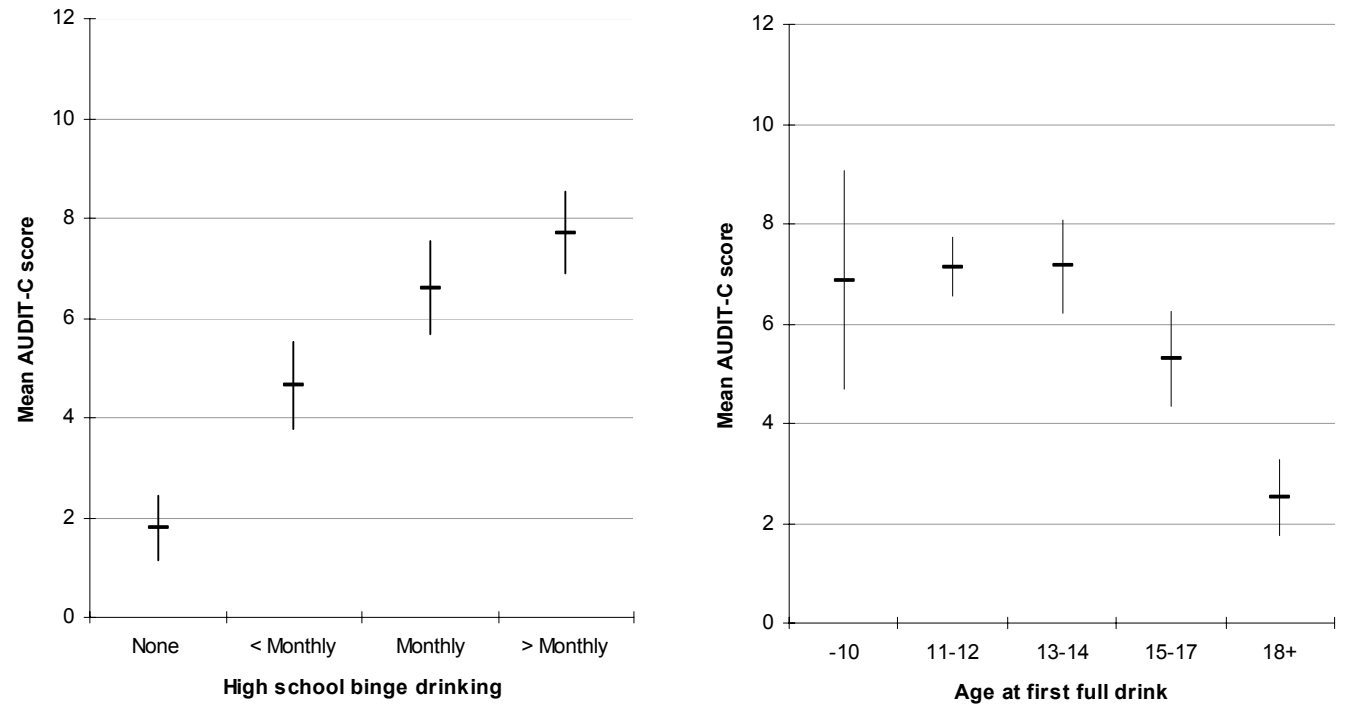
Participants who drank more heavily were more likely to report unsafe sex, unhappy or regretted sex due to their own drinking, and unwanted sexual experiences due to other people's drinking, as was seen in a previous study of a single New Zealand university campus,[8] and broadly consistent with findings from studies in other settings.[11,27]

The frequency of heavy drinking episodes at high school predicted drinking levels at university, as previously reported.[3] However, high school binge drinking was also significantly associated with unsafe sex due to drinking at university, independently of current level of drinking. The risk increased with frequency of binge drinking at school, but the major difference was between those who had any experience of binge drinking and those who had none.

