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Binge drinking: Prevalence, correlates, and expectancies of alcohol use among individuals with first-episode psychosis

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Aim: This study examines the prevalence and correlates of binge drinking and its association with expectancies of alcohol use, within a sample of patients with first-episode psychosis enrolled in the Early Psychosis Intervention Programme (EPIP) in Singapore's Institute of Mental Health.

Methods: A total of 280 patients from the EPIP were recruited for an on-going longitudinal study examining cigarette smoking and alcohol habits. Only baseline data were used, pertaining to socio-demographics, alcohol use, clinical symptomology, quality of life, and expectancies of alcohol use.

Results: Overall 23.9% (N = 67) reported ever binge drinking in their lifetime, and 11.4% (N = 32) had binged in the past 2 weeks. Controlling for all other socio-demographic and clinical factors, binge drinking was significantly associated with higher education levels, having children, current or past history of cigarette smoking, and lower negative symptom scores. Binge drinkers were also more likely to endorse statements relating to the themes of enhancement seeking (ie, using alcohol to alter or enhance experiences in a pleasurable way), coping with distress, and socializing-related expectancies of alcohol use.

Conclusion: Similar to past studies, the prevalence of binge drinking among our first-episode sample was relatively high. Our findings suggest certain lifestyle and social factors associated with risky drinking behaviour that future prevention efforts may address. Additionally, the three motivations of enhancement seeking, coping, and socializing also suggest psychological processes and coping styles that could be targeted for interventions.

KEYWORDS

alcohol use, binge drinking, first-episode psychosis, motivations

1 | BACKGROUND

Prevalence of alcohol abuse reported among persons with psychosis is consistently higher than that of the general population, with rates ranging from 20% to 50% (Archie & Gyömörey, 2009; Barrowclough, Eisner, Bucci, Emsley, & Wykes, 2014; Compton, Whicker, & Hochman, 2007; Ouellet-Plamondon, Abdel-Baki, Salvat, & Potvin, 2017). Persons with psychosis are also found to be at greater risk for developing alcohol use disorders (AUDs), and having worse health and psychosocial outcomes than the general population (Archie & Gyömörey,

2009; Cruce, Nordström, & Öjehagen, 2007). In a two-year longitudinal study of patients with first-episode psychosis (FEP), AUD was associated with lower quality of life (QOL), social functioning, and medication non-compliance (Ouellet-Plamondon et al., 2017). Alcohol misuse has also been linked with exacerbated symptomology, such as disorganized speech and depression (Drake, Osher, & Wallach, 1989; Van Mastrigt, Addington, & Addington, 2004; Wade et al., 2006; Warner et al., 1994). Aside from mental health-related risks, heavy alcohol consumption is one of the key behavioural risk factors for cardiovascular disease—the largest single cause of death for persons with

psychosis (Baker, Hiles, Thornton, Hides, & Lubman, 2012; Osborn, Nazareth, & King, 2007). Although the dangers of diagnosable AUD—alcohol abuse and alcohol dependence—have been well established, studies have shown that even mild or moderate use of alcohol can have a destabilizing impact among persons with psychosis (Compton et al., 2007; Drake et al., 1989; Goldstein, Velyvis, & Parikh, 2006).

Binge drinking, also known as heavy episodic drinking, is a pattern of risky alcohol consumption commonly attributed to young adults (Kuntsche, Kuntsche, Thrul, & Gmel, 2017; Yi, Ngin, Peltzer, & Pengpid, 2017). It is often measured as having consumed four or more drinks on one occasion for women, and five or more drinks on one occasion for men (Biolcati, Passini, & Mancini, 2016; Lim et al., 2013). Binge drinking has been associated with increased risk for acute harms such as alcohol poisoning, risky sexual behaviour, as well as occupational and interpersonal strife (Kuntsche et al., 2017; Robin, Long, Rasmussen, Albaugh, & Goldman, 1998). Specifically, among mentally ill populations, binge drinking has been linked with a greater likelihood of non-recovery and medication non-compliance (Haynes et al., 2008; Warner et al., 1994). Petit, Maurage, Kornreich, Verbanck, and Campanella (2014) reported that the alternating sessions of alcohol intoxication and abstinence may have worse consequences than other harmful patterns of alcohol misuse. Crucially, not only does binge drinking occur in individuals with increased alcohol use and frequency, it is associated with higher odds of acquiring riskier drinking patterns and developing alcohol dependence (Biolcati et al., 2016; Kim et al., 2008; Robin et al., 1998). Although previous research has focused on AUDs, studies generally report that more people with psychosis present risky drinking patterns than diagnosable criteria for AUDs (Archie et al., 2007; Barry et al., 2006). Moreover, interventions targeted at populations with sub-clinical alcohol problems have shown effectiveness in reducing alcohol consumption and progression into disorders (Baker et al., 2012). Consequently, efforts targeted against binge drinking may prove to be an effective prevention strategy in the long run.

