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Impact of Alcohol Use and Bar Attendance on Smoking and Quit Attempts Among Young Adult Bar Patrons

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Abstract

Objectives—We examined cigarette smoking and quit attempts in the context of alcohol use and bar attendance among young adult bar patrons with different smoking patterns.

Methods—We used randomized time location sampling to collect data among adult bar patrons aged 21 to 26 years in San Diego, California (n = 1235; response rate = 73%). We used multinomial and multivariate logistic regression models to analyze the association between smoking and quit attempts and both drinking and binge drinking among occasional, regular, very light, and heavier smokers, controlling for age, gender, race/ethnicity, and education.

Results—Young adult bar patrons reported high rates of smoking and co-use of cigarettes and alcohol. Binge drinking predicted smoking status, especially occasional and very light smoking. All types of smokers reported alcohol use, and bar attendance made it harder to quit. Alcohol use was negatively associated with quit attempts for very light smokers, but positively associated with quitting among heavier smokers.

Conclusions—Smoking and co-use of cigarettes and alcohol are common among young adult bar patrons, but there are important differences by smoking patterns. Tobacco interventions for young adults should prioritize bars and address alcohol use.

Tobacco is responsible for approximately 443 000 deaths in the United States annually,^{1,2} but cessation before the age of 30 years avoids most of the long-term health consequences of smoking.³ As smoking prevalence has declined,⁴ nondaily smoking and low-level daily cigarette consumption,^{5–7} also referred to as occasional or light smoking patterns, have increased.^{8–11} Nondaily smokers made up 4.1% of the US adult population in 2006,¹² increasing from 3.2% in 1997 and 1998.⁶ Nondaily smokers accounted for 19.9% of current smokers in 2006,¹² increasing from 16.0% in 1997 and 1998.⁶ Younger age is associated with occasional smoking,^{9,13} and nondaily smoking is common among young adults. In

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Contributors

N. Jiang analyzed data and led the writing. Both authors contributed to the review, revision, and approval of the final article. P. M. Ling conceptualized and supervised the study.

Human Participant Protection

This study protocol was reviewed by and received institutional review board approval from the Committee for Human Research at the University of California San Francisco.

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1997 and 1998, 5.5% of young adults aged 18 to 24 years were nondaily smokers, accounting for 19.9% of young adult smokers, the highest proportion of nondaily smoking among all age groups.⁶

Alcohol complicates occasional or light smoking in young adults, and it often plays a powerful catalyst role in facilitating and maintaining smoking.¹⁴ Young adults report that alcohol increases the enjoyment of and desire for cigarettes,^{15,16} and tobacco enhances the desired effect of alcohol.^{17–19} The co-use of cigarettes and alcohol has been described as like “milk and cookies” or “peanut butter with jelly.”²⁰

The co-use of tobacco and alcohol among young adults^{15,21,22} poses a serious health threat. Use of both cigarettes and alcohol increases the risk for certain cancers (e.g., mouth, throat, esophagus, upper aerodigestive tract)^{23–25} and makes it more difficult to quit either substance.^{26–28} In a 2001–2002 national study, 2.9% of adults aged 18 years and older (6.2 million) reported both alcohol use disorders and a dependence on nicotine by *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV)* criteria, and young adults aged 18 to 24 years exhibited the highest rates of this comorbidity.²²

Bars and nightclubs are key public venues where young adults congregate and use both alcohol and tobacco. Tobacco companies have targeted young adults, using entertaining events to reinforce a smoker-friendly atmosphere in bars and nightclubs.^{16,29–31} Many tobacco marketing events have encouraged alcohol use by offering alcohol discounts, paraphernalia, or by holding alcohol drinking contests.^{16,29,30,32} The strong rewarding effects of nicotine paired with alcohol,^{33–35} the aggressive tobacco marketing linked with alcohol,³² and the peer acceptance of smoking while drinking at parties in bars and nightclubs²⁰ have put young adult bar patrons at high risk for tobacco use and co-use of tobacco and alcohol, even for occasional and light smokers.

To our knowledge, no study has examined the co-use of tobacco and alcohol among young adult bar patrons. This is a hard-to-reach population often underrepresented in national surveillance studies. Additionally, no study has assessed co-use behavior among young adult occasional and light smokers, an increasingly common behavior. We examined patterns of smoking and quit attempts in the context of alcohol use and bar attendance among 4 groups of young adult smokers attending bars in San Diego, California, including occasional, regular, very light, and heavier smokers.

