Published in final edited form as:
Psychol Health Med. 2013 May ; 18(3): 330–342. doi:10.1080/13548506.2012.712705.

Alcohol use and client-perpetrated sexual violence against female sex workers in China

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Abstract

Background—The global literature suggests that female sex workers (FSWs) experience high rates of sexual violence perpetrated by their clients, especially when FSWs are under the influence of alcohol. However, such data are limited in China. The current study is aimed to fill in the literature gap by examining the association between alcohol use by FSWs and client-perpetrated sexual violence against FSWs in China.

Methods—A total of 1,022 FSWs were recruited through community outreach in Guangxi, China. FSWs completed a self-administered survey on their demographic information, alcohol use, and sexual violence perpetrated by clients. Multivariable regression was employed to assess the relationship between alcohol use and client-perpetrated sexual violence among FSWs while controlling for possible confounders.

Results—Alcohol use was positively associated with the experience of sexual violence in both bivariate and multivariable analyses. Women who were at a higher risk level of alcohol use were more likely to experience sexual violence perpetrated by clients even after controlling confounders (e.g., demographics and alcohol-serving practice).

Conclusion—Given the association between alcohol use and client-perpetrated sexual violence, preventing or reducing alcohol use among FSWs could be an effective strategy to protect these women from sexual violence perpetrated by their clients. Alternatively, psychological counseling and other support should be available to these women so they can reduce their alcohol use as a maladaptive coping strategy. We call for culturally appropriate alcohol use reduction components, incorporated with sexual violence reduction strategies including adaptive coping skills training as well as empowerment, and targeting both FSWs and their clients.

Keywords

China; Female Sex Workers; Alcohol Use; Sexual Violence; Clients; Prevention

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Introduction

Existing studies have revealed that the prevalence of sexual violence against FSWs is alarmingly high. A qualitative study conducted among FSWs in the U.S. reported that 72% of the participants experienced sexual violence (El-Bassel, Gilbert, Rajah, Foleno, & Frye, 2000). Previous research has also pointed out that clients were the most frequent perpetrators of violence against sex workers (Mont & McGregor, 2011). FSWs were even more vulnerable for sexual violence perpetrated by clients when they were under the influence of alcohol (Strike, Myers, Calzavara, & Haubrich, 2001; Testa & Livingston, 2009).

Numerous studies have documented that alcohol consumption among FSWs was positively associated with their experience of sexual violence victimization (Chesrich et al 2007; Kalichman, Simbayi, Jooste, & Cain, 2007; Wechsberg et al. 2009). Previous studies have suggested several mechanisms that can explain how sexual violence and alcohol use interplayed in the context of commercial sex. First, alcohol use and sexual violence may co-occur in settings where alcohol use takes place (e.g., bars, night clubs). In such settings, both perpetrators (e.g., clients) and victims were more likely to have been drinking excessively, which further lowered inhibiting factors and therefore, increased the probability of sexual assaults (Testa & Parks, 1996; Wojcicki & Malala, 2001). Second, some research has suggested that alcohol use might be a maladaptive coping strategy for traumatic events in life, such as the experience of sexual violence (Burnam et al., 1988; Miranda, Meyerson, Long, Marx, & Simpson, 2002; Kalichman et al. 2007; Li, Li, & Stanton, 2010). Therefore, alcohol use may be a traumatic aftermath of sexual violence victimization among FSWs (Kalichman et al. 2007; Li et al., 2010; Burnam et al. 1988; Miranda et al. 2002).

Although studies also demonstrated a reciprocal relationship between alcohol use and sexual violence experience, sexual violence against women did occur more frequently in circumstances involving alcohol use than in non-drinking contexts (Wojcicki & Malala, 2001). Alcohol use is a common practice among FSWs prior to commercial sex episodes (Li et al., 2010). Therefore, an important practical question is: can FSWs protect themselves from sexual violence by reducing their alcohol use?

