

Sociodemographic Correlates of Drinking Behaviors among University Students in Hong Kong: A Cross-Sectional Study

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Abstract

Background: University students' alcohol use is a social concern in Hong Kong. While the association between sociodemographic factors and university students' drinking behaviors has been widely studied, such research remains limited in the Hong Kong context. **Methods:** This study collected 147 valid responses from students at a public university in Hong Kong using self-administered questionnaires. Bivariate analyses and multivariable logistic and linear regression models were used to examine the correlates of four drinking-related outcomes, which were drinking status, binge drinking behavior, number of standard drinks, and AUDIT score. **Results:** Alcohol use is relatively common (81.6%). 44.2% of students engaged in binge drinking with different frequencies. Male gender and being international students were the most consistent correlates. While male gender showed increased risk, being international students demonstrated a protective effect. In addition, age and study year were significant correlates of the number of standard drinks, while on-campus residence was significantly associated with a higher likelihood of past-year drinking. **Conclusion:** Although alcohol misuse generally is not a serious problem at this public university in Hong Kong, a subgroup of students shows signs of problematic drinking. These findings suggest that alcohol prevention programs may be more effective if they are targeted at male students and those living on-campus rather than taking a uniform approach.

Keywords

Alcohol, University Students, Gender, Hong Kong

1. Introduction

Drinking alcohol has become increasingly common among university students

around the world. In the United States, national data show that nearly two-thirds of students drink alcohol in a given month (White & Hingson, 2013). In addition, today's students also drink more and are more likely to engage in binge drinking than earlier generations (Davoren et al., 2016). The trend of increasing alcohol use and problematic drinking in university students deserves special attention. The reason is that university students are more vulnerable than other adults. These younger adults are going through a transitional period. During this stage, there are huge changes in their social activities, living arrangements, and socialisation groups. This type of transition is often associated with risky drinking behaviors, which can damage students' mental and physical health (Lorant et al., 2013).

In Hong Kong, the pattern is similar. Although earlier research found that Chinese university students were less likely to drink, the situation has changed. An early longitudinal study conducted in the 1970s on Chinese Mainland university students in Hong Kong found that only 29% of male students and 8% of female students had consumed alcohol upon university entry. By the end of the third year, these figures had risen to 48% and 21%, respectively (Bard & Peacock, 1976). In contrast, a more recent study conducted at another Hong Kong university in 2006 showed that the percentages of male and female students who had consumed alcohol before entering university were 71.8% and 53.0%, respectively. By halfway through university, these figures had risen to a relatively high level: 86.6% for male students and 80.6% for female students (Kim et al., 2009). In addition, the rate of students reporting alcohol dependence and alcohol abuse also rose clearly (Kim et al., 2009). Many students start drinking during their university years and develop problems related to alcohol use. These problematic drinking behaviors not only affect their immediate health, but also may negatively influence their future drinking habits (El Ansari et al., 2013). Therefore, identifying at-risk populations and providing them with early prevention and intervention is important. To achieve this, it is necessary to examine which factors are associated with university students' drinking behaviors.

Sociodemographic factors have been consistently proven in numerous previous studies to be key correlates in university students' alcohol use. Many Western studies have conducted specific analyses focusing on sociodemographic correlates. For instance, one study involving seven universities across England, Wales and Northern Ireland found that male gender and perceived insufficient income were positively correlated with length of time of drinking, number of drinks, frequency of alcohol consumption, frequency of heavy episodic drinking, problem drinking, and possible alcohol dependence (El Ansari et al., 2013). Similarly, a study in Brazil found that university students who consumed alcohol more often were more likely to be older, male, single, enrolled in evening courses, and excessive drinking was more common among students with low socioeconomic status (Gasparotto et al., 2015).

However, sociodemographic correlates related to drinking behaviors among uni-

versity students in Hong Kong have rarely been specifically studied. There has been only research focusing on drinking among Hong Kong adolescents. Huang et al. (2016) pointed out that older adolescents and those from higher socioeconomic status are more likely to drink alcohol. There is no gender difference in current drinking, but compared with boys and students born in Hong Kong, girls and students born in the Chinese mainland are less likely to be binge drinkers (Huang et al., 2016). It is worthy of noting that university students and adolescents are quite different groups. They are at distinct stages of life, and most university students are no longer underage. Besides, university students live in universities, which are particular institutions with unique culture and norms (Martin, 2019). Therefore, the sociodemographic factors associated with drinking behaviors may differ.

Based on existing literature from Western and Hong Kong societies, five major sociodemographic correlates, namely, gender, age, social origin, parental socioeconomic status, and accommodation type, are considered important for university students' drinking behaviors in Hong Kong. Beyond this, religion is also a factor that cannot be ignored, though few studies in Hong Kong have addressed it. Without strict religious restrictions on alcohol, the drinking behaviors of international students, especially Muslim students in Hong Kong, receive little attention but are worthy of exploration.

2. Literature Review

2.1. Gender

In Western societies, alcohol use among university students has been extensively studied for many years, and gender is one of the most frequently discussed correlates. Berkowitz & Perkins (1987) summarized the findings of early American studies, drawing the conclusion that, in general, men drink more frequently, consume larger quantities of alcohol, are more likely to drink to get drunk, and experience more negative consequences from drinking. Recent studies in other Western countries have found similar gender differences in drinking frequency (El Ansari et al., 2013; Gasparotto et al., 2015; Lorant et al., 2013), drinking quantity (Lorant et al., 2013), and problem drinking (El Ansari et al., 2013; Lorant et al., 2013). However, Berkowitz & Perkins (1987) suggested that this common finding may result from a somewhat false dichotomy. The difference in alcohol consumption between most men and women is not significant. Instead, the extreme, heavy drinking patterns of a small proportion of men are the real cause of gender differences in the average (Berkowitz & Perkins, 1987). Compared with female university students, male university students have significantly higher rates of heavy episodic drinking (El Ansari et al., 2013). Gender differences in abusive drinking, in fact, are greater than gender differences in drinking frequency (Lorant et al., 2013). In Hong Kong society, findings related to gender share many similarities with those in Western societies. Binge drinking is significantly associated with male gender (Griffiths et al., 2006; Kim et al., 2009; Kim et al., 2020). More men

than women reported ever drinking (Abdullah et al., 2002; Griffiths et al., 2006). Abdullah et al. (2002) believe that gender differences in substance use may be related to beliefs and sociocultural factors, which discourage women's substance use.