METHODS

We accessed a random sample of young adult bar patrons using randomized time location sampling strategies in San Diego from September 2010 to June 2011. Time location sampling approximates probability sampling methods and has been widely used to approximate probability samples among hard-to-reach populations at venues where the target populations tend to congregate, such as commercial sex workers in red light districts.^{36–39} Time location sampling requires a tally of all specific venues at which the target population gathers, as well as days and time intervals. Venues and data collection times are randomly selected, so that members of the target population have approximately equal chances of being sampled.^{36–38}

For this study, using key informant interviews, we created a complete list of bars frequented by young adults in San Diego, along with the days and time intervals during which they gathered. We randomly selected venue, date, and time of survey collections. Trained study personnel visited the randomly selected locations, enumerated patrons present in the sampling area, and invited all individuals whose self-reported age was between 21 and 26 years to complete a paper-and-pencil questionnaire. Study personnel explained the study,

and participants completed verbal informed consent to maximize participants' convenience. We did not include patrons who appeared to be intoxicated or who were unable or unwilling to complete the informed consent procedure for any reason.

After data collection, we cross-checked age using self-reported date of birth and included only respondents aged 21 to 26 years by date of birth. We excluded participants who did not satisfactorily complete at least 90% of the questionnaire. We collected 1235 valid surveys, for a response rate of 72.5%.

Main Measures

Smoking status—Participants reported the number of days in the past 30 days when they smoked at least 1 cigarette; respondents were divided into 3 groups on the basis of the frequency distribution: nonsmokers (no smoking in the past 30 days), occasional smokers (smoked on 1–19 of the past 30 days), and regular smokers (smoked on ≥ 20 of the past 30 days). Current smokers also reported the average number of cigarettes they smoked on a smoking day. As we found frequent reports of very low cigarette consumption per day, we classified respondents as nonsmokers (< 1 cigarette/day), very light smokers (1–5 cigarettes/day) and heavier smokers (> 5 cigarettes/day). The same cutoff of very light smoking has been used in earlier research on “chippers” (those who smoke at low levels for years without developing dependence) and very light smokers.^{40,41}

Quit attempts—All respondents were asked, “During the past 12 months, have you stopped smoking tobacco for 1 day or longer because you were trying to quit?” We dichotomously coded responses, and those who responded “I have tried to quit” to this question were classified as having made a quit attempt.

Alcohol drinking and binge drinking—On the basis of past-month alcohol consumption, we categorized respondents as nondrinkers, occasional drinkers (< 10 of past 30 days), and frequent drinkers (≥ 10 of past 30 days); we categorized binge drinking (≥ 5 shots or drinks in the same night) into no binge drinking, occasional binge drinking (< 10 of past 30 days), and frequent binge drinking (≥ 10 of past 30 days).

Impact of alcohol use and bar attendance on smoking—Previous studies of tobacco and alcohol co-use have tended to create measures of co-use by defining it on the basis of separate measures of tobacco and alcohol use. To measure tobacco and alcohol co-use behavior, all respondents were asked, “During the past 30 days, when out drinking alcohol at a bar or club, how frequently did you smoke cigarettes?” Participants answered on a 0 to 10 visual analog scale, with 0 labeled “none of the time,” 5 labeled “about half of the time,” and 10 labeled “all of the time.” Respondents were also asked to respond to the prompt, “During the times when you are drinking alcohol, do you smoke cigarettes?” Possible completions of the sentence (on a 5-point Likert scale) ranged from “a lot more than usual” to “a lot less than usual,” or “I don’t smoke.” Similarly, all respondents were also asked, “During the times when you are at a bar or club, do you smoke cigarettes?,” with the same (more or less than usual) response categories.

Impact of alcohol use and bar attendance on tobacco quit attempts—Respondents who had made a quit attempt in the past year were asked to rate on a 5-point Likert scale whether (1) drinking alcohol and (2) being in a bar or club made it harder or easier to quit smoking.

Demographics—We calculated each respondent's age on the basis of self-reported date of birth. We also created 2 gender categories (male and female), 5 race/ethnicity categories

(non-Hispanic White, non-Hispanic Black, non-Hispanic Asian and Pacific Islander, Hispanic, and other), and 4 education groups (high school graduate, dropped out of college, college student, and college graduate).

Data Analysis

We calculated frequency and percentage of each smoking pattern for each demographic factor and for each category of alcohol drinking and binge drinking frequency. Among all young adult bar patrons, we used multivariate logistic regression to examine the association between the dichotomous current smoking status and both drinking and binge drinking, controlling for age, gender, race/ethnicity, and education. In addition, we used multinomial logistic regression models to assess the association between smoking patterns in 3 categories of frequency (0 = nonsmoker, 1 = occasional smoker, 2 = regular smoker) and drinking and binge drinking, controlling for demographic variables. These multinomial regression models used the nonsmoker group as the referent, and compared (1) occasional smokers to nonsmokers and (2) regular smokers to nonsmokers. Similarly, a second set of multinomial regression models compared categories of cigarette consumption per day (nonsmokers, very light smokers, heavier smokers) and drinking and binge drinking, controlling for demographics.