The relationship between alcohol use and sexual violence victimization has been documented in Western countries. However, few studies have been conducted in Asian countries, including China, where both alcohol use and commercial sex are prevalent. Similar to other Asian countries, commercial sex in China is primarily establishment-based. An estimated 10 million FSWs in China operate in a complex commercial sex hierarchy (Hong & Li, 2008; Huang, Henderson, Pan, & Cohen, 2004). Typically, FSWs encounter their clients in either entertainment establishments (e.g., karaoke [KTV], night clubs, and bars) or personal service sectors (e.g., saunas, hair salons, massage parlors, road-side restaurants, and mini-hotels).

Despite the fact that many FSWs in China use alcohol excessively (Li, et al., 2010), limited data are available regarding the association between alcohol use and client-perpetrated sexual violence against these vulnerable women. As an attempt to fill in the literature gap, we conducted the current study with the following research questions: (1) What is the prevalence of client-perpetrated sexual violence against FSWs in China? (2) Is alcohol use among FSWs independently associated with client-perpetrated sexual violence while controlling for other potential confounders?

Methods

Study sites

The current study was conducted in two cities (Beihai and Guilin) of Guangxi Zhuang Autonomous Region (Guangxi) in southwest China. Both Beihai and Guilin are famous tourism spots, attracting 4-10 million tourists in each city every year. An estimated 2,000 FSWs are actively working in more than 150 commercial sex venues in each city (Guangxi CDC, 2009). Both the Institutional Review Boards at Wayne State University in the U.S. and Beijing Normal University in China approved the study protocol.

Participants and Procedure

Prior to the data collection, the research team conducted ethnographic mapping to identify commercial sex venues in sampling areas. These venues included entertainment establishments (e.g., karaoke [KTV], night clubs, and bars), personal service sectors (e.g., saunas, hair salons, massage parlors, road-side restaurants and mini-hotels) and the street. Upon the completion of the ethnographic mapping, the owners/managers or other gatekeepers of the venues (with the exception of streets) were contacted and asked for permission to conduct the survey in their venues. Once we obtained permission from the owners or managers, trained outreach health workers from the local Center for Disease Control and Prevention (CDC) approached the women in these venues to ask for their participation. Women were eligible to participate in the study if they: (a) worked in a commercial sex venue, (b) admitted their involvement in commercial sex, and (c) were willing to provide informed consent to participate in the study. Overall, 1,022 eligible women in 60 venues agreed to participate. All participants completed a self-administered structured survey. The survey was conducted in separate rooms or private spaces in the venues or sites where participants were recruited. No one was allowed to stay with the participant during the survey except the interviewer who provided the participant with assistance when necessary. For a small proportion of women (less than 5%) with low literacy, interviewers read questions to participants. The questionnaire took about 45 minutes to complete. Each participant received a small gift with a cash value equivalent to US$4.50 upon the completion of the survey. Among the 1,022 women who agreed to participate, 983 (96.2%) answered questions on alcohol use and sexual violence.

Measures

Demographic information—Participants were asked to provide information on their age, ethnicity (e.g., Han, Zhuang, and others), home residency (types of household registration including either rural or urban residency), educational attainment (e.g., illiterate, elementary school, middle school, high school, college or above), marital status (e.g., never married, cohabitated but not married, married, separate, divorced or widowed), length of working in the city (in months), and monthly income (in Chinese currency *yuan*). For thepurpose of data analysis in the current study, we dichotomized ethnicity into “Han” or “non-Han”. Venues were classified as “alcohol-serving” or “non-alocohol-serving” based on whether sale of alchol was a part of their routine business practices.