2.2. Age

Age is another common correlate, but the findings of previous studies are inconsistent. For example, in a study conducted in Belgium, Lorant et al. (2013) found that older students were less likely to drink and engage in abusive drinking. This may stem from a protective maturing effect of age. As Berkowitz & Perkins (1987) summarized, after advancing to higher grades, men may learn a more controlled and less destructive way of drinking. However, a study conducted in Brazil came to the opposite conclusion, finding that older students had a higher likelihood of drinking and binge drinking (Gasparotto et al., 2015). The relationship between age and drinking behaviors is difficult to determine clearly, as the protective maturing effect is likely to be covered by other factors. Lorant et al. (2013) argue that the time spent in university is one such risk factor. Although some studies have both found that older students are more likely to binge drink (Ji et al., 2012; Kim et al., 2020), it is unclear whether this conclusion represents a definitive and universal relationship between age and drinking patterns.

2.3. Social Origin

The two main categories of students at university in Hong Kong are local students and students from the Chinese Mainland, but few studies have focused on differences in drinking behaviors between the two groups. Griffiths et al. (2006) categorized students according to their place of birth and found that male students from the Chinese Mainland had a relatively high rate of alcohol consumption. They explained this difference by arguing that Hong Kong students live with their families, which means they have less chance of accessing alcohol (Griffiths et al., 2006). However, Griffiths et al. (2006) did not conduct a comprehensive analysis of differences in drinking behaviors, and there may be other ways to explain the possible differences. In addition, there are many non-Chinese students in Hong Kong's universities, but very few studies focus on them.

2.4. Religion

When discussing university students' drinking behaviors, religion is a correlate that is rarely mentioned. A study on Hong Kong adolescents' religious beliefs shows that 34.3% of students have religious beliefs. Among Non-Chinese Speaking South and Southeast Asian Students (NCS), the proportion with religious beliefs is significantly higher than that of Chinese Mainland and Hong Kong students (Yuen et al., 2016). The major religious beliefs vary among different student groups. For NCS, the major religions are Islam and Christianity, while for Chinese Mainland students and Hong Kong students, the major religions, respectively, are Buddhism

and Christianity (Yuen et al., 2016).

Compared to students with religious beliefs, students without religious beliefs have significantly higher levels of drinking frequency, quantity, and getting drunk (Patock-Peckham et al., 1998). Different religions also have different attitudes towards alcohol use. According to Najjar et al. (2016), Buddhists have the most positive attitudes towards alcohol use. Next are Christians. Muslims are the last. Many international students in Hong Kong come from countries where Islam is the dominant religion. In Islam, alcohol use is strictly prohibited (Ahmed et al., 2014). Therefore, the overall prevalence of binge drinking among university students is much lower in Muslim countries than in Buddhist countries. These differences can be partially explained by students' religious beliefs (Yi et al., 2017). In addition, higher levels of religious commitment have a protective effect on alcohol use (Ahmed et al., 2014). Among students with a higher level of involvement in religious activities, the prevalence of binge drinking is much lower (Yi et al., 2017).

2.5. Parental Socioeconomic Status

Current research has not reached a consensus on the relationship between parental socioeconomic status and university students' drinking behaviors. The first debate in the existing research is about whether there is an association between parental socioeconomic status and university students' drinking. Although many studies have confirmed the existence of an association (El Ansari et al., 2013; Gasparotto et al., 2015; Harrell et al., 2013; Ji et al., 2012; Martin, 2019), there are still studies with different findings, suggesting that mothers' educational attainment and family's financial situation are not associated with alcohol use (Abdullah et al., 2002), and that the relationships between parental educational attainment and alcohol consumption are not significant (El Ansari et al., 2013).

The second debate is about what kind of relationship exists between the two. Some studies have found that university students with higher SES have higher drinking rates (Ji et al., 2012), drink more frequently (Martin, 2019), and are more likely to face alcohol-related problems (Harrell et al., 2013). Others argue that individuals with low SES are most likely to engage in binge drinking (Gasparotto et al., 2015), and that students who feel they do not have sufficient income are more likely to drink and be classified as problem drinkers (El Ansari et al., 2013).

2.6. Accommodation Type

Accommodation type, which refers to students' specific residential arrangements during the academic semester (e.g., residing with parents, living in university dormitories, or renting independently off-campus), is an essential sociodemographic factor frequently discussed in the analysis of university students' alcohol use. These living arrangements have been consistently linked to various drinking indicators. For instance, El Ansari et al. (2013) found in a UK study that living with parents is significantly and negatively correlated with high-frequency drinking,

heavy episodic drinking, and problem drinking. Similarly, Gasparotto et al. (2015) demonstrated in a Brazilian study that university students who do not reside with family (e.g., living alone or with peers) are more prone to engaging in binge drinking.

Empirical literature supports the mechanism underlying these variations, suggesting that the transition away from the parental home significantly alters social control structures. Specifically, longitudinal research by Wood et al. (2004) and Abar and Turrisi (2008) demonstrates that relocating away from family drastically reduces direct parental monitoring and expands personal autonomy. This reduction in parentally enforced behavioral boundaries, combined with increased proximity to independent living environments, leaves students substantially more vulnerable to peer drinking norms and local campus alcohol cultures.