We conducted χ^2 and *t* tests among current smokers to assess how their smoking behavior changed when they were drinking alcohol and when they were in a bar, and how co-use of cigarettes and alcohol differed between occasional and regular smokers and between very light and heavier smokers. We used multivariate logistic regression to examine whether regular and heavier smoking was associated with (1) increased smoking while drinking alcohol and (2) increased smoking when in a bar or club, controlling for age, gender, race/ethnicity, and education. We also used multivariate logistic regression to assess the association between making quit attempts and alcohol drinking and binge drinking among all current smokers, and then among each type of smoker (occasional, regular, very light, and heavier smokers), controlling for demographics. We used Stata version 11.0 (StataCorp LP, College Station, TX) for data analysis.

RESULTS

Forty-seven percent of the young adult bar patrons reported current smoking (Table 1). Current smokers reported occasional or very light smoking more frequently than regular or heavier smoking. Males had higher smoking rates than females across all smoking categories. Whites showed the highest current (50%) and heavier (20%) smoking rates; non-Hispanic Asian and Pacific Islanders and Hispanics showed current smoking rates of 40% and 47%, respectively. Respondents who had dropped out of college reported the highest current smoking rate (65%). Unlike groups with at least some college education, those whose highest level of completed education was high school more frequently reported regular (37%) or heavier (32%) smoking than occasional (22%) or very light (27%) smoking.

Association Between Tobacco and Alcohol Use

As the frequency of alcohol use and binge drinking increased, the current smoking rate increased. Frequent drinkers and frequent binge drinkers exhibited the highest regular and heavier smoking rates. Unlike other groups, they reported more regular smoking than occasional smoking. Table 2 shows the demographic and behavioral predictors of each smoking pattern. As expected in a sample of bar patrons, the majority (93%) of the participants had drunk alcohol in the past month. Therefore, we used occasional drinkers instead of nondrinkers as the reference group. Compared with occasional drinkers, frequent

drinkers were more likely to be current smokers, after we controlled for age, gender, race/ethnicity, education, and binge drinking. Binge drinkers (both occasional and frequent) were more likely to be current smokers than those who reported no binge drinking, after we controlled for covariates. Frequent drinking predicted all smoking patterns except occasional smoking, occasional binge drinking predicted occasional and very light smoking only, and frequent binge drinking was associated with all smoking patterns.

Impact of Alcohol Use and Bar Attendance on Smoking

Among current smokers, 96% reported some cigarette smoking when drinking alcohol or at a bar or club (data not shown), 75% smoked more than usual when drinking alcohol, and 69% smoked more at a bar (Table 3). Compared with occasional smokers, a significantly higher proportion of regular smokers reported increased smoking when drinking alcohol ($P = .015$) or at a bar ($P = .023$), and regular smokers were more likely than occasional smokers to report increased smoking while drinking alcohol, with control for age, gender, race/ethnicity, education, and cigarette consumption. No significant difference was observed between very light and heavier smokers. When drinking alcohol at a bar or club, 95% of smokers reported some smoking (rated 1 on the 0–10 Likert scale), 60% smoked at least half of the time on such occasions (rated 5 on the scale), and 24% smoked “all of the time” (rated 10 on the scale; data not shown). Young adult bar patrons who were current smokers reported that they smoked on more than half of the occasions when they drank at a bar, with a mean of 5.67 (SD = 3.28) on the 0 to 10 scale. Regular (7.44; SD = 2.81) and heavier (7.70; SD = 2.68) smokers smoked more frequently while drinking at a bar than occasional (4.44; SD = 3.01) and very light (4.83; SD = 3.09) smokers. We observed significant differences in the frequency of smoking when drinking alcohol at a bar between occasional and regular smokers ($t_{563} = 11.96$, $P < .001$) and between very light and heavier smokers ($t_{552} = 10.59$, $P < .001$).