We found that the age at which students recalled having their first full drink of alcohol was inversely related to reporting of unsafe sex due to drinking and unwanted sexual advances. Only the association with unwanted sexual advances was statistically significant once current level of drinking was controlled for. The point estimates for the association between early age at first drink and current unsafe sexual behaviour due to drinking in this study was similar to that measured by Hingson and colleagues in the 1999 Harvard Campus Alcohol Study,[17] although measures used were not completely comparable. In the Harvard study, no association of unplanned or unprotected sex at college with age of first smoking or the age at first marijuana use was found, suggesting that early risk-taking in general was not the explanation for their finding. They found that controlling for current alcohol consumption diminished the association only modestly and concluded that there were other mechanisms involved.

The strengths of this study include the random sampling of students from enrolment lists, and the simultaneous surveying of all sites via identical web questionnaires. The web-based survey

Figure 1: Association of drinking history with consumption of alcohol at university.



Notes: a) Mean AUDIT-C at university by frequency of high school binge drinking. b) Mean AUDIT-C at university by age at first full drink
Vertical bars represent 95% confidence intervals

methodology has a number of advantages over more traditional methods[21,28] and of particular importance here is its potential to improve disclosure of sensitive information. The response rate (63% overall) was high compared with college surveys in the US[29] but could still have resulted in some bias due to self-selection, notably in the campuses with the lowest rates (range 53-71%). Previous research with New Zealand university students demonstrated a longer response latency in heavy drinkers that causes hazardous consumption to be underestimated by a modest amount. This bias amounted to a 3% underestimation of hazardous drinking and alcohol-related problems in the first 65% to respond compared to 82% overall.[22]

Interpretation of the findings of this study is limited by the usual shortcomings of self-reported data and by the cross-sectional design, which makes causal inference problematic. In particular, accuracy of recall of age at first drink may have declined with time since the event, or have been biased by subsequent events. Disclosure of both drinking and sexual experiences may be incomplete, and the degree to which the survey questions were considered sensitive may have varied between subgroups, for example by ethnicity. The direction of social desirability biases would be expected to vary with the acceptability of drinking and the acceptability of sexual activity in the university context, for groups and for individuals.

Individuals and groups may also have differed in their willingness to attribute events to drinking. High levels of hazardous drinking and high levels of risky and indiscriminate sexual behaviour in student populations mean that they will commonly coincide, even without a causal relationship between them.[9] A recent study by Kuendig et al.[30] showed systematic differences in attribution of events to drinking by young people. In communities characterised by a predominant pattern of heavy episodic drinking, 18-25 year olds were more likely to attribute consequences such as blackouts or injuries to their drinking than those in communities with a pattern of more frequent, moderate drinking. However, since the causal pathway between alcohol and risky and unwanted sexual behaviour would include both the physiological impacts of alcohol (e.g. disinhibition due to pharmacological effects) and the expectancies of the drinkers in terms of sexual and other behaviours that will result from drinking,[9] the drinker's own attribution of cause may be a reasonable measure.

A cross-sectional study such as this cannot adequately address the nature of the association between drinking and sexual behaviours. There is research evidence for physiological effects of alcohol and expectancies about behaviour both being important causal mechanisms, but also support for what Cooper et al.[9] called a "third variable" explanation of the connection between alcohol and risky sex. This attributes both behaviours to the same characteristics of the individual without a causal relationship between them. Putative third variables include impulsivity, negative emotionality, and environmental factors (including a college/university lifestyle). Thus, the observed association may be partly an artifact due to

Table 5: Association of age at first drink with risky and unwanted sexual experiences due to drinking at university (Model 1), and the contribution of level of current drinking (Model 2). Adjusted odds ratios (AdjOR) and 95% confidence intervals from multivariable models.[a]