Aside from understanding the prevalence and correlates of binge drinking, understanding underlying motivations for use is important to determine appropriate preventive treatment. Based on the cognitive-motivational models of alcohol use, drinking behaviour is shaped by each individual's anticipated consequences of drinking alcohol (Cooper, Frone, Russell, & Mudar, 1995; Cox & Klinger, 1988). These expectancies motivate behavioural decisions, and have been commonly shown to predict drinking patterns among college students (Derby, 2011; McBride, Barrett, Moore, & Schonfeld, 2014). A few prominent motivations associated with alcohol and other stimulant use include self-medication to deal or cope with unwanted emotional states or symptoms; use of alcohol as a socializing lubricant; and the seeking of stimulants to enhance experiences and sensations by altering perceptions and thoughts in a pleasurable way (Addington & Duchak, 1997; Archie, Boydell, Stasiulis, Volpe, & Gladstone, 2013; Biolcati et al., 2016). Consequently, in this study, we examine the prevalence and correlates of binge drinking, and its association with expectancies of alcohol use, within a sample of patients with FEP enrolled in the Early Psychosis Intervention Programme (EPIP) at the Institute of Mental Health.

2 | METHODS

Data were extracted from an on-going longitudinal study examining cigarette smoking and alcohol habits among FEP patients who were enrolled in the EPIP in Singapore, where the legal drinking age is 18. EPIP is a comprehensive and integrated patient-centred programme consisting of a multidisciplinary team of psychiatrists, psychologists, case managers, social workers, nurses and occupational therapists who provide psycho-pharmacological management over 2 years (Verma, Poon, Subramaniam, Abdin, & Chong, 2012). Participants enrolled in EPIP were aged between 15 and 40 years and had a first-episode psychotic disorder that was not substance-induced or related to major medical or neurological illness (Verma et al., 2012). For this study, participants had to be capable of providing consent, as well as be able to read and understand English. Persons who were deemed unstable or identified as being at risk mental state by their case managers were excluded. The longitudinal study involves three visits over a span of a year; however, only baseline data were used for this paper (N = 280). All baseline visits were completed within 3 months of admission into the EPIP. All participants completed a written informed consent and a series of questionnaires on an iPad. For participants below the legal age of 21 years, parental consent was sought. The study obtained ethics approval from the National Healthcare Group Domain Specific Review Board.

2.1 | Measures

The Alcohol Use Disorders Identification Test (AUDIT) was administered. The items relevant to this study were (a) if they have ever consumed alcohol, that is, Have you ever consumed alcoholic beverages?; (b) lifetime binge drinking was determined by the questions-if male: Have you ever consumed five or more standard drinks in one sitting?; if female: Have you ever consumed four or more standard drinks in one sitting?; and (c) prevalence of binge drinking in the last 2 weeks. One standard drink was defined as equivalent to one can of beer (330 mL), a glass of wine (140 mL), or one shot of spirits (40 mL).

Participants' expectancies of alcohol were assessed using 12 items about the believed effects of alcohol. Variations of this questionnaire have been commonly used to assess attitudes towards alcohol use among university students (McBride et al., 2014). Participants were asked, "For each of the following statements, indicate whether or not you believe alcohol has that effect?" and responded on a five-point Likert scale (1 = Strongly Disagree; 5 = Strong Agree). Cronbach's alpha for this sample was 0.84, indicating high internal consistency of the questionnaire.

The Structured Clinical Interview for Diagnostic Statistical Manual of Mental Disorders-IV (SCID-clinical version) was used to diagnose participants for psychosis at baseline. Duration of untreated psychosis (DUP) was operationalized as the time in months between the onset of psychotic symptoms and the time of established diagnosis and treatment. The Positive and Negative Scale for Schizophrenia PANSS was used to assess severity of psychopathology, and to obtain scores for positive and negative symptoms (Kay, Opler, & Lindenmayer, 1988). Ratings were completed by experienced psychiatrists who were trained in the use of the rating instrument. The

World Health Organization Quality of Life Abbreviated questionnaire (WHOQOL-BREF) questionnaire was used to assess QOL (WHO, 1998). The WHOQOL-BREF is a self-administered questionnaire of 26 items, with a five-point Likert scale. It measures perceived QOL over four broad domains. The instrument has been cross-culturally validated and field-tested (Skevington, Lofty, & O'Connell, 2004). Socio-demographic questions included age at interview, ethnicity, gender, marital status, religion, educational qualification, employment status, and cigarette smoking status and quantities of use.

