

# Australian first-year university college residents' alcohol consumption and alcohol-related harms

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## Abstract

**Aim:** The study sought to develop an understanding of Australian first-year university residential college students' alcohol consumption, their experience of alcohol-related harms and their alcohol knowledge. **Method:** Students were surveyed during Orientation Week in 2015 ( $N = 84$ , men 36%) and again in 2017 ( $N = 97$ , men = 45%) using the Alcohol Use Disorders Identification Test (AUDIT) to measure alcohol consumption, and purpose-designed measures of alcohol-related harms and alcohol knowledge. **Results:** The mean AUDIT score across the two cohorts was 10.79, placing these first-year college residents at much riskier consumption levels than their Australian undergraduate and international peers. Three-quarters were consuming alcohol at hazardous/harmful levels. They reported frequent occurrence of alcohol-related harms and, given the higher levels of drinking, these were for the most part more pronounced than in other studies: vomiting (73%), memory loss (55%), regretting their actions when drinking (41%), not having enough money because of money spent on alcohol (31%), doing something dangerous just for fun (29%), being injured (27%), poor performance at work (22%), poor physical health (21%), loss of consciousness (20%), and having sexual encounters they later regretted (19%). Poor knowledge of standard drink measures, particularly in relation to blood alcohol concentration, was also indicated. **Conclusions:** The study highlights the worrying occurrence of hazardous/harmful

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drinking in Australian first-year university residential college students and high levels of alcohol-related harms experienced by these residents. It also highlights poor alcohol knowledge and the need for early intervention prior to and within university college residences to minimise harm.

## Keywords

alcohol-related harm, harm minimisation, university residential settings, youth

In people aged 15–49 years, alcohol is the leading risk factor for burden of disease, accounting for nearly 10% of global deaths (GBD, 2018). In Australia, alcohol consumption is woven into the social and cultural fabric, with “risky” drinking (beyond the Australian National Health and Medical Research Council guidelines of no more than four standard drinks in any one day, and no more than 10 standard drinks a week (NHMRC, 2020)) normalised for some groups, including young people (VicHealth, 2013).

While there appears to be consensus that young people are starting to drink at a later age (AIHW, 2020), and international trends indicate that they are drinking at less risky levels than in previous decades (Visontay et al., 2020), 41% of young Australians aged 18–24 years still exceeded the single occasion risk guideline in 2019 – the age group with the highest risk (AIHW, 2020). In many countries, including Australia, drinking patterns of concern have been identified in the university setting (Stafford & Keric, 2017), with a number of Australian and New Zealand studies noting that university college residents exceed the recommended number of alcohol units for occasional drinking more often than their non-university peers (Boyd et al., 2005; Hutton, 2012; Kypri et al., 2010; Rickwood et al., 2011). Previous research has identified that Australian university students’ responsible drinking knowledge is poor in the areas of identification of standard drinks, the minimum number of drinks to reach a blood alcohol concentration (BAC) driving limit, and actions effective in lowering BAC (Dowling et al., 2006; Hasking et al., 2005).

First-year university students living in residential colleges are predominantly young people in late adolescence transitioning to adulthood – a period marked by changes and adaptations which, like many major transitions, may temporarily negatively impact on well-being (Riordan & Carey, 2019). It is a period of self-focus and identity exploration, also characterised by instability, possibilities and feeling in between adolescence and adulthood as young people move out of their home communities, establish new friendships, experience greater freedoms, and begin self-directed learning (Arnett, 2000; Hustad et al., 2010; Riordan & Carey, 2019).

The residential college setting and experience is often characterised by peer pressure and a culture of excessive drinking (AHRC, 2017). While there is usually an increase in alcohol consumption during Orientation Week (i.e., students typically double their drinking compared to the preceding week and experience five times as many negative alcohol-related consequences (Riordan et al., 2018), there are also strong associations between secondary school and university alcohol use, indicating a continuity of drinking patterns (Riordan & Carey, 2019). However, Australian research indicates that college residents’ alcohol consumption is also intertwined with college traditions, routines, events and occasions, with the explicit or implied permissiveness of college alcohol policies and management shaping students’ drinking culture (Leontini et al., 2017). Residential students who have a stronger fear of missing out (FoMO) on these social experiences are also more likely to exhibit risky drinking (Riordan et al., 2019). Harmful drinking in

this context is often normalised as a routine feature of the student experience, with some college administrations viewing this as part and parcel of adult development and autonomy (Leontini et al., 2017).