Besides, variations in institutional management systems can lead to divergent outcomes. For instance, Ji et al. (2012) discovered that due to the stringent dormitory regulations in Chinese mainland universities, off-campus students exhibited higher binge drinking rates than their on-campus counterparts. In Hong Kong, empirical evidence aligns more closely with the Western paradigm. Kim et al. (2020) indicated that full-time residential hall living is independently associated with past-month binge drinking, while Abdullah et al. (2002) observed that university students who had ever consumed alcohol were more likely to reside in university hostels compared to lifetime abstainers.

3. Method

3.1. Design, Sample, and Ethics

This is a cross-sectional study, which employed quantitative methods to identify key sociodemographic factors associated with Hong Kong university students' drinking behaviors. Full-time university students from a major public university in Hong Kong, aged 18 to 24, were recruited using convenience sampling. Data were collected through an online survey, and the questionnaire was distributed via QuestionPro. A total of 204 questionnaires were started, and 155 completed questionnaires were returned (response rate: 75.98%). 147 participants met the criteria (eligibility rate: 94.84%). The average completion time for the questionnaire was 7 minutes. The final sample size was 147.

This study was approved by the Research Ethics Committee at this major public university in Hong Kong. Participants were provided self-administered questionnaires, and each questionnaire included an informed consent statement. Participation was voluntary, and students could withdraw at any time without penalty. All responses were collected anonymously. Data were securely stored on password-protected devices and only accessible to the research team.

3.2. Measures

For sociodemographic characteristics, information was collected about gender, study year, age, student type (local, mainland, international), accommodation type

(on-campus, off-campus), religion (Buddhism, Christianity, Islam, none, other), mother's and father's education (primary or below, junior high school, senior high school, university or above), and perceived family financial situation (very poor, tight, comfortable, well-off). The Alcohol Use Disorders Identification Test (AUDIT) was adopted in this study to measure participants' alcohol use. This is because the AUDIT not only demonstrates high sensitivity and specificity among self-report screening measures, but has also been proven to be highly effective in identifying hazardous alcohol use or alcohol use disorders among university students (Reinert & Allen, 2002). The AUDIT consists of ten items, which cover three domains. They are hazardous alcohol use, dependence symptoms, and harmful alcohol use (Babor et al., 2001). It assesses people's alcohol use over the past year. The score range for the AUDIT is 0 - 40 in this study.

The third item in the AUDIT is about the frequency of heavy drinking. We made some adjustments to this question. The original question was "How often do you have six or more drinks on one occasion?" We changed it to "How often do you have: For females: 4 or more drinks on one occasion; For males: 5 or more drinks on one occasion?" This adjustment was based on the gender-specific definition of binge drinking. According to the National Institute on Alcohol Abuse and Alcoholism (2026), binge drinking is defined as a pattern of consuming five or more drinks for males, or four or more drinks for females, in about two hours. Except for the third question, all other questions in the AUDIT remain unchanged. However, because the third item was adjusted in this study, the standard AUDIT risk categories (e.g., low-risk range, hazardous or harmful range, alcohol dependent range) may not apply (AUDIT Screen, n.d.). For this reason, the AUDIT was treated as a modified screening instrument in this study, and only the continuous AUDIT score was used to reflect the severity of alcohol-related problems.

In addition, this section also collects three dimensions of frequency information from participants who report drinking. The first dimension is about the frequency of drinking for different reasons. The second dimension is about the frequency of drinking with different groups of people. The third dimension is about the frequency of drinking on different occasions. For the first dimension, we used Cooper's (1994, as cited in Richards et al., 2022) classification of drinking motives. The four categories are enhancement (Because you like the feeling), social (Because it helps you to enjoy a party), coping (To forget your worries), and conformity (Because your friends pressure you to drink). We revised the wording in the first category. We replaced "enhancement" with "enjoyment" to make it easier for participants to understand.

3.3. Statistical Analyses

All statistical analyses were performed using the package SPSS Version 29. The significance level was set at $p < 0.05$. Continuous variables were described as means and standard deviations, and categorical variables were described as absolute values and percentages. Frequency tables were generated, and stacked bar charts were

made. The bivariate analyses were then conducted to examine the associations between sociodemographic variables and drinking behaviors, including drinking status, binge drinking behaviors, number of standard drinks, and AUDIT score. For binge drinking behaviors and AUDIT score, 27 participants who reported never drinking alcohol were classified as never having engaged in binge drinking, with a 0 AUDIT score. For number of standard drinks, only 120 participants who had consumed alcohol in the past year were included in the analysis. Chi-square tests, independent-samples t-tests, One-way ANOVA, and Pearson correlation were applied depending on the nature of the variables.

To further examine correlates of Hong Kong university students' drinking behaviors, two multivariable logistic regression models and four multivariable linear regression models were constructed. However, both the number of standard drinks (skewness = 2.50) and AUDIT score (skewness = 1.38) showed positive skewness in the raw distribution. Therefore, before conducting bivariate and multivariate analyses, the number of standard drinks was log-transformed ($\log[x]$), and AUDIT score was log-transformed ($\log[x + 1]$). This transformation largely reduced skewness (number of standard drinks: skewness = 1.40; AUDIT score: skewness = -0.078).

4. Results

4.1. Characteristics of Sample

Table 1 includes descriptive statistics for study variables. Of the participants, 65.3% were female; 68.7% were junior students; 55.8% were local students. On average, students were aged 19.6 (std = 1.69). Most students had no religious beliefs (81.6%) and perceived their family's financial situation as comfortable (76.9%). Slightly over half of the students had a mother and father whose education was at university or above (51.0% vs 55.1%). 49.0% of students lived on campus, while 51.0% lived off campus.

In addition, **Table 1** also shows participants' drinking behaviors. Of all the participants, 27 reported that they had never drunk alcohol in the past year, while 120 reported drinking alcohol with different frequencies. Most students reported their drinking frequency was monthly or less (40.1%). Besides, more participants reported never engaging in binge drinking behaviors than those who had (55.8% vs. 44.2%). Only 5.4% of participants engaged in binge drinking on a weekly or daily basis. Participants' average AUDIT score was 3.97 (std = 4.02). Of 120 participants who reported alcohol use over the past year, on average, the number of standard drinks participants had on a typical day was 2.72 (std = 2.38).