2.2 | Statistical analyses

Statistical analyses were conducted using IBM SPSS Statistics for Windows, Version 24.0 (Armonk, NY: IBM Corp). Descriptive analyses were first conducted to establish the prevalence of alcohol-related use and socio-demographics of the sample. Following WHO recommendations, an AUDIT score of 16 was used as the cutoff for AUD; individuals with scores of 16 and above "represented a high level of alcohol problems" and more likely to have an AUD (Babar, Higgins-Biddle, Saunders, & Monteiro, 2001, p. 20). Bivariate analyses were conducted, with cross-tabulations for categorical variables and independent samples t tests for continuous clinical and QOL variables, and Cohen's d reported for effect sizes. Logistic regression analysis was performed to examine socio-demographic and clinical correlates of lifetime binge drinking. First, socio-demographic correlates of lifetime binge drinking were examined. Thereafter, cigarette smoking status, clinical diagnosis, and significant clinical variables were added, while controlling for significant socio-demographic correlates. To assess the associations between expectancies about alcohol and lifetime binge drinking behaviour, cross-tabulation analysis was conducted and χ^2 statistics are reported. Response categories for the expectancies about alcohol items were collapsed from five categories into three (disagree/strongly disagree, neutral, agree/strongly agree) due to limited cases. Statistical significance was set at $P < 0.05$, using two-sided tests.

3 | RESULTS

3.1 | Prevalence of binge drinking

Table 1 presents the socio-demographic and clinical characteristics of the sample. Of the 280 participants, half were male (50.7%), ranging in age from 18 to 24 years (46.1%), of Chinese descent (71.4%), and were diagnosed with a schizophrenia spectrum disorder (53.2%). Overall, 63.2% (N = 177) reported having ever consumed alcoholic beverages, 23.9% (N = 67) reported ever binge drinking in their lifetime, and 11.4% (N = 32) had binged in the past 2 weeks. Of the 67 participants who reported lifetime binge drinking, frequency of binge drinking over the previous 2 weeks was reported as follows: 52.2% (N = 35) did not binge drink over the last 2 weeks; 38.8% (N = 26) reported binge drinking two to six times; and 9.0% (N = 6) 10 or more times in the last 2 weeks. 2.1% (N = 6) of the total sample had AUDIT scores of 16 and above,

indicating a high likelihood of having an AUD. All six participants were lifetime binge drinkers. Table 2 presents additional descriptive statistics with regards to alcohol and cigarette use among the sample.

3.2 | Correlates of binge drinking

t tests showed that lifetime binge drinkers had significantly lower negative symptom scores on the PANSS (M = 13.3, SD = 7.4) than non-binge drinkers (M = 16.1, SD = 8.5, t(143) = 2.04, $P = 0.04$; $d = 0.35$). Lifetime binge drinkers also had a shorter DUP (M = 10.0, SD = 16.8) than non-binge drinkers (M = 16.3, SD = 19.7, t(143) = 2.00, $P = 0.047$; $d = 0.34$). There was no significant difference for any of the QOL domains or positive PANSS scores between binge drinkers and non-binge drinkers. Examining the socio-demographic correlates of lifetime binge drinking (Table 3), women were less likely to binge drink than men (odds ratio [OR]: 0.41, 95% confidence interval [CI]: 0.21-0.78, $P = 0.01$); individuals who were currently married were less likely to binge drink than those who were neither married nor cohabiting (OR: 0.15, 95% CI: 0.02-0.98, $P = 0.04$); and persons with children were more likely to binge drink than those without (OR: 9.01, 95% CI: 1.45-55.87, $P = 0.02$). Additionally, unemployed individuals were less likely to binge drink than those who were employed or serving national service (OR: 0.41, 95% CI: 0.17-0.99, $P = 0.047$).

Controlling for significant socio-demographic factors, cigarette smoking status, clinical diagnosis, DUP, and negative PANSS scores were added to the second regression model (Table 4). Gender and work status were no longer significant predictors of lifetime binge drinking, and marital status predicted binge drinking only at a trending level ($P = 0.05$). However, individuals with children were still more likely to binge drink than those without (OR: 22.53, 95% CI: 1.50-338.75, $P = 0.02$); whereas individuals with either primary or lower education (OR: 0.07, 95% CI: 0.01-0.78, $P = 0.03$) or secondary education (OR: 0.19, 95% CI: 0.06-0.66, $P = 0.01$) were less likely to binge drink than those with pre-tertiary education. Aside from socio-demographic factors, current cigarette smokers (OR: 4.39, 95% CI: 1.63-11.78, $P = 0.003$) and ex/social cigarette smokers (OR: 11.73, 95% CI: 1.52-90.76, $P = 0.02$) had higher odds of binge drinking than those who had never smoked cigarettes. Lastly, participants with higher scores on the PANSS negative scale had lower odds of binge drinking (OR: 0.94, 95% CI: 0.89-0.996, $P = 0.04$).