Alcohol use—Women’s alcohol use in the past year was measured using the Alcohol Use Disorders Identification Test (AUDIT) (Babor, Biddle-Higgins, Saunders, & Monteiro, 2001; Saunders, Aasland, Babor, de la Fuente, & Grant, 1993). The AUDIT scores range from 0 to 40 with higher scores indicating more severe alcohol use problems. The Cronbach’s alpha for the 10 AUDIT items was 0.79 for the current study sample. To create a categorical measure of alcohol use problems in the current study, we employed a scoring system with four risk levels of alcohol consumption: level one refers to “low risk” with the AUDIT scores from “0-7”, level two refers to “risk drinking” with the AUDIT scores from

"8-15", level three refers to "heavy drinking" with the AUDIT scores between "16-19", and level four refers to "hazordous drinking" with the AUDIT scores from "20-40" (Babor et al., 2001). Both scoring options (e.g., continuous and categorical AUDIT scores) have been used in the Chinese culture (Gao, 2000; Li, Shen, Zhang, Zheng, & Wang, 2003; Zhang et al., 2012a, 2012b).

Client-perpetrated sexual violence—Measures of client-perpetrated sexual violence were developed based upon similar scales in the global literature (WHO, 2003) and relevant measures used in several Chinese studies (Wang et al. 2007) The scale consisted of seven items measuring both drinking-related sexual violence (e.g., sexual violence that happened during drinking episodes) and sexual violence in other contexts. The sexual violence in the context of drinking included "being taken advantage of sexually by clients", "being demanded for extra service (sexual in nature)", "clothes being stripped off by clients", and "being raped or sexually assaulted". The non-drinking-specific measures of client-perpetrated sexual violence included "coerced sex (without using force)", "coerced sex by force", and "having genitals purposely injured". For the purpose of data analysis, the responses to these items were dichotomized as 0="never" and 1="ever" in the current study.

Data analysis

First, Chi-square (for categorical variables) and independent t-test (for continuous variables) were employed to assess the differences in participants' demographic characteristics as well as measures of sexual violence by four risk levels of alcohol use.

Second, a multivariable regression model was employed to examine the independent association between alcohol use and client-perpetrated sexual violence controlling for key confounders (e.g., age, education, marital status, types of working places, and venue's alcohol serving practice). Seven binary logistic regression models were employed with each of the sexual violence measures as the dependent variable. To control for potential intra-class correlation by venue due to cluster-sampling, we used random effect modeling. Adjusted Odds Ratios (aORs) and their 95% confidence intervals (95% CIs) from logistic regression models were calculated to depict the relationship between alcohol use and measures of sexual violence while controlling for other key factors that might confound the associations between sexual violence and alcohol use. We excluded demographic variables that showed non-significant bivariate associations from the logistic regression models. Hosmer-Lemeshow Chi-square statistics were used to assess the goodness-of-fit of the regression models. All statistical analyses were performed using SAS 9.2.

Results

Key demographic characteristics and alcohol use

The average age of the participants (N=983) was 24.43 (SD=6.12) years, and most of them had less than a middle school education. Most participants were of Han ethnicity (84.00%), never married including cohabitation (73.4%), and from rural areas (55.20%). They had worked in the cities on an average of 44.02 (SD=36.18) months, and earned 2,720 (SD=2,370) yuan (approximately US$380 at the time of survey) per month.

Based on their responses to the AUDIT, about 45% of the FSWs were in the low-risk alcohol use category; 34% fell in the risk-drinking category; 13% fell in the heavy-drinking category, and nearly 10% were considered as hazardous-drinkers. FSWs who were younger, never married, with more schooling, and worked in alcohol-serving venues were more likely to report alcohol use problems ($p<.05$) (Table 1).

Association between client-perpetrated sexual violence and alcohol use

More than one half (54.00%) of the FSWs had been taken advantage of sexually by clients, and for nearly half of them (43.30%) extra service had been demanded; 6.90% of FSWs were raped or sexually assaulted, and 4.20% had their clothes stripped off by clients. These four measures of client-perpetrated sexual violence in the context of alcohol use were significantly different among four risk levels of alcohol use. The three non-drinking-specific measures of sexual violence did not significantly differ among the four risk levels of alcohol use (Table 2).