Impact of Alcohol Use and Bar Attendance on Quit Attempts

About 41% of current smokers had made a quit attempt during the past 12 months. A higher proportion of regular smokers (54%) reported quit attempts than occasional smokers (32%; $\chi^2_1 = 59.77$; $P < .001$), and a higher proportion of heavier smokers (48%) reported quit attempts than very light smokers (38%; $\chi^2_1 = 5.04$; $P = .025$). Approximately 20% of occasional smokers and 15% of very light smokers reported that they did not smoke and thus had made no quit attempts. Among smokers who had tried to quit, 80% reported that drinking alcohol made it harder (or a lot harder) to quit, and 73% reported that being in a bar or club made it harder to quit. Although a slightly higher proportion of regular and heavier smokers than of occasional and very light smokers reported that alcohol use or bar attendance made it harder to quit, the difference was not statistically significant.

Table 4 shows the association between quit attempts and alcohol drinking and binge drinking for all current smokers and for each type of smoker (occasional, regular, very light, and heavier), after we controlled for covariates and used separate multivariate logistic regression models. Among current smokers, regular smoking predicted more quit attempts, and drinking and binge drinking were not associated with quit attempts. Binge drinking was associated with quit attempts for very light and heavier smokers. Among very light smokers, frequent binge drinkers were less likely to report quit attempts than their counterparts who reported no binge drinking; for heavier smokers, occasional binge drinkers were more likely to report quit attempts than those reporting no binge drinking (covariates were controlled for both outcomes).

DISCUSSION

Young adult bar patrons aged 21 to 26 years in San Diego reported a current smoking rate of 47%, which was almost 4 times the 2010 state smoking prevalence of 12.5% for young adults aged 18 to 24 years.⁴² Most of the smokers, however, were occasional or very light smokers. The high prevalence of occasional and very light smoking among current smokers in San Diego may be due to the long-term comprehensive California Tobacco Control Program established in 1989.^{43–46} It is worth noting that, among these young adult bar patrons, non-Hispanic Asian and Pacific Islanders and Hispanics showed current smoking rates of 40% and 47%, respectively; these were much higher than their national smoking prevalences, which were 12.0% for non-Hispanic Asians and 14.5% for Hispanics in 2009.⁴⁷ The findings suggest that despite the low smoking prevalence in California, smoking is concentrated among certain groups. For the special population of young adult bar patrons, even members of traditionally low-risk racial/ethnic groups exhibit disproportionately high smoking rates. Future tobacco control efforts should prioritize bars and nightclubs to reach this concentrated high-risk population. Given that tobacco companies continue to implement tobacco promotional events in bars and nightclubs that target young adults,^{16,29–31} including in smoke-free bars, counterinterventions are urgently needed in these venues.

The current smoking rate increased with the frequency of drinking and binge drinking. This finding is consistent with previous research.²¹ Frequent drinking was associated with all smoking patterns, except occasional smoking, and predicted more very light smoking (AOR = 1.95) than heavier smoking (AOR = 1.76). Thus, frequent drinkers in San Diego tended to be regular smokers (i.e., smoking ≥ 20 days in the past 30 days), but mainly at a relatively low level of cigarette consumption per day. A longitudinal study has shown that even very light smokers (< 5 cigarettes per day) are at risk for becoming heavier smokers if they experience regular nicotine exposure.⁴⁰

Consistent with previous studies,^{21,48} binge drinking (both occasional and frequent) was associated with current smoking. Frequent binge drinking predicted all smoking patterns, whereas occasional binge drinking only predicted occasional and very light smoking. It is not known whether occasional binge drinkers who smoke will become regular or heavier smokers or will maintain low cigarette consumption. A longitudinal study among Finnish adults found that those who were binge drinkers at the baseline survey were less likely to maintain light smoking (< 5 cigarettes per day) and were more likely to increase cigarette consumption at follow-up.¹³ However, that study did not examine subgroups of occasional or frequent binge drinkers. Future prospective studies should examine whether occasional binge drinkers who engage in occasional and very light smoking progress to regular or heavier smoking over time.

The co-use of cigarettes and alcohol is common with all smoking patterns, despite the fact that data were collected in San Diego where bars and clubs are smoke free. About 96% of young adult bar patrons who smoked reported increased cigarette consumption in the context of alcohol use or bar attendance, and 95% of smokers reported co-use of cigarettes and alcohol at bars. Even occasional and very light smokers reported smoking about half of the time when out drinking alcohol at a bar. The high rate of cigarette and alcohol co-use among bar patrons, even among occasional and very light smokers, could be explained by previous findings that light smokers (< 5 cigarettes per day) tend to be influenced by social motives and endorse smoking while drinking alcohol at a party,⁴¹ and alcohol reduces young adult social smokers' rational barriers to smoking.¹⁴