3.3 | Expectancies of alcohol use

Compared to non-binge drinkers, binge drinkers were significantly more likely to endorse the statements that alcohol use helps "break the ice" (χ^2(2) = 11.39, $P = 0.003$), enhances social activities (χ^2(2) = 11.87, $P = 0.003$), makes it easier to deal with stress (χ^2(2) = 6.02, $P = 0.049$), makes a connection with friends easier (χ^2(2) = 8.91, $P = 0.012$), and enables people to have more fun (χ^2(2) = 11.39, $P = 0.018$). Negative expectancies of alcohol use were not significantly associated with binge drinking behaviour (Table 5).

TABLE 1 Socio-demographic and clinical characteristics of the sample (N=280)

Characteristic	Category	Binge Drinkers			Non-binge drinkers			Total		
		N	%	M (SD)	N	%	M (SD)	N	%	M (SD)
Age group	15–17 years	0	0	-	10	4.7	-	10	3.6	-
	18–24 years	27	40.3	-	102	47.9	-	129	46.1	-
	25–30 years	22	32.8	-	50	23.5	-	72	25.7	-
	31–40 years	18	26.9	-	51	23.9	-	69	24.6	-
Gender	Male	44	65.7	-	98	46.0	-	142	50.7	-
	Female	23	34.3	-	115	54.0	-	138	49.3	-
Ethnicity	Chinese	53	79.1	-	147	69.0	-	200	71.4	-
	Malay	4	6.0	-	38	17.8	-	42	15.0	-
	Indian	9	13.4	-	22	10.3	-	31	11.1	-
	Other	1	1.5	-	6	2.8	-	7	2.5	-
Marital status	Currently married	7	10.5	-	27	12.7	-	34	12.1	-
	Separated/Divorced	2	3.0	-	5	2.4	-	7	2.5	-
	Never married but cohabiting	7	10.5	-	34	16.0	-	41	14.6	-
	Never married and not cohabiting	51	76.1	-	147	69.0	-	198	70.7	-
Have any children	No	58	86.6	-	195	91.6	-	253	90.4	-
	Yes	9	13.4	-	18	8.4	-	27	9.6	-
Religion	Christianity	16	23.9	-	56	26.3	-	72	25.7	-
	Hinduism	4	6.0	-	10	4.7	-	14	5.0	-
	Islam	7	10.5	-	49	23.0	-	56	20.0	-
	Taoism	1	1.5	-	5	2.4	-	6	2.1	-
	Buddhism	19	28.4	-	55	25.8	-	74	26.4	-
	Others	20	29.9	-	38	17.8	-	58	20.7	-
Education	No formal education/Primary education	1	1.5	-	6	2.8	-	7	2.5	-
	Secondary	10	14.9	-	60	28.2	-	70	25.0	-
	Pre-tertiary/Diploma	40	59.7	-	111	52.1	-	151	53.9	-
	Tertiary	16	23.9	-	36	16.9	-	52	18.6	-
Employment status	Student/Housewife	16	23.9	-	62	29.1	-	78	27.9	-
	Unemployed	15	22.4	-	63	29.6	-	78	27.9	-
	Working/National service	35	52.2	-	83	39.0	-	118	42.1	-
Smoking status	Current smoker	39	58.2	-	56	26.4	-	95	34.0	-
	Social and ex-smoker	7	10.5	-	10	4.7	-	17	6.1	-
	Never	21	31.3	-	146	68.9	-	167	59.9	-
SCID Diagnosis	Bipolar (with or without psychotic features)	4	6.9	-	6	3.4	-	10	4.3	-
	Delusional disorder	2	3.5	-	16	9.0	-	18	7.7	-
	Brief psychotic disorder	8	13.8	-	24	13.6	-	32	13.6	-
	Psychosis NOS	4	6.9	-	9	5.1	-	13	5.5	-
	Depression (with psychotic features)	3	5.2	-	10	5.7	-	13	5.5	-
	Schizophrenia spectrum disorders	37	63.8	-	112	63.3	-	149	63.4	-
AUDIT score	Below 16	61	91.0	-	213	100	-	274	97.9	-
	16 and above	6	9.0	-	0	0	-	6	2.1	-
DUP (in months)				10.0 (16.8)			14.7 (23.0)			13.6 (21.7)

Note. Percentages are reported based on the number of individuals in that category within that variable group, e.g. 40.3% of binge drinkers are aged 18–24 years old. AUDIT scores of 16 and above represent dangerous levels of alcohol dependence, indicating a high likelihood of AUD. All decimals are rounded up to 1 decimal point.