Apart from consequences such as academic difficulties (Hustad et al., 2010), students who consume alcohol at high-risk levels have been found to be 1.6 times more likely to experience harm, and 1.1 times more likely to witness harm, than students who consume alcohol at low-risk levels (Hart & Burns, 2016). These risks for harm have the potential to impact the immediate and long-term health and wellbeing of students, with continual risky drinking resulting in cumulative harms. There is also the potential for secondary harms in that drinking may affect other students, family members, bystanders and the broader community (e.g., family disruption, violence, crime, road accidents, work-related harms and community safety issues) (NHMRC, 2020). Longitudinal research has indicated that individual-felt harms (e.g., hangover, embarrassment, passing out, or having a regrettable sexual experience) are heightened during Orientation Week, with almost half of all students experiencing negative alcohol-related consequences, compared to 36% during the first week of second year (Merrill et al., 2017). The Australian Human Rights Commission identified that hazing practices and other college traditions often involve excessive alcohol consumption, and include performing humiliating or degrading acts (AHRC, 2017). In residential college settings it also plays a part in sexual assault and sexual harassment, with peer pressure to drink and the ready availability of alcohol contributing to a troubling environment in which perpetrators use alcohol as a tool to commit sexual assault (AHRC, 2017).

Given these potentials for harm, particularly among first-year university college residents, this study sought to develop an understanding of their consumption levels and its associated harms. In keeping with international trends on young people consuming less alcohol, we hypothesised that first-year college residents

would be consuming alcohol at lower rates than previously indicated, and consequently also experiencing fewer harms. In building on our previous research (Dowling et al., 2006) the study also sought to develop an understanding of students' alcohol knowledge as a potential avenue for future interventions. For example, by investigating whether students have sufficient knowledge on responsible drinking it could inform informational campaigns aimed at reducing harmful alcohol use among students.

## Method

First-year university students living in a university-affiliated residential college and attending large Melbourne-based universities were surveyed about their alcohol consumption. The residential college gave permission for the research to occur. First-year college residents were surveyed in 2015, and the survey was offered again to new first-year college residents in 2017. Students upon entry/enrolment in college were asked to participate in survey. The paper-based survey was distributed to students by the college and the survey was completed and returned by students on the day they were distributed (this being during their first week – Orientation Week – in college residence). The survey was anonymous and undertaken voluntarily as a self-completion questionnaire by students. The participants provided written consent, and at both data collection points the sample size reflected most first-year students living in the residential college. The total number of first-year students in the college was approximately 100, and as such the research samples ( $N=84$  in 2015;  $N=97$  in 2017) are considered representative of first-year Australian university college residents.

The surveys collected information on demographics (gender and age), alcohol consumption and alcohol knowledge. The Alcohol Use Disorders Identification Test (AUDIT) was used to measure level of alcohol consumption and alcohol-related harm. The AUDIT is a 10-item instrument developed by the World Health

Organization to measure alcohol use and adverse consumption. A score of  $\leq 7$  indicates low-risk alcohol consumption, 8 to 14 on the AUDIT scale indicates levels of alcohol consumption considered hazardous, and scores of  $\geq 15$  indicate an increased likelihood of alcohol dependence (Saunders et al., 1993). Building on previous research (Dowling et al., 2006), questions on alcohol knowledge, including knowledge of standard drink measures were included (Table 4). Questions on alcohol-related harms (over the preceding 12 months) (Table 2) were developed for the purpose of this research.

### Analysis

Descriptive statistics were obtained to explore patterns in drinking behaviour and understanding of the effects of alcohol. Further, a t-test examined whether there was a change in AUDIT scores between the 2015 and 2017 students. A series of crosstabs were also conducted to investigate drinking patterns. An ANOVA was conducted to examine the interaction between genders on the AUDIT scores. Where data violated assumptions for ANOVA or t-tests, a Kruskal–Wallis test was employed instead. Given minimal differences between the two cohorts and genders, pooled data were used in correlations between harmful drinking (AUDIT) and drinking knowledge, as well as between drinking knowledge and number of harmful behaviours. In pooled data, students who had not specified gender were removed. Where multiple comparisons were made (gender and year of survey) the *p*-value was adjusted using a Bonferroni correction ( $p = .025$ ).