Figures 1-3 present the drinking frequency of these 120 participants who have consumed alcohol over the past year by different motives, companions, and occasions. For drinking motives, social and enjoyment were the most common reasons for drinking. 39.2% and 43.4% of participants selected "often" or "almost always" for social and for enjoyment, respectively. On the contrary, conformity was the least common motive. Most people (85.9%) reported they rarely or never drink

for this reason. For coping, 55% of participants reported a low frequency, selecting “never” or “rarely”, while the others chose a higher frequency. The number of participants reporting a low frequency was slightly higher than those reporting a medium-to-high frequency (Figure 1).

Table 1. Frequency distributions and descriptive statistics of variables.

	n (Percent)		n (Percent)	
Gender		Perceived Family Financial Situation		
Female	96 (65.3)	Very Poor	0 (0.0)	
Male	50 (34.0)	Tight	20 (13.6)	
Third Gender	1 (0.7)	Comfortable	113(76.9)	
Study (year)		Well-Off	14 (9.5)	
Junior (year 1 - 2)	101 (68.7)	Accommodation Type		
Senior (year 3 & above)	46 (31.3)	On-Campus	72 (49.0)	
Student Type		Off-Campus	75 (51.0)	
Local Student	82 (55.8)	Drinking Frequency		
Mainland Student	53 (36.1)	Never	27 (18.4)	
International Student	12 (8.2)	Monthly or Less	59 (40.1)	
Religion		2 - 4 Times a Month	42 (28.6)	
Buddhism	10 (6.8)	2 - 3 Times a Week	15 (10.2)	
Christianity	11 (7.5)	4 or More Times a Week	4 (2.7)	
Islam	5 (3.4)	Binge Drinking Frequency		
None	120 (81.6)	Never	82 (55.8)	
Other	1 (0.7)	Less than Monthly	47 (32.0)	
Mother's Education		Monthly	10 (6.8)	
Below University	64 (43.5)	Weekly	7 (4.8)	
University or Above	75 (51.0)	Daily or Almost Daily	1 (0.7)	
Prefer Not to Say/Not Applicable	8 (5.4)	Number of Standard Drinks		
Father's Education		1 or 2	82 (68.3)	
Below University	52 (35.4)	3 or 4	22 (18.3)	
University or Above	81 (55.1)	5 or 6	7 (5.8)	
Prefer Not to Say/Not Applicable	14 (9.5)	7 to 9	5 (4.2)	
		10 or More	4 (3.3)	
	Mean	Std	Min.	Max.
Age (years)	19.60	1.69	18	24
Number of Standard Drinks	2.72	2.38	1.50	12.00
AUDIT Score	3.97	4.02	0.00	17.00

Note: n = 147 except for the number of standard drinks, in which case n = 120.

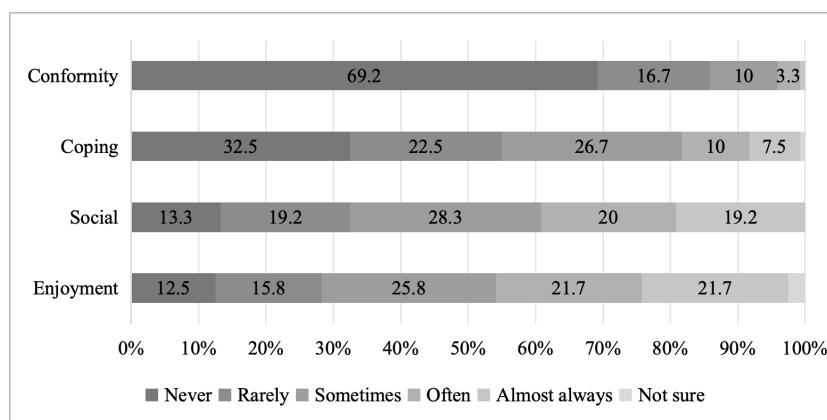


Figure 1. Stacked bar chart for drinking motives (n = 120).

For Drinking companions, participants reported that they drank most frequently with friends and least frequently with strangers. The frequency distribution for drinking with fellow students was relatively similar to drinking alone. The number of participants reporting a low frequency was close to that reporting a medium-to-high frequency. Besides, most participants indicated that they did not drink with family members very frequently (**Figure 2**).

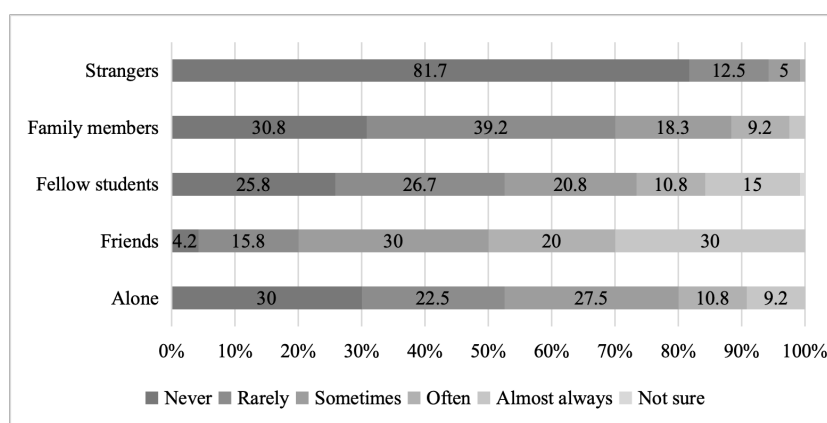


Figure 2. Stacked bar chart for drinking companions (n = 120).