Abbreviations: AUD, alcohol use disorder; AUDIT, alcohol use disorders identification test; DUP, duration of untreated psychosis; SCID, structured clinical interview for diagnostic statistical manual of mental disorders-fourth edition.

4 | DISCUSSION

Binge drinking is a risky pattern of alcohol consumption that has not been well studied among persons with psychosis. The extant literature indicates both substantial harms of binge drinking and vulnerabilities of this population to substance misuse (Cruce et al., 2007; Warner et al., 1994). In this study, we found that nearly a quarter (23.9%) of the FEP sample had partaken in binge drinking over their lifetime and 11.4% (N = 32) had binged over the past 2 weeks. Only 2.1% of the total FEP sample, all of whom were lifetime binge drinkers would

TABLE 2 Alcohol and cigarette use characteristics of the sample (N = 280)

Variable	Category	Binge Drinkers N	%	M (SD)	Non-binge drinkers N	%	M (SD)	Total N	%	M (SD)
Frequency of alcohol use	Never	-	-	-	125	59.0	-	125	44.6	-
	Monthly	46	68.7	-	77	36.3	-	123	43.9	-
	2–4 times a month	14	20.9	-	9	4.3	-	23	8.2	-
	2–3 times a week	5	7.5	-	1	0.5	-	6	2.2	-
	4+ times a week	2	3.0	-	0	0	-	2	0.7	-
Number of days smoked cigarette over the past 30 days	1	23	46.9	-	32	44.4	-	55	45.5	-
	2	7	14.3	-	11	15.3	-	18	14.9	-
	3	19	38.8	-	29	40.3	-	48	39.7	-
Number of cigarettes smoked in entire life	10 or less	8	16.3	-	32	44.4	-	40	33.1	-
	11–100	6	12.2	-	12	16.7	-	18	14.9	-
	More than 100	35	71.4	-	28	38.9	-	63	52.1	-

Note. Percentages are reported based on the number of individuals in that category within that variable group. All decimals are rounded up to one decimal point.

likely meet criteria for a current AUD. A recent nationally representative survey conducted in Singapore reported a lifetime heavy drinking (used as a proxy of binge drinking) rate of 15.9% (Lim et al., 2013). The higher prevalence of lifetime binge drinking among persons with psychosis than the general population corroborates existing findings of an increased propensity towards risky substance use among populations with psychosis (Archie & Gyömörey, 2009; Cruce et al., 2007). Compared to Western populations, in which most studies of this nature have been conducted, Singapore has been shown to have a lower prevalence of AUD and heavy drinking, with lifetime prevalence more comparable to findings from China (Lim et al., 2013; Subramaniam et al., 2012). Thus, it is important to note that although the prevalence of binge drinking among our FEP sample is higher than the prevalence in Singapore's general population, it is still lower than that reported in Western countries. These findings suggest important cultural elements influencing drinking patterns that differ between the gross categories of Asian and Western cultures. Similar to local and overseas studies examining problematic alcohol use, we found limited overlap between individuals who binged and those who had an AUD (Lim et al., 2013; Tuithof, ten Have, van den Brink, Vollebergh, & de Graaf, 2014). Tuithof et al. (2014) proposed that heavy drinking and AUD represent two independent but related dimensions of problematic alcohol use. Considering that both problematic patterns were associated with respective adverse outcomes, our results reaffirm the importance of examining risky patterns of alcohol use in addition to AUD when establishing the prevalence of problematic alcohol use in the population. Future studies should examine the longitudinal course of both disorders and their independent and additive effects on the well-being and healthcare utilization of both groups.

Additionally, Lim et al. (2013) reported that prevalence of heavy drinking (27%) was highest among the younger adult age group (18-34 years old). We similarly found that binge drinking rate was highest among the 18 to 30 years age range of our FEP sample. Notably, the prevalence of binge drinking among individuals in this age group was only 24.4% (49 out of 201 people in this age range)—lower than the 27% reported by Lim et al. (2013). Within a U.S. population, Brunette et al. (2018) reported that rates of lifetime AUD among a sample of young

people with FEP were not higher than the general population. This discrepancy by age group reinforces notions of binge drinking being particularly prevalent among younger adults regardless of mental health status. This also suggests that although risky binge drinking patterns may taper off among the general population as they age, it may not for persons with psychosis, thus accounting for the overall higher prevalence of lifetime binge drinking among persons with psychosis than the general population.

Similar to past studies, we found that men and unmarried individuals demonstrated a higher likelihood of binge drinking (Archie et al., 2007; Kim et al., 2008; Lim et al., 2013; Wade et al., 2006). Individuals with a lower education level were also less likely to binge drink. As Kim et al. (2008) suggested, these correlates suggest social lifestyle factors such as social contexts and individual resources that provide greater opportunities for procuring and indulging in alcohol. Interestingly, people with children were more likely to binge drink than those without. Perhaps, individuals with children have higher levels of functioning and thus have greater ability or social opportunities to binge drink (Kim et al., 2008). However, this finding should be taken with caution as only 9.6% of our sample had children.