In the multivariable regression models, alcohol use was significantly associated with “being taken advantage of sexually by clients”, “demands for extra service”, “being raped or sexually assaulted”, “having clothes stripped off by clients”, and “having genitals purposely injured”. Women who were at a higher risk of alcohol use problem were more likely to experience sexual violence perpetrated by their clients. For instance, women who were at the risk-drinking category were two times more likely to report being taken advantage of sexually by clients (aOR=2.19, 95% CI=1.49,3.23), while these who were at the heavy-drinking and hazardous-drinking categories were 2.49 and 5.31 times higher to experience sexual violence from clients. The same patterns have been observed among other measures of sexual violence. All logistic regression models demonstrated an acceptable goodness-of-fit as indicated by the non-significant Chi-square statistics on the Hosmer and Lemeshow goodness-of-fit test.

Discussion

This study extended existing literature by investigating the association between alcohol use and client-perpetrated sexual violence among Chinese FSWs. Consistent with the global literature (Li et al., 2010; Cherisich et al., 2007; Wechsberg et al., 2009), our study suggested significant associations between alcohol consumption and sexual violence victimization. Our data indicated that Chinese FSWs had experienced a high level of various types of client-perpetrated sexual violence. However, such events were likely to be underreported as many FSWs might not perceive some experiences as victimization of sexual violence unless they were injured. Moreover, it is difficult to compare the rates in our study with the ones in existing studies because of the differences in definitions and measurements of sexual violence across studies and settings. For meaningful comparison of experience on sexual violence across samples or over time, it is critical to establish a standardized, comparable, and reliable measurement on sexual violence against FSWs in China.

By further exploration of our data, we found that almost half of the FSWs had experienced two types of drinking-related sexual violence, including “being taken advantage of sexually by clients”, and “being demanded for extra service”. Compared with other types of sexual violence (e.g., clothes being stripped off by client and being raped or sexually assaulted), these two types of sexual violence usually happened at the initial stage of the client-perpetrated, drinking-related sexual violence. This finding suggested that if FSWs could detect early signs of these risks during their encounters with clients, they might be able to take the necessary steps to minimize or escape from dangerous situations before they develop into more aggressive acts of sexual violence. Violence reduction interventions need to increase FSWs’ awareness of the risks of sexual violence in their working environments and to help them to develop cognitive and behavioral skills to identify, prevent, or escape from abusive encounters with their clients (El-Bassel, Witte, Wada, Gilbert, & Wallace, 2001; Sanders 2004). On the other hand, interventions also need to target clients to address their understanding of HIV risk during alcohol-facilitating sexual encounters. Working with

clients to increase their perception of risk and knowledge may further protect FSWs from sexual violence (Huang, Maman, & Pan, 2012).

It is worth noting that non-alcohol-specific measures of client-perpetrated sexual violence did not significantly differ by the four risk levels of alcohol use in bivariate analyses. Although one measure (e.g., having genitals purposely injured) showed significant relationships with alcohol use in the multivariable regression, such relationships tended to be less significant than those with context-specific measures of sexual violence (e.g., during drinking episodes). A couple of potential explanations could explicate these findings. First, context-specific questions might provide us with better measures of sexual violence in the context of alcohol use. Second, the context-specific measures of sexual violence might be related to the explanatory variables by definition (e.g., alcohol use), thus resulting in a stronger association because of the co-occurrence of the dependent variable and the explanatory variable in the similar context (e.g., drinking episodes).

In the current study, we also found out that venues' alcohol-serving practice was associated with client-perpetrated sexual violence among Chinese FSWs, which is consistent with the existing global literature (Norris, Nurius, & Dimeff, 1996). Since alcohol-serving settings included both implicit and explicit hints of sexual activities, risk of sexual violence during commercial sex might be further enhanced by alcohol consumption (Norris et al., 1996; Li et al., 2010). However, an important finding in the current study was that the association between alcohol use and client-perpetrated sexual violence among FSWs remained significant after controlling for the venues' alcohol-serving practice. This finding suggested the prevalence of both alcohol use and sexual violence among FSWs at non-alcohol-serving venues. Women in these non-alcohol-serving venues might have used alcohol (with or without the presence of clients) outside of their establishments. It was also possible that some venues were allowing clients or FSWs to bring alcoholic beverages to the venue, even though the venue was not permitted to sell it. Future intervention efforts need to target both alcohol-serving and non-alcohol-serving venues and to consider factors at both venue and individual levels for the intervention to be effective in reducing both alcohol use among FSWs and client-perpetrated sexual violence against these women.