Although it was not formally measured in our survey instruments, our data collectors informally reported that the smoking they observed during data collection periods mainly

occurred outside the bar (but often nearby, such as patio areas or doorways just outside the bar). Many bars and clubs in San Diego have patios, and these bars and clubs were technically compliant with the smoke-free bar laws. Patrons may smoke cigarettes and drink alcohol simultaneously on bar patios or doorways. Patrons may also drink inside and quickly step outside onto a patio to smoke, sometimes leaving their partially finished drinks with friends. Those responding positively to the survey question about “smoking while out drinking at a bar” probably included those simultaneously using cigarettes and alcohol as well as those who used them at nearly the same place or time, but not necessarily simultaneously. Both simultaneous co-use of cigarettes and alcohol and quick alternation between cigarettes and alcohol are frequently reported behaviors, so this study attempted to capture both behaviors in the survey question. It is not known whether more strict smoke-free bar policies (e.g., extending clean indoor air laws to include outdoor spaces, including all outdoor patios and decks, within 20 feet of a bar entrance) could deter patrons from smoking while drinking at bars, and whether the effect would be different for smokers with different patterns. Future studies are needed to examine the impact of smoke-free bar policies on the link between tobacco and alcohol use.

Young adult bar patrons reported a quit attempt rate of 41% in the past 12 months, which is similar to the 2008 national estimate of a quit attempt rate of 45% among current smokers aged 18 years and older.⁴⁹ Regular and heavier smokers reported more quit attempts than occasional and very light smokers. About 20% of occasional smokers and 15% of very light smokers identified themselves as nonsmokers and so did not report quit attempts. The lack of self-identification as a smoker among occasional and very light smokers, and thus the lack of a need to quit, may explain their fewer quit attempts. Similarly, college party smokers may perceive smoking while drinking as “not really smoking.”²⁰ Another study of young adults concluded that self-identified social smokers were less likely to intend to quit.⁵⁰ These data suggest the need for cessation interventions to reach young adult occasional and very light smokers in social entertainment venues. In addition, efforts to decrease perceptions of smoking as a socially normative behavior in bars and nightclubs may help reduce smoking among occasional and very light smokers.

For very light smokers, those engaged in frequent binge drinking were less likely to report quit attempts than nonbinge drinkers. For heavier smokers, however, occasional binge drinking predicted more quit attempts, whereas frequent binge drinking did not. One explanation might be that very light smokers who frequently engaged in binge drinking mainly smoked during binge drinking episodes and believed that they were not really smoking, and so felt less need to quit. It is unclear why heavier smokers who occasionally binge drank were more likely to report quit attempts than frequent binge drinkers. One reason might be that heavier smokers who frequently binge drink have greater propensity to use both substances in general and so make fewer quit attempts. These data suggest that tobacco cessation interventions for young adults should address alcohol use, and that different interventions may be needed for very light and heavier smokers.

Limitations

Limitations of this study include the fact that data were collected in 1 city, so the findings may not be generalizable to the entire young adult bar-going population. However, the use of randomized time location sampling strategies allowed a random sample of the young adult bar patron population. As in all studies using questionnaires, respondents could have misreported their behaviors, so the results were subject to measurement errors. Additionally, the co-use behavior described among these young adult bar patrons is rather ambiguous, and may include different patterns or intensity of co-use. However, the co-use measure in this study reflects both simultaneous use of cigarettes and alcohol and closely timed or

alternating smoking and drinking, behaviors that are perceived as paired activities by the respondents.

Conclusions

This is the first study to attempt to deliberately measure co-use, rather than posthoc construction of a co-use variable based on separately reported tobacco and alcohol use. This is among the very few studies to examine smoking and quit attempts in the context of alcohol use and bar attendance among young adult bar patrons. It used sample-customized smoker classifications as dependent variable categories and used multinomial logistic regression models to examine the association between smoking and alcohol use, thus allowing a more appropriate categorization of cigarette smoking behavior for this population. It also described quit attempts among various smoking categories, including occasional and very light smoking, increasingly common behaviors among young adults.

Bars, nightclubs, and other social entertainment venues represent an important opportunity to focus tobacco control efforts. The high smoking rate, even among some racial/ethnic groups with a relatively low national smoking prevalence, suggests the need for tobacco interventions for young adult bar patrons. In addition, the high co-use rates, the positive association between smoking and alcohol use (especially among occasional and very light smokers), and the negative association between quit attempts and binge drinking among very light smokers suggest that addressing alcohol use is an important part of smoking cessation for many young adult smokers.