### Results

The surveys yielded 84 first-year participants in 2015 (men = 35.71%) and 97 first-year participants in 2017 (men = 45.36%). The first-year college residents in 2015 ranged in age from 17 to 20 years ( $M = 18.13$ ,  $SD = 0.64$ ), and in 2017 ranged in age from 17 to 21 years ( $M = 18.07$ ,  $SD = 0.61$ ). There were no significant

differences in the proportion of men versus women in the 2015 and 2017 cohorts ( $\chi^2(1) = 1.56$ ,  $p = .21$ ), nor any significant age differences ( $t(167.81) = 0.629$ ,  $p = .53$ ).

### Alcohol consumption

The mean AUDIT score for first-year college residents in 2015 was 11.38 ( $SD = 5.52$ ), and in 2017 it was 10.39 ( $SD = 5.21$ ). There was no significant change in the AUDIT score between participants in 2015 and 2017 ( $t(171.87) = 1.23$ ,  $p = .219$ ), thus, the data were pooled (see Table 1 for students' alcohol consumption risk using the AUDIT scale). Across pooled data, only 2.8% ( $n = 5$ ) were abstainers, while over half of the participating students disclosed a level of alcohol consumption that put them at risk of harmful consequences on the AUDIT (52.8%) with over one-fifth (21.9%) indicating a likelihood of alcohol dependence. In looking at the levels of consumption on a typical day across the pooled data (question two of the AUDIT) two-thirds of college residents ( $n = 117$ , 66.9%) were consuming five or more drinks on a typical day of drinking, which includes a third ( $n = 53$ , 30.3%) having seven or more drinks per typical day, and 11% ( $n = 34$ ) consuming 10 or more drinks per occasion. In terms of frequency, a third of the college residents ( $n = 52$ , 29.1%) were consuming six or more drinks per occasion on a monthly basis,

**Table 1.** First-year college residents' alcohol consumption risk (AUDIT).

	<i>M (SD)</i>
Pooled (2015 & 2017) AUDIT score	10.79 (5.31)
	<i>n (%)</i>
<i>AUDIT categories</i>	
Low-risk alcohol consumption	45 (25.3)
Hazardous/harmful alcohol consumption	94 (52.8)
Likelihood of alcohol dependence	39 (21.9)

Note. AUDIT = Alcohol Use Disorders Identification Test.

**Table 2.** Drinking-related harms over the last 12 months (pre-university): 2015 and 2017 college residents' comparison.

	2015 (N = 84) n (%)	2017 (N = 97) n (%)	Men (n = 74) n (%)	Women (n = 104) n (%)
Poor performance at work	24 (28.57)	15 (15.46)	10 (13.5)	28 (26.9)
Driven a car after drinking too much	2 (2.38)	5 (5.15)	3 (4.1)	4 (3.8)
Had unprotected sex with a casual partner	10 (11.90)	17 (17.53)	11 (14.9)	15 (14.4)
Had unprotected sex with a regular partner	11 (13.10)	14 (14.43)	10 (13.5)	15 (14.4)
Had a sexual encounter you later regretted	14 (16.67)	21 (21.65)	17 (23.0)	16 (15.4)
Vomited	62 (73.81)	70 (72.16)	59 (79.7)	70 (67.3)
Memory loss	50 (59.52)	49 (50.52)	40 (54.1)	58 (55.8)
Loss of consciousness	21 (25.00)	14 (14.43)	16 (21.6)	18 (17.3)
Poor physical health	19 (22.62)	18 (18.56)	13 (17.6)	23 (22.1)
Verbally abused someone	16 (19.05)	11 (11.34)	13 (17.6)	12 (11.5)
Directed racial harassment toward someone	0	1 (1.03)	1 (1.4)	0
Threatened someone with harm	5 (5.95)	3 (3.09)	5 (6.8)	3 (2.9)
Caused harm to someone else	3 (3.57)	2 (2.06)	3 (4.1)	2 (1.9)
Been injured	29 (34.52)	18 (18.56)*	19 (25.7)	26 (25.0)
Done something dangerous just for fun	29 (34.52)	23 (23.71)	25 (33.8)	25 (24.0)
Damaged property	14 (16.67)	12 (12.37)	17 (23.0)	8 (7.7)*
Relationship difficulties with partner, friend, or family	13 (15.48)	9 (9.28)	5 (6.8)	16 (15.4)
Regretted your actions when drinking	39 (46.43)	35 (36.08)	25 (33.8)	47 (45.2)
Not had enough money because of money spent on alcohol	33 (39.29)	22 (22.68)*	24 (32.4)	30 (28.8)