Although the current study only used self-reports from FSWs on their alcohol use and client-perpetrated sexual violence, our findings confirmed the importance of engaging clients in future alcohol use and violence reduction intervention prevention efforts among FSWs. The global literature has suggested that clients may play a key role in alcohol use among FSWs and sexual violence against FSWs in several possible ways. First, clients may use alcohol as a tactic to get sex from women (Strike et al. 2001). Clients might be more likely to perpetrate sexual violence against women who were under the influence of alcohol use and were unable to make a conscious decision about sex (Testa & Livingston, 2009) or lacked the ability to defend against sexual violence (Testa & Livingston, 2009; Norris et al. 1996). Second, because most FSWs were in economically and emotionally vulnerable positions, clients might take advantage of women's vulnerability by monetarily and physically forcing them to drink excessively and perpetrating sexual violence against them afterward (Strike et al. 2001).

Several limitations of the current study should be acknowledged. First, because our study was conducted in Guangxi, a multi-ethnic region of China, the findings may not be generalizable to FSWs in other areas of China. Second, the cross-sectional design precluded us from establishing a causal relationship between sexual violence and alcohol use among the FSWs. Alcohol use may lead to more sexual violence victimization, but it is also possible that alcohol use is an aftermath of sexual violence experience among FSWs. Future studies with longitudinal designs are needed to examine the temporal relationships. Third,

due to the illegal and highly stigmatized and marginalized status of sex work in China, our data were subject to volunteer bias and socially desirable reporting. Finally, although we collected context-specific measures of sexual violence (e.g., during drinking episodes), our data largely remained non-event specific measures, which limited our ability to conduct event-level analysis on links between alcohol use and sexual violence (Weinhardt & Carey, 2000).

Despite these limitations, findings of the current study have several important implications for future sexual violence reduction interventions among FSWs in China and other developing countries. First, the high rates of alcohol use among FSWs call for effective and tailored alcohol risk reduction efforts targeted at this at-risk population. Future prevention programs need to be culturally adapted from existing efficacious programs and to address the heterogeneous needs of this population. Second, future intervention efforts should also target clients of FSWs. If alcohol use reduction intervention as well as violence prevention programs could engage both FSWs and clients, it may be more effective in reducing women's drinking problems and client-perpetrated sexual violence against FSWs. Third, we call for a multi-level sexual violence reduction approach. At the individual level, the intervention may provide skill-based trainings to help FSWs to identify potential risks in drinking contexts and adopt effective skills to cope with dangerous situations and reduce their vulnerability of both excessive drinking and sexual violence victimization. At the venue level, the intervention should advocate regular screenings to identify women who are at a higher risk of either sexual violence victimization or alcohol use. Furthermore, as commercial sex venues may play a key role in promoting or tolerating alcohol use among FSWs as well as their clients (Li et al., 2010; Safika, Johnson, & Levy, 2011), venue-based interventions may target contextual factors that promote or stimulate alcohol use in these venues (Hughes et al., 2011). In addition, future interventions may target changing social norms among FSWs and clients who often believe alcohol use and sexual violence are common or even acceptable practices in commercial sex. Finally, future intervention prevention programs and health services need to provide necessary referral service and psychosocial support to victimized women and to address their special mental and physical health needs. Such practical social support could help FSWs to break the vicious cycle that is caused by either alcohol use or sexual violence victimization.

Acknowledgments

The study described in this report was supported by NIH Research Grant R01AA018090 by the National Institute for Alcohol Abuse and Alcoholism. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institute for Alcohol Abuse and Alcoholism. The authors want to thank Xiaoyi Fang, Xiuyun Lin, and other faculty and graduate students at Beijing Normal University School of Psychology for their participation in instrument development and field data collection. The authors also want to thank Joanne Zwemer for assistance with manuscript preparation.