	Model 1			Model 2		
	AdjOR	(95% CI)	*p*-value	AdjOR	(95% CI)	*p*-value
Unsafe sex due to own drinking						
Current drinking (AUDIT-C)	-			1.30	(1.20,1.40)	<0.001
Age at first drink						
10 or less	1.00		<0.001	1.00		<0.001
11-12	1.15	(0.43, 3.09)		1.24	(0.40, 3.81)	
13-14	0.89	(0.49, 1.62)		0.96	(0.46, 2.00)	
15-17	0.45	(0.24, 0.83)		0.61	(0.31, 1.23)	
18 or more	0.38	(0.19, 0.76)		0.67	(0.31, 1.47)	
Unhappy or regretted sexual experiences due to own drinking						
Current drinking (AUDIT-C)	-			1.29	(1.21, 1.37)	<0.001
Age at first drink						
10 or less	1.00		0.018	1.00		<0.001
11-12	0.82	(0.40, 1.70)		0.87	(0.37, 2.03)	
13-14	0.68	(0.43, 1.09)		0.74	(0.44, 1.24)	
15-17	0.60	(0.38, 0.95)		0.82	(0.52, 1.31)	
18 or more	0.59	(0.14, 2.4)		1.11	(0.23, 5.33)	
Unwanted sexual advances due to others' drinking						
Current drinking (AUDIT-C)	-			1.13	(1.11, 1.16)	<0.001
Age at first drink						
10 or less	1.00		<0.001	1.00		<0.001
11-12	0.99	(0.58, 1.70)		1.01	(0.58, 1.75)	
13-14	0.75	(0.43, 1.29)		0.76	(0.46, 1.28)	
15-17	0.52	(0.35, 0.76)		0.62	(0.43, 0.89)	
18 or more	0.24	(0.14-0.39)		0.33	(0.17, 0.64)	

Notes: a) Logistic regression models included age, sex, ethnicity, residence type, and campus. Model 2 also included current drinking status.

confounding by factors related to both behaviours. In this study, age at first drink may be a marker for some of these factors, being associated with higher levels of drinking and independently with higher reporting of unwanted sexual behaviour.

Early age of first drink has been previously linked with heavier drinking, more alcohol use disorders and more alcohol-related harm of various kinds.[17] The mechanism for this relationship seems at least partly that early age at first drink is a manifestation of generalised behavioural disinhibition and particular personality traits.[31] The variability in the findings of studies in different settings[9] suggests that several mechanisms for the association between alcohol and sexual behaviour coexist and the contribution of each pathway varies by context.

The findings of this study suggest that many students come to university with harmful drinking patterns already established at high school, which are perpetuated in the unrestrained drinking environment of the university, and contribute to risky and unwanted sexual experiences. The association of current alcohol consumption and high school binge drinking frequency with episodes of unsafe sex was particularly strong. This provides further support for efforts to reduce drinking in children and adolescents. The effect of delaying the onset of alcohol use is not so clear in these data. While not the sole cause of alcohol-related problems for these vulnerable students, the alcohol-promoting environment that they experience at university contributes to their drinking trajectories (see, for example reference 32).

The strong associations between current risky drinking and adverse sexual outcomes, parallel our understanding of other acute alcohol-related harms. Hazardous drinking contributes to a range of acute health events that are known to have complex causes, e.g. car crash injuries, drownings, falls, violence, sudden cardiac death. An incomplete understanding of contributing causes does not preclude intervention. What is important is that the contribution of alcohol is modifiable, and it has been demonstrated that alcohol policies that reduce drinking also reduce harm, in general[33] and also, in the case of STI rates, harm related to sexual behaviour.[34]

In these university communities, interventions to reduce risky and unwanted sexual behaviour and its consequences need to include measures to reduce levels of hazardous drinking. At an individual level, there is evidence that widespread availability of screening and brief interventions for heavy drinking may have some effect,[35] and this requires large scale trialing. However, since these approaches require individual participation, and the consequences of heavy drinking may not be perceived as particularly negative by the students themselves[36] the potential of individual approaches could be limited. A broader environmental approach is required as well, and ample evidence exists that reduction in alcohol availability and promotion reduces alcohol-related harm.[37]

Acknowledgements

This study was funded by the Health Research Council of New Zealand and the Alcohol Advisory Council of New Zealand. We gratefully acknowledge the contribution of John Langley and Martine Cashell-Smith to the design and conduct of the study, and thank Patricia Priest, Anu Katainen and the Journal's reviewers for helpful comments on a draft of this paper.

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