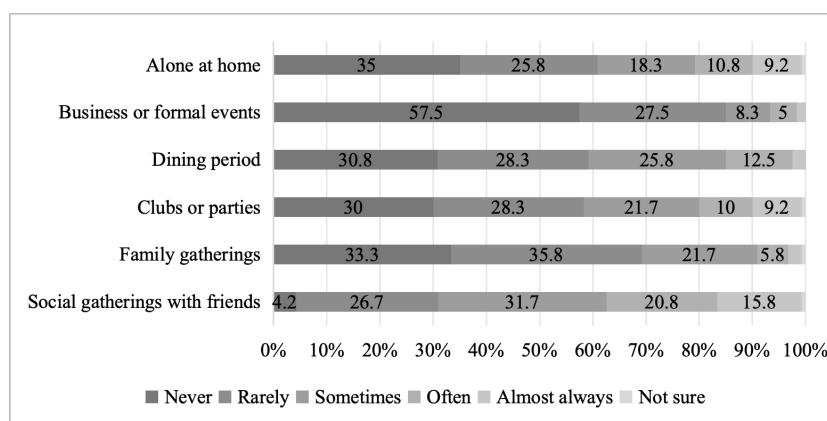


Figure 3. Stacked bar chart for drinking occasions (n = 120).

For drinking occasions, participants reported that they drank most frequently in social gatherings with friends and least frequently in business or formal events. The frequency distribution for drinking in clubs or parties was relatively similar to that of drinking alone at home. The number of participants reporting a low frequency was slightly higher than a medium-to-high frequency. Few people reported frequent drinking during the dining period or family gatherings (Figure 3).

4.2. Outcome 1: Drinking Status

In bivariate analyses, as shown in Table 2, study year ($\chi^2 = 4.18$, $p = 0.041$) and student type ($\chi^2 = 14.63$, $p < 0.001$) were significantly associated with drinking status. There was no significant association between drinking status and gender, age, accommodation type, religion, mother's and father's education, and perceived family financial situation. The percentages of local students (82.9%) and mainland students (88.7%) who drank were significantly higher than those of international students (41.7%). The percentage of senior year students (91.3%) who drank was slightly higher than that of junior year students (77.2%).

Table 2. Descriptive statistics and bivariate associations with drinking status and binge drinking behavior.

	Outcome 1: Drinking Status		Outcome 2: Binge Drinking Behavior	
	Drinking n (%)	χ^2	Binge Drinking n (%)	χ^2
Gender		0.01		5.59*
Female	78 (81.3)		36 (37.5)	
Male	41 (82.0)		29 (58.0)	
Study (year)		4.18*		1.72
Junior (year 1 - 2)	78 (77.2)		41 (40.6)	
Senior (year 3 & above)	42 (91.3)		24 (52.2)	
Student Type		14.63*		4.40
Local student	68 (82.9)		40 (48.8)	
Mainland student	47 (88.7)		23 (43.4)	
International student	5 (41.7)		2 (16.7)	
Accommodation Type		.90		0.00
On-campus	61 (84.7)		32 (44.4)	
Off-campus	59 (78.7)		33 (44.0)	
Religion		2.80		4.49*
Religious	19 (70.4)		7 (25.9)	
Non-religious	101 (84.2)		58 (48.3)	

Note: n = 147 except for gender, in which case n = 146 due to 1 person being third gender. Parental education, perceived family financial situation, and age are all not statistically significant with respect to either outcome. * $p < 0.05$.

An adjusted logistic regression was then conducted, controlling for six factors. As shown in **Table 3**, student type remained significant ($p = 0.002$). Compared to local students, international students had significantly lower odds of being past-year drinkers. Specifically, international students showed a dramatic reduction in drinking participation, with the risk decreasing by 97% (OR = 0.03). In addition, accommodation type ($p = 0.021$), which was not significant at the bivariate level, emerged as a significant correlate in the adjusted model. Living off-campus was significantly associated with a lower likelihood of drinking than living on-campus, with risk decreasing by 79% (OR = 0.21). After adjustment, study year lost its significance, and age, gender, and religion remained non-significant correlates (**Table 3**).

Table 3. Multivariable adjusted models for drinking status and binge drinking behavior.

	Drinking Status		Binge Drinking Behavior	
	OR	95% CI	OR	95% CI
Gender				
Female	1.00		1.00	
Male	1.53	0.54 - 4.33	2.95*	1.35 - 6.42
Age	1.26	0.76 - 2.08	1.47	0.99 - 2.18
Study (year)				
Junior (year 1 - 2)	1.00		1.00	
Senior (year 3 & above)	2.13	0.28 - 15.97	0.62	0.15 - 2.52
Student Type				
Local student	1.00		1.00	
Mainland student	0.59	0.16 - 2.25	0.45	0.19 - 1.05
International student	0.03*	0.003 - 0.26	0.09*	0.01 - 0.70
Accommodation Type				
On-campus	1.00		1.00	
Off-campus	0.21*	0.05 - 0.79	0.53	0.24 - 1.18
Religion				
Religious	1.11	0.28 - 4.48	0.50	0.17 - 1.49
Non-religious	1.00		1.00	
Nagelkerke R Square	0.230		0.186	

Note: n = 146 due to 1 person being third gender. * $p < 0.05$.

4.3. Outcome 2: Binge Drinking Behavior

For binge drinking behavior, as shown in **Table 2**, gender ($\chi^2 = 5.59$, $p = 0.018$) and religion ($\chi^2 = 4.49$, $p = 0.034$) were significantly associated with it in bivariate analyses. There was no significant association between binge drinking behavior and age, study year, student type, accommodation type, mother's and father's education, and perceived family financial situation. The percentage of males (58.0%)

who had engaged in binge drinking behavior was significantly higher than that of females (37.5%). The percentage of non-religious students (48.3%) who had ever engaged in binge drinking behavior was significantly higher than that of religious students (25.9%).

After adjusting for gender, age, study year, student type, accommodation type, and religion, male gender ($p = 0.007$) and being international students ($p = 0.021$) were both significant correlates in the multivariate model. Compared to females, males were significantly more likely to engage in binge drinking, with the risk increasing by 195% (OR = 2.95). Similar to the drinking status model, international students showed a substantially lower risk of binge drinking, with the risk decreasing by 91% (OR = 0.09). As for the other four variables, none of them were significantly associated with binge drinking behavior (Table 3).