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Table 1

Demographic information among FSWs by AUDIT scores

	Risk level of alcohol use [1]				
	Total (N=983)	**Level 1 (N=438)**	**Level 2 (N=332)**	**Level 3 (N=123)**	**Level 4 (N=90)**
Demographic information					
Age in years (Mean, SD)	24.43 (6.12)	26.96 (7.68)	23.21 (5.08)	23.06 (4.67)	22.63 (5.17) ****
Ethnicity					
Han	84.00%	86.50%	81.60%	80.50%	85.60%
Non-Han	16.00%	13.50%	18.40%	19.50%	14.40%
Residency					
Urban	44.80%	44.80%	44.60%	38.80%	53.90%
Rural	55.20%	55.20%	55.40%	61.20%	46.10%
Marital status					
Never married	54.0%	47.0%	61.2%	58.5%	55.7% **
Cohabit but not married	19.4%	18.9%	19.3%	21.1%	20.5%
Married	16.4%	20.3%	12.8%	13.0%	14.8%
Separate	3.8%	5.8%	1.5%	2.4%	4.5%
Divorce/widow	6.4%	8.1%	5.2%	4.9%	4.5%
Education					
Illiterate	0.9%	0.9%	1.5%	0.0%	0.0% ****
Elementary	7.6%	12.3%	4.6%	4.1%	1.1%
Middle school	53.6%	53.7%	52.7%	58.7%	49.4%
High school	35.1%	30.6%	38.4%	33.9%	46.1%
College or above	2.8%	2.5%	2.7%	3.3%	3.4%
Working venues					
Night club	3.30%	2.10%	5.40%	3.30%	1.10% ****
karaoke	52.90%	20.30%	75.00%	78.90%	94.40%
Bar	3.10%	2.30%	3.90%	4.90%	1.10%
Restaurant	0.60%	1.10%	0.30%	0.00%	0.00%
Hair salon	2.60%	3.90%	1.80%	2.40%	0.00%

	Risk level of alcohol use [1]				
	Total (N=983)	**Level 1 (N=438)**	**Level 2 (N=332)**	**Level 3 (N=123)**	**Level 4 (N=90)**
Massage parlor	4.60%	9.10%	1.50%	0.00%	0.00%
Sauna	27.20%	50.00%	10.50%	8.90%	2.20%
Mini hotel	0.80%	1.80%	0.00%	0.00%	0.00%
Streets	5.00%	9.40%	1.50%	1.60%	1.10%
Income in 1,000yuan(Mean, SD)[2]	2.72 (2.37)	2.71 (2.73)	2.49 (2.08)	2.92 (1.81)	2.72 (1.64)
Length of working in months (Mean, SD)	44.02 (36.18)	43.90 (33.93)	43.49 (36.41)	46.22 (37.74)	43.12 (40.78)
Alcohol-serving practice in venues					
Not alcohol-serving venues	40.20%	74.20%	15.40%	13.00%	3.30%****
Alcohol serving venues	59.80%	25.80%	84.60%	87.00%	96.70%

[1] Notes: Risk level of alcohol use: level one refers to “low risk” with the AUDIT scores from “0-7”, level two refers to “risk drinking” with the AUDIT scores from “8-15”, level three refers to “heavy drinking” with the AUDIT scores between “16-19”, and level four refers to “hazardous drinking” with the AUDIT scores from “20-40”;

[2] The currency exchange rate for RMB and USD at the time of study was: 1yuan=0.14 USD;

* p<.05,

** p<.01,

*** p<.005,

**** p<.0001;

Table 2

Unadjusted association between levels of FSW alcohol use and client-perpetrated sexual violence