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Table 1
Sample Characteristics and Prevalence of Smoking Among Bar Patrons Aged 21–26 Years: San Diego, CA, 2010–2011

Characteristic	Total No. (%)	Current Smokers, ^a No. (%)	Smoking by No. of Smoking Days			Smoking by Cigarette Consumption Per Day	
			Occasional Smokers, ^b No. (%)	Regular Smokers, ^c No. (%)	Very Light Smokers, ^d No. (%)	Heavier Smokers, ^e No. (%)	
Total	1235 (100)	576 (46.64)	339 (27.45)	237 (19.19)	383 (31.29)	182 (14.87)	
Gender							
Male	633 (51.26)	328 (51.82)	189 (29.86)	139 (21.96)	212 (33.92)	108 (17.28)	
Female	602 (48.74)	248 (41.20)	150 (24.92)	98 (16.28)	171 (28.55)	74 (12.35)	
Race/ethnicity							
White	534 (43.34)	265 (49.63)	147 (27.53)	118 (22.10)	155 (29.30)	105 (19.85)	
Black	44 (3.57)	14 (31.82)	8 (18.18)	6 (13.64)	9 (20.93)	4 (9.30)	
Asian/Pacific Islander	147 (11.93)	59 (40.14)	34 (23.13)	25 (17.01)	41 (27.89)	18 (12.24)	
Hispanic	415 (33.69)	194 (46.75)	132 (31.81)	62 (14.94)	149 (36.25)	41 (9.98)	
Others	92 (7.47)	43 (46.74)	17 (18.48)	26 (28.26)	28 (30.77)	14 (15.38)	
Education							
High school graduate	110 (8.92)	65 (59.09)	24 (21.82)	41 (37.27)	29 (26.61)	35 (32.11)	
Dropped out of college	146 (11.84)	95 (65.07)	55 (37.67)	40 (27.40)	50 (34.97)	42 (29.37)	
College student	518 (42.01)	235 (45.37)	155 (29.92)	80 (15.44)	177 (34.30)	56 (10.85)	
College graduate	459 (37.23)	180 (39.22)	104 (22.66)	76 (16.56)	126 (27.75)	49 (10.79)	
Drinking frequency							
Nondrinker	92 (7.50)	27 (29.35)	19 (20.65)	8 (8.70)	16 (17.78)	9 (10.00)	
Occasional drinker ^f	524 (42.74)	192 (36.64)	161 (30.73)	31 (5.92)	133 (25.63)	54 (10.40)	
Frequent drinkers ^g	610 (49.76)	352 (57.70)	156 (25.57)	196 (32.13)	231 (38.06)	118 (19.44)	
Binge drinking							
No binge drinking	440 (36.30)	148 (33.64)	87 (19.77)	61 (13.86)	99 (22.81)	43 (9.91)	
Occasional binge drinking ^h	569 (46.95)	273 (47.98)	189 (33.22)	84 (14.76)	192 (33.98)	77 (13.63)	
Frequent binge drinking ⁱ	203 (16.75)	137 (67.49)	53 (26.11)	84 (41.38)	81 (39.90)	56 (27.59)	

^aCurrent smokers reported that they had smoked cigarettes on 1 of the past 30 days.

^bOccasional smokers had smoked on 1–19 of the past 30 days.

- ^cRegular smokers had smoked on 20 of the past 30 days.
- ^dVery light smokers smoked 1–5 cigarettes on a smoking day on average.
- ^eHeavier smokers smoked > 5 cigarettes per day.
- ^fOccasional drinkers had drunk alcohol on 1–9 of the past 30 days.
- ^gFrequent drinkers had drunk on 10 of the past 30 days.
- ^hOccasional binge drinkers reported binge drinking on 1–9 of the past 30 days.
- ⁱFrequent binge drinkers reported binge drinking on 10 of the past 30 days.

Table 2

Predictors of Smoking Among Bar Patrons Aged 21–26 Years: San Diego, CA, 2010–2011