\* $p < .05$ .

with 40% ( $n = 72$ ) drinking six or more drinks per occasion on a weekly basis. Across the pooled data there were gender differences for the following: For question two on the AUDIT, men were significantly more likely than women to report consuming seven or more drinks on a typical day of drinking (53.6% vs. 16.3%,  $X^2 = 27.49$ ,  $p = .001$ ) (76% of women college residents were consuming three to six drinks on a typical day when drinking). Additionally, for question seven on the AUDIT, women were significantly more likely than men to report experiencing regret or guilt after drinking on a weekly or daily basis (10.6% vs. 1.4%,  $X^2 = 10.08$ ,  $p = .039$ ).

### Alcohol-related harms

Overall, the 2015 and 2017 college residents were comparable in terms of drinking-related harms

(see Table 2), with a few exceptions (noted below). Across the pooled data, the frequency of drinking-related harms included: vomiting (73%), memory loss (55%), regretting their actions when drinking (41%), not having enough money because of money spent on alcohol (31%), doing something dangerous just for fun (29%), being injured (27%), poor performance at work (22%), poor physical health (21%), loss of consciousness (20%), having sexual encounters they later regretted (19%), having unprotected sex with a casual (15%) or regular partner (14%), and verbally abusing someone (15%). The 2017 cohort compared to the 2015 cohort were significantly less likely to report being injured (19.0% vs. 34.5% respectively,  $X^2 = 5.97$ ,  $p = .15$ ).

Given that there were very few differences noted between the 2015 and 2017 data, the data were pooled ( $N = 178$ ) to compare gender differences. Men and women college residents

reported similar negative experiences apart from a few exceptions. Women were significantly more likely than men to report performing poorly at work in the last year as a result of drinking alcohol (26.9% vs. 13.5%,  $\chi^2 = 4.63$ ,  $p = .031$ ). Men, however, were significantly more likely than women to report damage to property (23.0% vs. 7.7%,  $\chi^2 = 8.363$ ,  $p = .004$ ).

The number of drinking-related harms reported by college residents varied significantly across the AUDIT score ( $H(2) = 83.52$ ,  $p < .001$ ).

**Table 3.** Number of drinking-related harms across AUDIT scores.

	Number of harms as a result of drinking M (SD)
Low-risk consumption	1.07 (1.36)
Hazardous/harmful consumption	4.24 (2.79)
Likelihood of alcohol dependency	7.76 (3.23)

Note. AUDIT = Alcohol Use Disorders Identification Test.

As shown in Table 3, the average number of drinking-related harms reported by first-year college residents increased along with the AUDIT risk score categories, with those in the highest risk category (where there is the increased likelihood of alcohol dependence) reporting on average eight different harms.

### Alcohol knowledge

First-year college residents' alcohol knowledge is reported in Table 4. Across the pooled data, 40% ( $n = 72$ ) correctly identified a "pot" of beer (285 ml) as a standard drink; 69% ( $n = 124$ ) correctly identified a nip of spirits as a standard drink; 82% ( $n = 148$ ) correctly identified a small glass of wine as a standard drink; 60% ( $n = 108$ ) correctly identified a can of low-alcohol beer as a standard drink; 72% ( $n = 131$ ) correctly identified that a can of pre-mixed sprits exceeded a standard drink; and 80% ( $n = 145$ ) correctly identified that a cocktail exceeds a standard drink. There was one significant difference between the 2015 and 2017