	Risk level of alcohol use [1]				
Client-perpetrated sexual violence	**Total (N=983)**	**Level 1 (N=477)**	**Level 2 (N=332)**	**Level 3 (N=123)**	**Level 4 (N=90)**
Sexual advantages taken by clients	54.00%	29.90%	69.90%	73.20%	86.70% ****
Demand for extra service	43.30%	25.10%	50.60%	63.40%	77.80% ****
Being raped or sexually assaulted	6.90%	4.80%	4.80%	13.00%	16.70% ****
Clothes being stripped off by clients	4.20%	2.10%	3.90%	8.10%	10.00% ***
Coerced sex	12.70%	11.80%	12.50%	14.20%	15.70%
Coerced sex by violence	2.80%	2.70%	2.00%	4.40%	3.60%
Purposely injuring genitals	3.00%	2.90%	3.10%	4.40%	1.20%

[1] Notes: Risk level of alcohol use: level one refers to “low risk” with the AUDIT scores from “0-7”, level two refers to “risk drinking” with the AUDIT scores from “8-15”, level three refers to “heavy drinking” with the AUDIT scores between “16-19”, and level four refers to “hazardous drinking” with the AUDIT scores from “20-40”.

* p<.05,

** p<.01,

*** p<.005,

**** p<.0001;

Table 3

Multivariate logistic regression of client-perpetrated sexual violence and alcohol use among FSWs[1, 2] (N=983)

	Sexual advantages taken by clients	Demand for extra service	Being raped or sexually assaulted	Clothes being stripped off by clients	Coerced sex	Coerced sex by violence	Purposely injuring genitals
	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)
Risk of Alcohol use[3]							
Level 1: low risk	Reference	Reference	Reference	Reference	Reference	Reference	Reference
Level 2: risk drinking	2.19 (1.49, 3.23)****	1.23 (0.84, 1.80)	0.89 (0.39, 2.02)	1.51 (0.52, 4.40)	1.58 (0.88, 2.86)	0.71 (0.21, 2.47)	2.47 (0.85, 7.16)
Level 3: heavy drinking	2.49 (1.47,4.21)***	2.11 (1.28, 3.46)***	2.58 (1.10, 6.05)*	3.44 (1.10, 10.76)*	2..07 (1.00, 4.29)	1.78 (0.49, 6.46)	4.71 (1.31,16.99)*
Level 4: hazardous drinking	5.31 (2.56, 11.01)****	3.54 (1.93, 6.50)****	3.57 (1.46, 8.72)**	3.79 (1.15, 12.52)*	2.27 (1.00, 5.18)	1.29 (0.27, 6.14)	1.38 (0.15,12.82)
Age	0.95 (0.91,0.99)*	0.98 (0.95, 1.02)	1.01 (0.94, 1.08)	1.00 (0.92, 1.10)	0.96 (0.91, 1.02)	0.94 (0.83, 1.05)	1.01 (0.91, 1.12)
Education							
Illiterate	Reference	Reference	Reference	Reference	Reference	Reference	Reference
Elementary	1.13 (0.23,5.50)	0.57 (0.12, 2.67)	0.96 (0.07, 13.17)	0.05 (0.00, 1.13)	0.22 (0.04, 1.33)	0.18 (0.01, 2.32)	0.14 (0.02, 1.33)
Middle school	1.99 (0.45,8.82)	0.81 (0.19, 3.42)	1.02 (0.09, 12.20)	0.17 (0.02, 1.67)	0.26 (0.05, 1.32)	0.18 (0.02, 1.53)	0.04 (0.01, 0.30)***
High school	1.83 (0.41,8.19)	0.94 (0.22, 4.03)	1.11 (0.09, 13.65)	0.34 (0.04, 3.30)	0.31 (0.06, 1.57)	0.16 (0.02, 1.52)	0.06 (0.01, 0.45)**
College or above	0.99 (0.18,5.55)	0.68 (0.13, 3.62)	0.50 (0.02, 12.38)	n/a	0.26 (0.03, 1.97)	n/a	0.09 (0.01, 1.52)
Marital status							
Never married	Reference	Reference	Reference	Reference	Reference	Reference	Reference
Cohabit but not married	1.20 (0.79,1.82)	1.34 (0.91, 1.97)	0.65 (0.30, 1.40)	0.89 (0.37, 2.14)	1.93 (1.18, 3.15)**	0.53 (0.15, 1.84)	2.04 (0.82, 5.05)
Married	1.13 (0.66,1.94)	1.03 (0.62, 1.73)	0.78 (0.31, 1.96)	1.31 (0.43, 3.98)	1.12 (0.53, 2.38)	0.31 (0.05, 2.13)	0.26 (0.04, 1.61)
Separate	0.81 (0.34,1.91)	0.75 (0.32, 1.76)	1.09 (0.30, 3.94)	1.73 (0.35, 8.62)	2.71 (0.95, 7.72)	0.74 (0.08, 6.69)	0.42 (0.04, 4.95)
Divorce/widow	1.00 (0.49,2.05)	0.77 (0.38, 1.57)	0.82 (0.25,2.71)	0.38 (0.04, 3.47)	3.09 (1.27, 7.54)*	0.60 (0.07, 5.55)	n/a
Working venues							
Mini hotel	Reference	Reference	Reference	Reference	Reference	Reference	Reference
Streets	0.77 (0.05,10.93)	0.98 (0.07, 13.85)	0.41 (0.02, 7.99)	n/a	n/a	n/a	n/a
Massage parlor	1.93 (0.34, 10.92)	1.73 (0.29, 10.20)	0.42 (0.04, 4.09)	n/a	0.11 (0.01, 0.94)*	2.94 (0.07,133.23)	n/a
Hair salon	0.60 (1.00, 3.75)	1.11 (0.17, 7.14)	0.28 (0.02, 3.44)	n/a	0.14 (0.02, 1.36)	0.45 (0.01, 24.27)	n/a
Bar	1.52 (0.24, 9.74)	3.29 (0.51, 21.12)	0.22 (0.01, 4.17)	n/a	0.11 (0.01, 1.38)	0.41 (0.01, 26.30)	n/a