	Current Smokers, AOR (95% CI)	Smoking by No. of Smoking Days ^b			Smoking by Cigarette Consumption Per Day ^c		
		Occasional Smokers, AOR (95% CI)	Regular Smokers, AOR (95% CI)	Very Light Smokers, AOR (95% CI)	Very Light Smokers, AOR (95% CI)	Heavier Smokers, AOR (95% CI)	
Age	0.99 (0.92, 1.08)	0.98 (0.89, 1.07)	1.02 (0.92, 1.14)	0.95 (0.87, 1.04)	1.13* (1.00, 1.27)		
Gender							
Male (Ref)	1.00	1.00	1.00	1.00	1.00		
Female	0.73* (0.57, 0.93)	0.75* (0.57, 0.99)	0.69* (0.49, 0.96)	0.73* (0.56, 0.96)	0.75 (0.52, 1.08)		
Race/ethnicity							
White (Ref)	1.00	1.00	1.00	1.00	1.00		
Black	0.47* (0.23, 0.96)	0.43 (0.18, 1.01)	0.53 (0.19, 1.44)	0.49 (0.21, 1.13)	0.37 (0.12, 1.16)		
Asian/Pacific Islander	0.84 (0.57, 1.25)	0.79 (0.50, 1.26)	0.95 (0.55, 1.63)	0.95 (0.61, 1.47)	0.73 (0.40, 1.31)		
Hispanic	0.94 (0.71, 1.25)	1.08 (0.79, 1.48)	0.73 (0.49, 1.08)	1.24 (0.91, 1.69)	0.48** (0.31, 0.75)		
Others	0.95 (0.59, 1.53)	0.68 (0.36, 1.25)	1.39 (0.77, 2.52)	1.08 (0.63, 1.84)	0.74 (0.37, 1.46)		
Education							
High school graduate (Ref)	1.00	1.00	1.00	1.00	1.00		
Dropped out of college	1.23 (0.72, 2.12)	2.07* (1.08, 4.00)	0.65 (0.34, 1.27)	1.51 (0.79, 2.89)	0.95 (0.50, 1.81)		
College student	0.62* (0.40, 0.97)	1.11 (0.63, 1.94)	0.30*** (0.17, 0.53)	1.06 (0.62, 1.82)	0.28*** (0.16, 0.49)		
College graduate	0.47** (0.30, 0.75)	0.79 (0.44, 1.41)	0.25*** (0.14, 0.45)	0.83 (0.48, 1.46)	0.19*** (0.10, 0.34)		
Drinking frequency							
Occasional drinker ^d (Ref)	1.00	1.00	1.00	1.00	1.00		
Nondrinker	0.88 (0.52, 1.50)	0.85 (0.47, 1.57)	1.23 (0.52, 2.91)	0.75 (0.40, 1.43)	1.12 (0.49, 2.55)		
Frequent drinker	1.87*** (1.42, 2.46)	1.06 (0.78, 1.46)	6.09*** (3.89, 9.54)	1.95*** (1.44, 2.63)	1.76* (1.15, 2.70)		
Binge drinking							
No binge drinking (Ref)	1.00	1.00	1.00	1.00	1.00		
Occasional binge drinking ^f	1.56** (1.18, 2.07)	1.99*** (1.44, 2.76)	0.98 (0.65, 1.47)	1.62** (1.18, 2.22)	1.54 (0.98, 2.40)		
Frequent binge drinking ^g	2.31*** (1.54, 3.49)	2.21** (1.34, 3.67)	1.97** (1.20, 3.23)	2.07** (1.31, 3.25)	3.17*** (1.77, 5.66)		

Note. AOR = adjusted odds ratio; CI = confidence interval.

- ^aMultivariate logistic regression model (n = 1204) examining the association between current smoking and binge drinking, controlling for age, gender, race/ethnicity, and education.
- ^bMultinomial logistic regression model (n = 1204) examining the association between smoking (0 = nonsmoker [reference group], 1 = occasional smoker, 2 = regular smoker) and drinking and binge drinking, controlling for age, gender, race/ethnicity, and education. Occasional smokers had smoked on 1–19 of the past 30 days; regular smokers had smoked on ≥ 20 of the past 30 days.
- ^cMultinomial logistic regression model (n = 1194) examining the association between smoking (0 = nonsmoker [reference group], 1 = very light smoker, 2 = heavier smoker) and drinking and binge drinking, controlling for age, gender, race/ethnicity, and education. Very light smokers smoked 1–5 cigarettes on a smoking day on average; heavier smokers smoked > 5 cigarettes per day.
- ^dOccasional drinkers had drunk alcohol on 1–9 of the past 30 days.
- ^eFrequent drinkers had drunk on ≥ 10 of the past 30 days.
- ^fOccasional binge drinkers reported binge drinking on 1–9 of the past 30 days.
- ^gFrequent binge drinkers reported binge drinking on ≥ 10 of the past 30 days.