4.4. Outcome 3: Number of Standard Drinks

Table 4. Descriptive statistics and bivariate associations with number of standard drinks and AUDIT score.

	Outcome 3: Number of Standard Drinks		Outcome 4: AUDIT Score	
	Mean $\pm$ Std	<i>t</i>	Mean $\pm$ Std	<i>t</i>
Gender		−2.19*		−1.70
Female	2.31 $\pm$ 1.62		3.50 $\pm$ 3.76	
Male	3.52 $\pm$ 3.28		4.84 $\pm$ 4.42	
Age	-	^a 0.22*	–	^a 0.14
Study (year)		−0.68		−2.27*
Junior (year 1 - 2)	2.58 $\pm$ 2.08		3.51 $\pm$ 3.81	
Senior (year 3 & above)	2.98 $\pm$ 2.87		4.96 $\pm$ 4.32	
Student Type		^b 0.14		^b 6.65*
Local student	2.65 $\pm$ 2.13		3.95 $\pm$ 3.94	
Mainland student	2.82 $\pm$ 2.81		4.60 $\pm$ 4.24	
International student	2.70 $\pm$ 1.10		1.25 $\pm$ 2.34	
Accommodation Type		−0.04		0.47
On-campus	2.65 $\pm$ 2.12		3.82 $\pm$ 3.53	
Off-campus	2.80 $\pm$ 2.64		4.11 $\pm$ 4.46	
Religion		0.24		−2.01*
Religious	2.79 $\pm$ 2.52		2.93 $\pm$ 3.76	
Non-religious	2.71 $\pm$ 2.36		4.20 $\pm$ 4.05	

Note: For outcome 3, $n = 120$, except for gender, in which case $n = 119$ due to 1 person being third gender. For outcome 4, $n = 147$, except for gender, in which case $n = 146$ due to 1 person being third gender. Superscript a refers to a correlation coefficient. Superscript b refers to an F statistic. Parental education and perceived family financial situation are both not statistically significant with respect to either outcome. * $p < 0.05$.

Descriptive statistics and bivariate associations for the number of standard drinks were calculated among students who reported alcohol use over the past year ($n = 120$). As shown in **Table 4**, in bivariate analyses, gender ($t = -2.19$, $p = 0.032$) was significantly associated with the number of standard drinks consumed on a typical day. Males reported higher alcohol consumption (Mean = 3.52, Std = 3.28) than females (Mean = 2.31, Std = 1.62). Besides, age ($r = 0.22$, $p = 0.018$) was also a significant correlate. There was no significant association between the number of standard drinks and the other seven sociodemographic correlates at the bivariate level.

In the multivariate model 1, gender ($b = 0.272$, $p = 0.019$) and age ($b = 0.180$, $p = 0.003$) remained significant correlates of the number of standard drinks after adjustment. Males consumed approximately 31.3% more standard drinks than females, while one additional year of age was associated with about a 19.7% higher number of standard drinks. Study year ($b = -0.440$, $p = 0.038$), which was not significant at the bivariate level, emerged as a significant correlate in the adjusted model. Compared with junior students, senior students consumed about 35.6% fewer standard drinks.

Model 2 added mother's and father's education, and perceived family financial situation, but the pattern of significant correlates remained largely similar. Gender ($b = 0.321$, $p = 0.010$) and age ($b = 0.187$, $p = 0.004$) remained significant, with only minor changes in effect sizes. However, study year ($b = -0.421$, $p = 0.064$) lost its significance in Model 2, and none of the parental SES correlates reached statistical significance. Although Model 2 showed a slight improvement in fit ($R^2 = 0.163$ vs. 0.133 in Model 1), there was a reduction in sample size ($n = 109$ in Model 2 vs. 119 in Model 1), due to missing data on mother's and father's education (**Table 5**).

4.5. Outcome 4: AUDIT Score

For AUDIT score, study year ($t = -2.27$, $p = 0.025$), student type ($F = 6.65$, $p = 0.002$), and religion ($t = -2.01$, $p = 0.046$) were significantly associated with it in bivariate analyses, as shown in **Table 4**. There was no significant association between AUDIT score and the other six sociodemographic correlates at the bivariate level. Senior students (Mean = 4.96, std = 4.32) had a higher average score than junior students (Mean = 3.51, std = 3.81). The AUDIT scores of Mainland students (Mean = 4.60, std = 4.24) and local students (Mean = 3.95, std = 3.94) were both more than three times higher than those of international students (Mean = 1.25, std = 2.34). In addition, students with religion (Mean = 2.93, std = 3.76) had a lower average score than students without religion (Mean = 4.20, std = 4.05).

In the multivariate model 3, being international students ($b = -1.045$, $p = 0.001$) was the only correlate remaining significant. Compared to local students, international students had approximately 64.8% lower AUDIT scores. After adjusting for five other factors, gender ($b = 0.309$, $p = 0.03$) emerged as a new significant correlate, indicating that males had approximately 36.2% higher AUDIT scores than

females. Study year ($b = 0.126$, $p = 0.625$) and religion ($b = -0.060$, $p = 0.762$) both lost their significance (**Table 5**).

Table 5. OLS regression models of number of standard drinks and AUDIT score.

	Number of Standard Drinks		AUDIT Score	
	Model 1	Model 2	Model 3	Model 4
Constant	-2.625*	-2.834*	0.054	-0.027
Male	0.272*	0.321*	0.309*	0.342*
Age	0.180*	0.187*	0.067	0.077
Senior (Year 3 & above)	-0.440*	-0.421	0.126	0.151
Mainland student	-0.112	-0.155	-0.030	-0.113
International student	-0.351	-0.413	-1.045*	-1.162*
Religious	0.063	0.175	-0.060	-0.066
Off-campus	-0.064	-0.052	-0.256	-0.328*
Mother's education_below university		0.233		0.099
Father's education_below university		-0.153		-0.105
Family financial situation_tight		-0.091		-0.017
Family financial situation_well-off		-0.191		-0.139
R-squared	0.133	0.163	0.158	0.197

Notes: $n = 119$ for Model 1, $n = 109$ for Model 2, $n = 146$ for Model 3, $n = 131$ for Model 4.
* $p < 0.05$.