	Sexual advantages taken by clients	Demand for extra service	Being raped or sexually assaulted	Clothes being stripped off by clients	Coerced sex	Coerced sex by violence	Purposely injuring genitals
	aOR (95% CI)	**aOR (95% CI)**	**aOR (95% CI)**	**aOR (95% CI)**	**aOR (95% CI)**	**aOR (95% CI)**	**aOR (95% CI)**
Night club	0.56 (0.09, 3.69)	1.29 (0.21, 8.02)	0.06 (0.00, 1.10)	n/a	0.06 (0.00, 1.10)	n/a	n/a
Karaoke	1.42 (0.22, 9.29)	1.97 (0.33, 11.75)	0.30 (0.03, 2.80)	n/a	0.17 (0.01,1.93)	n/a	n/a
Sauna	0.54 (0.11, 2.81)	1.04 (0.20, 5.38)	0.14 (0.02, 1.11)	n/a	0.21 (0.03, 1.58)	0.25 (0.01,7.21)	n/a
Alcohol serving practice in venues	6.91(4.54, 10.53) ***	5.65 (3.65, 8.75) ****	2.38 (0.92, 6.19)	n/a	0.43 (0.24, 0.79) **	4.66 (0.19, 115.38)	n/a[4]
Goodness-of-fit (Chi-Square)	3.60	4.25	3.59	3.65	2.82	2.22	13.38

[1] Notes: Random effect model, justifying intra-class correlation within each venue due to cluster sampling.

[2] All variables in the table were included in all models.

[3] Risk levels of alcohol use: level one refers to “low risk” with the AUDIT scores from “0-7”, level two refers to “risk drinking” with the AUDIT scores from “8-15”, level three refers to “heavy drinking” with the AUDIT scores between “16-19”, and level four refers to “hazardous drinking” with the AUDIT scores from “20-40”.

[4] N/A: no meaningful results are available.

* p<.05,

** p<.01,

*** p<.005,

**** p<.0001