In our FEP sample, individuals who had never smoked cigarettes had significantly lower odds of binge drinking than current or past cigarette smokers. Researchers have proposed a number of explanatory reasons for the strong association between cigarette smoking and alcohol use: shared genetic risk factors (True et al., 1999); early cigarette smoking could reinforce the rewarding effects of alcohol use (National Institute on Alcohol Abuse and Alcoholism, 1998); or substance use for self-medication (Margolese, Malchy, Negrete, Tempier, & Gill, 2004). Peer and social influences may also contribute to settings conducive for concurrent use (Kim et al., 2008). Co-use of these substances contributes to exacerbated health risks, such as an increased risk of cardiovascular disease and cancers of the mouth and throat (Franceschi et al., 1990; Osborn et al., 2007; Zheng et al., 1990). Considering that interventions targeting alcohol and nicotine use simultaneously have shown to improve alcohol-related outcomes, future studies should explore cigarette smoking cessation and alcohol abstinence concurrently among persons with psychosis (Gulliver et al., 2006).

TABLE 3 Socio-demographic correlates of lifetime binge drinking

Variable	OR	Lower limit (95% CI)	Upper limit (95% CI)	p value
Age group				
18–24 years	0.72	0.29	1.76	0.47
25–30 years	1.27	0.52	3.06	0.60
31–40 years	Ref.	-	-	-
Gender				
Male	Ref.	-	-	-
Female	**0.41**	0.21	0.78	0.01
Ethnicity				
Chinese	Ref.	-	-	-
Malay	0.57	0.07	4.98	0.61
Indian	1.78	0.34	9.48	0.50
Other	0.81	0.07	9.04	0.86
Religion				
Buddhism	Ref.	-	-	-
Christianity	0.91	0.39	2.13	0.84
Hinduism	0.82	0.10	6.82	0.85
Islam	0.40	0.05	3.13	0.38
Taoism	0.73	0.06	8.96	0.80
Others	1.61	0.69	3.77	0.27
Marital status				
Never married and not cohabiting	Ref.	-	-	-
Currently married	**0.15**	0.02	0.98	0.048
Separated/Divorced	0.80	0.08	8.34	0.85
Never married but cohabiting	0.45	0.16	1.24	0.12
Have any children				
No	Ref.	-	-	-
Yes	**9.01**	1.45	55.87	0.02
Education				
Pre-tertiary/Diploma	Ref.	-	-	-
No formal education/Primary education	0.36	0.03	3.71	0.39
Secondary	0.59	0.24	1.42	0.24
Tertiary	1.02	0.44	2.34	0.96
Employment status				
Working/National service	Ref.	-	-	-
Student/Housewife	0.75	0.34	1.64	0.47
Unemployed	**0.45**	0.20	0.99	0.046

Note. OR in bold indicate statistical significance at *p* < 0.05. No cases of individuals aged 15 to 17 years old are binge drinkers.
Abbreviations: CI, confidence interval; OR, odds ratio.

With regards to clinical characteristics, we found that increased negative symptomology was associated with decreased odds of binge drinking. Although the relationship between symptomology and alcohol abuse is inconclusive, a number of studies have indicated that lower levels of alcohol use are associated with increased negative symptoms (Archie & Gyömörey, 2009; Batki, Leontieva, Dimmock, & Ploutz-Snyder, 2008; Van Mastrigt et al., 2004). Batki et al. (2008) showed that social withdrawal and blunted affect was associated with reduced drinking frequency and alcohol craving. The authors suggested that individuals with more severe negative symptoms have impaired neural rewarding mechanisms that diminish the reinforcing qualities of alcohol or, the social and cognitive deficits accompanying negative symptoms may restrict individuals from obtaining alcohol (Batki et al., 2008). As such, these individuals may lack the ability or motivation to navigate their social environments to buy or use alcohol. However, the upper limit of the CI for negative symptomology was close to 1, suggesting a rather weak association. Surprisingly, we found that QOL did not differ between binge drinkers and non-binge drinkers. Addington and Addington (2007) and Cardoso et al. (2008) had similarly found no difference in QOL between alcohol abusers and non-abusers among FEP and bipolar populations, respectively. Cardoso et al. (2008) proposed that the self-report nature of the questionnaires may limit studies' abilities to identify disparities in QOL due to the limited insight of patients. Thus, self-reporting biases should prompt caution against trivializing the negative impact of alcohol on QOL.