Model 4 also added three parental SES correlates. Gender ($b = 0.342$, $p = 0.025$) and being an international student ($b = -1.162$, $p < 0.001$) both remained significant and showed slightly larger effect sizes compared to Model 3. It was worthy of noting that accommodation type ($b = -0.328$, $p = 0.045$) became a significant correlate in Model 4. Compared to students living on-campus, students living off-campus had approximately 28.0% lower AUDIT scores. As in Model 2, mother's and father's education and perceived family financial situation all failed to reach statistical significance in Model 4. Besides, in Model 4, a similar improvement in fit was observed ($R\text{-squared} = 0.197$ vs. 0.158 in Model 3), and there was the same reduction in sample size ($n = 131$ in Model 4 vs. 146 in Model 3) for the same reason (**Table 5**).

5. Discussion

This study investigated the drinking behaviors of university students at a major public university in Hong Kong. It examined the association between students' nine sociodemographic characteristics and four outcomes of their drinking behaviors. The overall finding indicated that while alcohol use was common at university, risky drinking behaviors were not very prevalent. Although nearly 80% of the sample had ever used alcohol in the past year, only a very small number of them

had engaged in frequent binge drinking, consumed large amounts of alcohol on a single occasion, or had relatively high AUDIT scores. Most students were found most frequently at social gathering settings, with friends or fellow students, drinking for social or enjoyment reasons. In contrast, most students reported never drinking at business or formal event settings, with strangers, with the motive of conformity.

As for the nine sociodemographic correlates, male gender and being international students were the only variables consistently associated with three outcomes of university students' drinking behaviors. Both male gender and being international students were significant correlates of binge drinking behaviors and AUDIT score. Besides, gender was additionally associated with the number of standard drinks, and males drank significantly more than females, while student type was further associated with drinking status, and international students were less likely to engage in past-year drinking.

In terms of gender, most of the relevant findings were consistent with both previous Western and Hong Kong research. Compared with female university students, male university students consumed more alcohol, were more likely to have engaged in binge drinking, and had higher AUDIT scores. This pattern matches the literature, which identifies male gender as one of the most robust correlates of drinking quantity (Berkowitz & Perkins, 1987; Lorant et al., 2013), binge drinking (Griffiths et al., 2006; Kim et al., 2009; Kim et al., 2020), and problematic drinking (El Ansari et al., 2013; Lorant et al., 2013).

The consistency of these findings across different cultural contexts may reflect the persistence of gendered social norms regarding alcohol use. There is a lingering social disapprobation of drunkenness among women (Kim et al., 2009). However, it is worthy of noting that an interesting discrepancy also emerged in this study. Unlike previous studies in Hong Kong (Abdullah et al., 2002; Griffiths et al., 2006), a different finding shows that there is no difference between male and female university students in terms of whether they drink alcohol. It seems that most Hong Kong university students in our study no longer agree with beliefs such as "drinking is only men's business" (Abdullah et al., 2002). One possible explanation is that gendered social norms regarding alcohol use are also evolving in Hong Kong. This has led to greater social acceptance of women drinking alcohol.

Social origin was not used to classify students as local, mainland, or international in this study. Instead, participants were asked to select their own student type from these three options. Given the limited literature on the relationship between social origin or student type and university students' drinking behaviors, the findings of this study can provide some new insights regarding this correlation.

In terms of local students and Mainland students, their drinking behaviors were found to have no significant association in any of the four outcomes. This finding to some extent rejects the previous study, which suggested that Hong Kong stu-

dents had a lower rate of alcohol use than Mainland students, as they lived at home and had fewer opportunities to drink (Griffiths et al., 2006). The convergence in drinking behaviors among students in the two regions may reflect that the university, as a relevant independent social space, has the major power shaping students' behavior. Its influence may transcend the power of regional differences.

International students in this study are a group that deserves special attention, as this category involves greater complexity. These students come from different countries and represent diverse ethnic backgrounds. Compared with local students and Mainland students, international students were less likely to drink, less likely to engage in binge drinking, and had lower AUDIT scores. This difference is most likely the result of a combination of several other factors.

One possibility is that the international students in the sample may be more likely to come from cultural or religious backgrounds with more conservative attitudes toward alcohol use. Of the 12 international students, 10 had religious beliefs, and 5 of them were Muslim. Since drinking alcohol is strictly prohibited in Islam, many Muslims have a negative attitude toward alcohol and refuse to use it (Ahmed et al., 2014; Yi et al., 2017). Notably, religion was not a significant correlate across all four outcomes of university students' drinking behaviors. It was only significantly associated with binge drinking behaviors and AUDIT score at the bivariate level. In the two multivariate models, the associations were no longer significant after student type was added. This may suggest that the binary classification of religious and non-religious in this study masks differences in alcohol-related norms across different religions. The protective effect of international student status may partly reflect the impact of being a Muslim. However, due to limitations in sample size, this study did not specifically examine the role of different religious beliefs.

A second possibility is that international students may have fewer opportunities to participate in social gatherings involving alcohol, as they have smaller social networks than Mainland or local students. On the one hand, international students in Hong Kong face language and cultural barriers, which limit their interaction with other students (Yu & Wright, 2026). On the other hand, these international students tend to stay within familiar cultural groups (Yu & Wright, 2026), but the number of international students at the university in Hong Kong is relatively small. Although these two points have been widely verified in other studies, this study did not directly test them, so this explanation is based on speculation. Besides, the sample size of international students in this study is small ($n = 12$). This finding should therefore be interpreted with caution. Future research with larger international student samples is needed to confirm whether these patterns still hold.