**Table 4.** First-year college residents' alcohol knowledge (correct responses).

Question content	2015 (N = 84) n (%)	2017 (N = 97) n (%)	Men (n = 74) n (%)	Women (n = 104) n (%)
<i>Which of the following are classified as a standard drink?</i>				
Pot of regular beer	25 (29.76)	47 (48.45)*	42 (56.76)	29 (28.16)**
Nip of spirits	62 (73.81)	62 (63.92)	56 (75.68)	65 (62.14)
Small glass of wine	74 (88.10)	74 (76.29)	59 (79.73)	86 (82.52)
Can of low-alcohol beer	55 (65.48)	53 (54.64)	44 (59.46)	61 (58.25)
Can of pre-mixed spirits <sup>^</sup>	62 (73.81)	69 (71.13)	51 (68.92)	78 (74.76)
Cocktail <sup>^</sup>	71 (84.52)	74 (76.29)	57 (77.03)	86 (82.52)
<i>How many standard drinks can a person have before reaching the 0.05 BAC limit?</i>				
Men (correct score)	58 (69.0)	34 (35.1)**	42 (62.7)	49 (53.3)
Women (correct score)	60 (71.4)	38 (39.2)**	40 (64.5)	58 (59.8)
<i>What can be done to lower a person's blood alcohol level?</i>				
Coffee (does not help)	84 (100.00)	97 (100.00)	74 (100.00)	104 (100.00)
Cold shower (does not help)	82 (97.62)	94 (96.91)	72 (97.30)	101 (97.09)
Vomiting (does not help)	73 (86.90)	91 (93.81)	69 (93.24)	93 (89.42)
Eating (does not help)	72 (85.71)	89 (91.75)	68 (91.89)	91 (87.50)
Nothing (bar passage of time)	62 (73.81)	80 (82.47)	60 (81.08)	80 (76.92)

Note. BAC = blood alcohol concentration.

\* $p < .05$ . \*\* $p < .001$ . <sup>^</sup> = correctly identified as exceeding a standard drink.

participants: 48% of the 2017 college residents were correct in identifying a “pot” (285 ml) of regular beer as a standard drink versus 30% in 2015 ( $\chi^2 = 7.15, p = .007$ ). Overall, men (57%) were also significantly more likely to correctly identify a “pot” of regular beer as standard drink than women (28%) ( $\chi^2 = 15.03, p < .001$ ).

Compared to 2015, the first-year college residents in 2017 were significantly less likely to report awareness of the number of standard drinks that men (69% vs. 35.1% respectively,  $\chi^2 = 13.92, p < .001$ ) and women (71.4% vs. 39.2%,  $\chi^2 = 17.37, p < .001$ ) can consume in the first hour of drinking before reaching 0.05 BAC. Across the pooled data, 63% of the men correctly identified the number of standard drinks a man can drink, and 65% correctly identified the number of standard drinks a woman can drink to reach a 0.05 BAC; and on average, 53% of the women correctly identified the number of standard drinks a man can drink, and 59% correctly identified the number of standard drinks a woman can drink to reach a 0.05 BAC. While not significant, women were overall less correct in identifying the number of standard drinks a man or woman can drink to reach a 0.05 BAC – specifically, many were overestimating the number of drinks for both genders (more so than men college residents).

In terms of common myths around techniques to lower one’s BAC, all first-year college residents correctly identified that drinking coffee does not help. Across the pooled data it was encouraging to note that the majority also correctly identified that a cold shower is unhelpful (97%), that vomiting is unhelpful (90%), that eating is unhelpful (89%), and over three-quarters (78%) correctly identified that nothing can be done to lower one’s BAC. No significant differences were noted between the 2015 and 2017 college residents, nor in terms of gender.

## Discussion

### *Alcohol consumption*

Compared to their age group peers (young adults aged 18–24 years), 41% of whom were

consuming more than four drinks on one occasion (AIHW, 2020), 67% of first-year college residents in the study were consuming five or more drinks on a typical occasion. When looking at the frequency of consuming six or more drinks per occasion this was occurring for most of the college residents on either a monthly (29%) or weekly (40%) basis. In the sample, 11% were consuming 10 or more drinks per occasion at least monthly, which is only slightly fewer than their general age group peers (of 18–24-year-olds) where 15% have been found to consume 11 standard drinks on one occasion at least monthly (AIHW, 2020). While in contrast with our hypothesis, this is in line with previous research continuing the trend that residential college students consume alcohol at higher levels than their non-university peers (Boyd et al., 2005; Hutton, 2012; Kypri et al., 2010; Rickwood et al., 2011), and the “drinking cultures” described in Australian university residential colleges (Leontini et al., 2017).

While there is no standard definition for “binge” drinking, a commonly used proxy measure, according to the National Health and Medical Research Council (NHMRC, Australia), is the consumption of four or more standard drinks on a single occasion (NHMRC, 2020), placing two-thirds of the college residents in the binge drinking category, and almost 70% of the respondents were consuming six or more drinks on a monthly or weekly (per occasion) basis. Of these first-year college residents, 75% reported drinking in excess of the hazardous/harmful levels ( $\geq 8$  on the AUDIT) – rates which are much higher than that indicated in other earlier Australian research also using the AUDIT (but looking at undergraduates more broadly): A 2011 online survey of 603 Australian students aged 18–24 years of whom 47% reported drinking at hazardous/harmful levels (Rickwood et al., 2011); a 2015 study of 2,465 18–24-year-old Australian undergraduate students of whom 40% were drinking at hazardous/harmful levels (Burns et al., 2015); and a 2012 online survey of 7,237 Australian

undergraduate students aged 17–25 years of whom 34% were drinking at hazardous/harmful levels (Hallett et al., 2012).