Psychotherapy interventions utilizing motivational elements have shown efficacy in reducing alcohol use among persons with psychosis (Baker et al., 2012; Hulse & Tait, 2003); understanding the underlying

TABLE 4 Final logistic regression for lifetime binge drinking

Criterion variable	OR	Lower limit (95% CI)	Upper limit (95% CI)	p value
Gender				
Female	0.56	0.22	1.38	0.21
Male	Ref.	-	-	-
Marital status				
Currently married	0.08	0.01	1.04	0.05
Separated/Divorced	1.69	0.07	41.36	0.75
Never married but cohabiting	0.38	0.08	1.83	0.23
Never married and not cohabiting	Ref.	-	-	-
Have any children				
Yes	**22.53**	1.50	338.75	0.02
No	Ref.	-	-	-
Education				
No formal education/Primary education	**0.07**	0.01	0.78	0.03
Secondary	**0.19**	0.06	0.66	0.01
Tertiary	0.82	0.27	2.54	0.73
Pre-tertiary/Diploma	Ref.	-	-	-
Employment status				
Student/Housewife	0.81	0.28	2.33	0.70
Unemployed	1.04	0.34	3.21	0.94
Working/National Service	Ref.	-	-	-
Smoking				
Current smoker	**4.39**	1.63	11.78	0.003
Social and ex-smoker	**11.73**	1.52	90.76	0.02
Never	Ref.	-	-	-
SCID diagnosis				
Bipolar (with or without psychotic features)	0.97	0.13	6.97	0.97
Delusional disorder	0.30	0.04	2.09	0.23
Brief psychotic disorder	0.36	0.10	1.28	0.11
Psychosis NOS	1.74	0.24	12.58	0.58
Depression (with psychotic features)	1.38	0.20	9.27	0.74
Schizophrenia spectrum	Ref.	-	-	-
DUP	0.97	0.94	1.01	0.10
PANSS				
Negative symptoms	**0.94**	0.89	0.996	0.04

Note. OR in bold indicate statistical significance at $p < 0.05$.
Abbreviations: CI, confidence interval; DUP, duration of untreated psychosis; OR, odds ratio; PANSS, positive and negative scale for schizophrenia; SCID, structured clinical interview for diagnostic statistical manual of mental disorders-IV.

motivations for drinking patterns will be beneficial for further tailoring therapeutic interventions. Previous research on reasons for alcohol use among populations with and without psychosis has consistently identified three key motivations: (a) enhancement/pleasure seeking; (b) coping with psychological distress or negative affect; and (c) socializing-related motives (Addington & Duchak, 1997; Archie et al., 2013; Biolcati et al., 2016; Spencer, Castle, & Michie, 2002). These three themes were similarly found within our sample; individuals who had ever binged were more likely to agree that alcohol helps to enhance social activities and enables people to have more fun (enhancement); deal with stress (coping); and helps "break the ice" and create easier connections with friends (socializing). Spencer et al. (2002) demonstrated that expectancies of alcohol use are a crucial pathway through which psychopathology influences drinking behaviour among persons with schizophrenia.

Additionally, different expectancies or motivations are related to different psychological processes accounting for drinking behaviour; for instance, coping motivations suggest poor coping strategies that have been learned (Cooper et al., 1995). Consequently, our findings reinforce the three main motivations that interventions could target to reduce reliance on drinking. Interestingly, none of the negative expectancies of alcohol use were associated with binge drinking behaviour. Cooper et al. (1995) had previously noted that positive and negative effects are separate dimensions, thus demonstrating distinct relationships with psychological and behavioural factors. Presumably, individuals with negative expectancies of alcohol use would not be frequent alcohol consumers, much less binge drink. Indeed, additional post-hoc analyses indicated that individuals agreeing with negative statements were significantly less likely to report ever consuming alcohol. Additionally, the finding also

TABLE 5 Associations between expectancies of alcohol use and lifetime binge drinking