For age, this study examines both dimensions of biological age and study year, which are highly correlated but different. In terms of the relationship between age and the number of standard drinks, it was found that both biological age and study year were significantly associated, but the effects of the two were opposite. As par-

ticipants' biological age increased, the number of standard drinks they consumed on a typical day also increased. On the contrary, compared with junior students, the senior students tended to consume less alcohol as they entered higher study years. This aligns with the argument of [Lorant et al. \(2013\)](#) that, without controlling for age and time spent at university together, the true effects of biological age and study year on university students' drinking behaviors may be confounded with each other.

While our findings similarly show that both variables were independently significant after adjustment, the direction of these associations differed from that reported by [Lorant et al. \(2013\)](#). The discrepancy may reflect differences in the research context, as differs in many ways, such as drinking culture, social norms, campus environment, and so on. It is worth noting that neither biological age nor study year was significantly associated with drinking status, binge drinking behaviors, and AUDIT score. This may be attributed to a relatively narrow age range and limited variation in study year within the undergraduate sample.

Accommodation type was only significantly associated with drinking status among the four outcomes of university students' drinking behaviors. It was not significant at the bivariate level and only emerged as a significant correlate after adjusting for the other five variables. Compared with students living on-campus, students living off-campus were significantly less likely to be past-year drinkers. This pattern may indicate a suppression effect, given the significant association between student type and accommodation type. 91.7% of international students lived on-campus, whereas the percentage of local students was only 31.7%. The association between accommodation type and drinking status at the bivariate level may be confounded by the student type composition. Once the student type was adjusted, the independent association between on-campus residence and being past-year drinkers was able to appear. The finding is in agreement with [Abdullah et al. \(2002\)](#), who observed that university students who had drunk alcohol ever are more likely to live on-campus. This may be because on-campus residence is associated with a lower level of parental monitoring ([Abar & Turrisi, 2008](#); [Wood et al., 2004](#)), more frequent night social gatherings ([Gasparotto et al., 2015](#)), and greater exposure to drinking norms among their peers ([Kim et al., 2009](#)), which provide university students with more opportunities to try alcohol.

As for parental SES, although previous studies have shown the diverse effects of parental SES on university students' drinking behaviors, it was not a significant correlate for any of the four outcomes of university students' drinking behaviors in this study. Mother's education, father's education, and perceived family financial situation were the three correlates used to measure parental SES. However, none of them showed any significant association with drinking status, binge drinking behaviors, the number of standard drinks, or AUDIT score.

The main reason may be that there are relatively minor differences in the participants' family backgrounds. Most students come from middle-class families with comfortable financial situations, and their parents have received a high school or

higher education. Without enough samples from extremely poor and wealthy families, the predictive power of parental SES regarding differences in participants' drinking behaviors is weakened. In addition, this finding may also reflect that the university students in this sample were in a transitional period. As young adults who have entered university life, the influence of their parents' background on their behavior tends to weaken. Instead, the new changes they experience in university may develop a greater impact on their alcohol use. This interpretation is consistent with the finding that senior student status and on-campus residence emerged as significant correlates in this study.

It is worthy of noting that adding parental SES in the multivariate models for number of standard drinks and AUDIT score did not significantly improve the overall explanatory power (R-squared) and resulted in a reduction in the effective sample size. Given that all correlates for parental SES were not significant, and to avoid potential bias and loss of statistical power, this study primarily interprets and discusses the results based on the larger sample model.

6. Conclusion

Given the results of this study, alcohol use is relatively common among students at this major public university in Hong Kong, but it is not a serious problem. The majority of students engaged in moderate drinking. Only a very small number of individuals show patterns consistent with more frequent or heavier alcohol use.

This study also examined the nine sociodemographic correlates of the four outcomes of university students' drinking behaviors. Findings indicated that male gender and being international students were the most consistent correlates. While male gender showed increased risk, international students demonstrated a protective effect. Age and study year were both significant correlates for the number of standard drinks. Accommodation type was a significant correlate for drinking status. Religion, mother's education, father's education, and perceived family financial situation were all not significantly associated with any outcome of drinking behaviors. This finding may suggest that the association between socioeconomic status and university students' drinking behaviors in this study may be weaker than the association between demographic factors and university students' drinking behaviors.

There are several limitations to this study. The first one is the research resource limitation and the sampling limitation. Due to time and funding limitations, this study was unable to use probability sampling. As a result, we cannot verify the representativeness of the sample or generalize its findings to the entire population of university students in Hong Kong. The second one is sample homogeneity and distribution bias. The effective sample size for this study was 147 participants. Due to the limited sample size and the non-probability sampling method used in this study, there is relatively limited variation within the sample. This also limits the study's ability to explore the effects of factors such as parental SES. In addition, the study population in this study is students at one major public university, which

is a selected group. If similar studies are conducted at a different university or at multiple universities, the findings may reflect different situations. The third one is the validity of responses collected through self-report questionnaires. This study used self-administered questionnaires to collect quantitative data, which means the validity of participants' responses remains unknown. Since people tend to portray themselves in a positive way, they are likely to report lower frequencies or intensities of alcohol use when answering questions about their drinking behaviors. Although the anonymity of the questionnaires reduces some risks, the validity of the responses cannot be verified.

Based on the findings of this study, campus alcohol prevention programs in Hong Kong should be targeted at specific student groups. Since male students and those living in on-campus residences showed a higher risk of alcohol use, gender specific and dormitory-based prevention programs, such as peer-led discussion groups and "safe drinking" workshops, could be introduced. For future studies, we suggest using random sampling and collecting more data to obtain a larger sample size. If universities wish to gain a more comprehensive understanding of students' alcohol use, we suggest that universities send out questionnaires to students in the university's name to increase the response rate and adopt random sampling to get a more representative sample.

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Author Contributions

Conceptualization: Y.T., W.L., and P.L.; Methodology: Y.T.; Formal analysis: Y.T.; Investigation: Y.T., W.L., and P.L.; Data curation: Y.T.; Writing—original draft preparation: Y.T. and W.L.; Writing—review and editing: Y.T., W.L., and P.L. All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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