In this study, first-year residential college men were significantly more likely than women to report consuming seven or more drinks on a typical day of drinking (54% vs. 16%); 76% of first-year residential college women were consuming three to six drinks on a typical day when drinking. Similar levels of consumption have been noted in an Australian prevalence study conducted in 2012 with undergraduate students who were found to typically consume an average of 5.1 standard drinks for women and 8.7 for men per occasion; that is, men had a two-times higher odds ratio of drinking at hazardous levels compared to women (Hallett et al., 2012).

In the current study, the mean AUDIT score for first-year college residents in 2015 was 11.38, and in 2017 it was 10.39, with an average of 10.79 across the two cohorts. A 2008 sample of Australian university students (not just first-year college residents) had an AUDIT score 8.46 ( $SD=6.20$ ) (Rickwood et al., 2011), and in another 2010 sample of Australian university students (again, not just first-year college residents) had a mean AUDIT score of 9.43 ( $SD=6.05$ ) (Ridout et al., 2012). An international meta-analysis of university student data (including the above-mentioned Australian studies) found that overall, there had been a difference score of  $-3.46$  when looking at it over 26 years: from 1989 where the mean AUDIT score was 9.38, to 2015 where the mean score had decreased to 5.92 (Visontay et al., 2020). The data from the sample of first-year college residents, and others, point to riskier drinking in Australian students, particularly in first-year college residents, compared to other international cohorts. There is also no noticeable decline over time as seen in international cohorts.

While these data were gathered from first-year university college residents during their Orientation Week (a period where alcohol consumption typically spikes (Riordan & Carey,

2019; Tremblay et al., 2010), the study specifically asked about consumption and alcohol-related harms in the last 12 months. There are few studies of students prior to entry to a university college, and as such this study presents new knowledge. These are drinking cultures students are bringing with them to the university college setting, and, as indicated in research by Riordan, they can be enhanced by the setting and can set the tone for future drinking and long-term harmful impacts (Riordan et al., 2018).

### *Alcohol-related harms*

Frequency of drinking and level of consumption can both have negative health and social impacts in the short and long term (NHMRC, 2020). While the average age of college residents was 18 years, the survey asked about harms as a result of drinking alcohol over the preceding 12 months. A high proportion (75%) of college residents had been consuming alcohol in excess of hazardous/harmful levels in the preceding 12 months. The Australian NHMRC guidelines note that there are no clear levels of safe drinking for young people under the age of 18 years, as drinking carries a risk of injury and potential adverse effects on brain development – the NHMRC (2020) also notes that brain development is not complete until approximately 25 years of age.

Worryingly, college residents reported frequent occurrence of alcohol-related harms and given the higher levels of drinking these were for the most part more pronounced than in other studies (Rickwood et al., 2011). This highlights the fact that Australian first-year college residents are consuming alcohol at harmful levels – a trend which has not subsided across Australian universities over the last decade.

As a result of drinking in the preceding 12 months, first-year college residents reported: vomiting (73%), memory loss (55%), regretting their actions when drinking (41%), not having enough money because of money spent on alcohol (31%), doing something dangerous



just for fun (29%), being injured (27%), poor performance at work (22%), poor physical health (21%), loss of consciousness (20%), having sexual encounters they later regretted (19%), having unprotected sex with a casual (15%) or regular partner (14%), and verbally abusing someone (15%). An online survey of 603 Australian students aged 18–24 years found harms experienced as a result of alcohol use included: vomiting (48%), embarrassment (34%), memory loss (25%), financial problems (21%), driving a car after drinking too much (17%), sexual encounter that was later regretted (17%), and being injured (13%) (Rickwood et al., 2011). In the current sample, only 4% drove a car after excessive drinking. This may indicate that public health messaging on drink driving is having a positive impact on young drivers.