| | Ever binge drink | | | |
| | No | Yes | | |
Expectancies of alcohol use	N (%)	N (%)	χ^2	p
Breaks the ice				
Disagree/Strongly disagree	46 (42.2)	17 (25.4)	11.39	0.003
Neutral	36 (33.0)	17 (25.4)		
Agree/Strongly agree	27 (24.8)	33 (49.2)		
Enhances social activities				
Disagree/Strongly disagree	46 (42.2)	12 (17.9)	11.86	0.003
Neutral	29 (26.6)	21 (31.3)		
Agree/Strongly agree	34 (31.2)	34 (50.7)		
Makes it easier to deal with stress				
Disagree/Strongly disagree	56 (51.4)	27 (40.3)	6.02	0.049
Neutral	28 (25.7)	13 (19.4)		
Agree/Strongly agree	25 (22.9)	27 (40.3)		
Makes a connection with friends easier				
Disagree/Strongly disagree	49 (45.0)	20 (29.9)	8.91	0.012
Neutral	29 (26.6)	13 (19.4)		
Agree/Strongly agree	31 (28.4)	34 (50.7)		
Facilitates male bonding				
Disagree/Strongly disagree	52 (47.7)	20 (29.9)	5.48	0.065
Neutral	25 (22.9)	21 (31.3)		
Agree/Strongly agree	32 (29.4)	26 (38.8)		
Facilitates female bonding				
Disagree/Strongly disagree	57 (52.3)	28 (41.8)	1.83	0.400
Neutral	32 (29.4)	24 (35.8)		
Agree/Strongly agree	20 (18.3)	15 (22.4)		
Enables people to have more fun				
Disagree/Strongly disagree	41 (37.6)	13 (19.4)	8.04	0.018
Neutral	34 (31.2)	21 (31.3)		
Agree/Strongly agree	34 (31.2)	33 (49.3)		
Gives people something to do				
Disagree/Strongly disagree	42 (38.5)	17 (25.4)	5.98	0.050
Neutral	37 (33.9)	20 (29.9)		
Agree/Strongly agree	30 (27.5)	30 (44.8)		
Interrupts your studying				
Disagree/Strongly disagree	43 (39.4)	26 (38.8)	1.31	0.520
Neutral	23 (21.1)	10 (14.9)		
Agree/Strongly agree	43 (39.4)	31 (46.3)		
Makes you feel unsafe				
Disagree/Strongly disagree	41 (37.6)	35 (52.2)	3.67	0.159
Neutral	28 (25.7)	14 (20.9)		
Agree/Strongly agree	40 (36.7)	18 (26.9)		
Messes up your physical living space (cleanliness, neatness, organization, etc.)				
Disagree/Strongly disagree	45 (41.3)	30 (44.8)	0.36	0.836
Neutral	32 (29.4)	17 (25.4)		
Agree/Strongly agree	32 (29.4)	20 (29.9)		
Prevents you from enjoying events, such as concerts, sports, social activities, etc.				
Disagree/Strongly disagree	52 (47.7)	34 (50.7)	0.88	0.645
Neutral	31 (28.4)	21 (31.3)		
Agree/Strongly agree	26 (23.9)	12 (17.9)		

Note. Percentages are rounded up to the first decimal place.

suggests that interventions focused on reiterating the negative impacts of alcohol use may not be as effective in modifying behaviour.

5 | LIMITATIONS

The study's limitations should be considered. We measured the self-reported occurrence of any lifetime binge drinking; individuals may either under-report binge drinking tendencies or, even if they do report binge drinking, they may not be representative of regular risky alcohol users. It is also important to note that not all heavy drinkers are binge drinkers; there may be participants that fall into the 'do not binge' category but are still risky alcohol users (Lim et al., 2013). Although the study utilized a common operationalization of binge drinking, additional standardized screening measures would have been beneficial to elicit more comprehensive information regarding binge drinking patterns. Additionally, as this is a cross-sectional study, causal inferences cannot be drawn. For instance, expectancies of alcohol use may be shaped by previous binge drinking experiences in addition to influencing binge drinking behaviour. This study also excluded the use of other forms of illicit drugs; although studies in Singapore have demonstrated a very low prevalence of drug use among this population, other countries have reported significant co-morbidity of alcohol and illicit drug abuse (Archie et al., 2007; Verma, Subramaniam, Chong, & Kua, 2002). Lastly, our exploration of expectancies of alcohol use was neither exhaustive nor tailored towards persons with psychosis. Future studies would benefit from a more rigorous investigation of motivations for use and its relevance across cultures and diagnoses.

6 | CONCLUSIONS

There exists an abundance of literature demonstrating high prevalence of alcohol abuse and dependence among persons with psychosis. This study was the first to demonstrate that binge drinking is similarly high among a FEP sample. Studying an FEP population is advantageous as confounding factors such as past treatment or medication can be ruled out, thus providing a more organic understanding of alcohol use and its correlates (Archie & Gyömörey, 2009). Although attitudes and patterns of alcohol use have been shown to vary across cultures, the three central motivations for alcohol use remain relevant even within Singapore's multiethnic Asian population (Kuntsche et al., 2017). An important continuation to this research would be to examine the efficacy of targeting these key motivations and expectancies across multiple risky alcohol use patterns. To reduce the prevalence of AUDs and minimize their accompanying harms, upstream efforts are necessary to prevent the progression of risky drinking patterns into AUDs. Although binge drinking has been treated as a normative practice in socializing settings, health care providers should be sensitive to the harms of binge drinking and the potential for risky use to progress into AUD—a vulnerability particularly prevalent among persons with psychosis.

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