The Australian NHMRC guidelines note that young adults are particularly vulnerable to harms due to social situations, including, for the purposes of this study, residential colleges, which can contribute to patterns of risk-taking behaviour (NHMRC, 2020). Patterns of drinking at risky levels (i.e., as shown by the AUDIT's increased likelihood of alcohol dependence where there is a score of  $\geq 15$ ) were also associated with a higher number of drinking-related harms, and potentially bode poorly for the future likelihood of experiencing harms, including cumulative health harms, if these patterns are sustained long term (NHMRC, 2020).

### *Alcohol knowledge*

The Australian government has invested significant resources since the mid-1990s to educate the public regarding alcohol-associated risks, standard drinks, and responsible drinking (e.g., NHMRC guidelines to reduce health risks from drinking alcohol) (Hasking et al., 2005; NHMRC, 2020). Labels on alcoholic beverages are also required to specify the number of standard drinks contained. In Australia, a standard drink refers to 10 g of pure alcohol (NHMRC, 2020). A 2005 study

of Australian university students found that they correctly identified the following standard drinks: 35% for 285 ml of full strength beer, 57% for a nip (30 ml) of spirits, and 53% for 100 ml of wine (Hasking et al., 2005). Comparatively, the current study sample performed slightly better: 40% for 285 ml of full strength beer, 69% for a nip of spirits, and 60% for 100 ml of wine. While less than half (40%) of first-year college residents correctly identified a “pot” of beer (285 ml) as a standard drink, it should be noted that people under the age of 18 are not legally able to purchase alcohol in a licensed bar or public house (pubs) where poured beer terminology is used. Thus, the first-year college residents in the sample may be less likely to have had exposure to these terms. It is also noted that there are some slight inconsistencies across different educational materials which might partly explain this confusion. For example, DrinkWise Australia (a not-for-profit independent organisation) denotes a 4.8% “pot/middy” (285 ml) beer as 1.1 standard drinks (DrinkWise, 2021), while the NHMRC denotes a 285 ml 4.9% beer as one standard drink (NHMRC, 2020).

It was heartening to note that first-year college residents were mostly well informed regarding common myths around techniques to lower one's BAC, with over three-quarters understanding that nothing, bar the passage of time, contributes to lowering your BAC. However, only between half to two-thirds of first-year college residents correctly identified the number of standard drinks necessary for the average man (two standard drinks) or average woman (one standard drink) to reach a 0.05 BAC (ADF, 2017). This indicates that there is ample opportunity to increase students' knowledge of what comprises a standard drink, particularly for women students who tended to inaccurately estimate the number of drinks required to reach a 0.05 BAC. Knowledge around standard drinks, including number of drinks for men and women to reach a BAC of 0.05, is important in terms of self-monitoring

of alcohol use and responsible drinking. It is also important in terms of social and relational aspects such as looking after friends and making safe choices in terms of driving (e.g., to avoid a conviction for driving under the influence of alcohol in Australia, drivers must have BAC of under 0.05 (ADF, 2017).

## Conclusion

This survey-based research includes all the limitations associated with self-report data, including that the drinking behaviour was not observed and that there might be self-report bias which may under- or overestimate actual consumption rates (Del Boca & Noll, 2000; Devaux & Sassi, 2015). Nonetheless, the study highlights that Australian first-year college residents are consuming alcohol at harmful levels – a trend which has not subsided across Australian universities over the last decade. These harmful levels of consumption are more notable in those enrolling in university college residences than in their age-group peers and, worryingly, are occurring at much higher levels than in international cohorts.

These hazardous levels of consumption are associated with increased levels of harmful consequences. Specific harms included direct effects on the body (e.g., vomiting, memory loss, loss of consciousness, poor physical health, injury), impacts on their ability to earn money (poor performance at work), financial impacts due to too much money spent on alcohol, risky sexual encounters, and risks to self and others (e.g., doing something dangerous just for fun). Many regretted their actions when drinking. Similar alcohol-related harms are identified in the study compared to previous Australian studies, although at a higher rate of harms in keeping with higher levels of harmful drinking. The occurrence of these alcohol-related harms can have dire consequences for young people in the present, but also cumulatively, and, if patterns of consumption are sustained, can also lead to greater future harms. The study underscores that there is much

room for improvement in terms of education around standard drinks and the number of standard drinks that men and women can have (on average) to reach a BAC of 0.05. In conclusion, this study highlights the need for research-based education and culture-change programmes to target alcohol consumption and alcohol education in the university college population, but also for earlier intervention in secondary school/precollege (Hustad et al., 2010), given that students are bringing these drinking cultures with them to college residences.

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