* $P < .05$;

** $P < .01$;

*** $P < .001$.

Smoking When Drinking Alcohol or in a Bar and the Co-Use of Cigarettes and Alcohol Among Currently Smoking Bar Patrons Aged 21–26 Years: San Diego, CA, 2010–2011

Table 3

	Smoked More Than Usual When Drinking Alcohol			Smoked More Than Usual When in a Bar or Club			Co-Use of Cigarettes and Alcohol at Bars ^d	
	No. (%)	χ^2_1 (P)	AOR ^b (95% CI)	No. (%)	χ^2_1 (P)	AOR ^c (95% CI)	Mean (SD)	t (P)
Current smoker ^d	434 (75.48)			395 (68.58)			5.67 (3.28)	
Smoking by no. of smoking days		5.96 (.015)			5.18 (.023)			$t_{563} = 11.96 (< .001)$
Occasional smoker ^e	243 (71.68)		1.00 (Ref)	220 (64.89)		1.00 (Ref)	4.44 (3.01)	
Regular smoker ^f	191 (80.93)		1.63* (1.04, 2.55)	175 (73.84)		1.48 (0.98, 2.24)	7.44 (2.81)	
Smoking by cigarette consumption per day		0.43 (.511)			0.21 (.644)			$t_{552} = 10.59 (< .001)$
Very light smoker ^g	287 (74.94)		1.00 (Ref)	262 (68.41)		1.00 (Ref)	4.83 (3.09)	
Heavier smoker ^h	141 (77.90)		0.90 (0.55, 1.45)	128 (70.33)		0.84 (0.54, 1.30)	7.70 (2.68)	

Note. AOR = adjusted odds ratio; CI = confidence interval.

^aCo-users were defined as respondents who rated 1 (on a 0–10 Likert scale) to the question, “During the past 30 days, when out drinking alcohol at a bar or club, how frequently did you smoke cigarettes?”

^bMultivariate logistic regression model examining the association between increased smoking when drinking alcohol (0 = no vs 1 = yes) and number of smoking days and cigarette consumption per day, controlling for age, gender, race/ethnicity, and education.

^cMultivariate logistic regression model examining the association between increased smoking when in a bar or club (0 = no vs 1 = yes) and number of smoking days and cigarette consumption per day, controlling for age, gender, race/ethnicity, and education.

^dCurrent smokers were respondents who reported that they had smoked cigarettes on 1 of the past 30 days.

^eOccasional smokers had smoked on 1–19 of the past 30 days.

^fRegular smokers had smoked on 20 of the past 30 days.

^gVery light smokers smoked 1–5 cigarettes on a smoking day on average.

^hHeavier smokers smoked > 5 cigarettes per day.

* $P < .05$.

Table 4
Association Between Making Quit Attempts and Alcohol Drinking and Binge Drinking Among Bar Patrons Aged 21–26 Years, by Type of Smoker: San Diego, CA, 2010–2011

	Smoking by No. of Smoking Days			Smoking by Cigarette Consumption Per Day		
	Current Smokers ^d (n = 545), AOR (95% CI)	Occasional Smokers ^b (n = 316), AOR (95% CI)	Regular Smokers ^c (n = 229), AOR (95% CI)	Very Light Smokers ^d (n = 369), AOR (95% CI)	Heavier Smokers ^e (n = 176), AOR (95% CI)	
Age	0.95 (0.85, 1.07)	0.93 (0.80, 1.09)	0.96 (0.80, 1.16)	0.95 (0.82, 1.09)	0.97 (0.78, 1.22)	
Gender						
Male (Ref)	1.00	1.00	1.00	1.00	1.00	
Female	1.15 (0.79, 1.66)	1.06 (0.64, 1.76)	1.40 (0.78, 2.50)	1.06 (0.66, 1.70)	1.49 (0.75, 2.96)	
Race/ethnicity						
White (Ref)	1.00	1.00	1.00	1.00	1.00	
Black	0.68 (0.19, 2.45)	0.60 (0.07, 5.61)	0.91 (0.16, 5.10)	0.45 (0.07, 2.76)	1.33 (0.14, 12.47)	
Asian/Pacific Islander	1.40 (0.77, 2.55)	1.19 (0.52, 2.73)	1.87 (0.70, 5.04)	1.59 (0.75, 3.39)	1.11 (0.38, 3.29)	
Hispanic	0.94 (0.62, 1.44)	0.98 (0.56, 1.72)	0.83 (0.42, 1.66)	0.82 (0.49, 1.39)	1.34 (0.60, 2.99)	
Others	1.26 (0.63, 2.52)	0.99 (0.28, 3.48)	1.81 (0.70, 4.66)	1.17 (0.47, 2.92)	1.94 (0.58, 6.51)	
Education						
High school graduate (Ref)	1.00	1.00	1.00	1.00	1.00	
Dropped out of college	1.73 (0.86, 3.48)	3.74* (1.11, 12.58)	0.84 (0.33, 2.14)	2.97 (0.97, 9.08)	1.18 (0.45, 3.12)	
College student	1.32 (0.71, 2.47)	1.73 (0.55, 5.45)	1.11 (0.50, 2.48)	2.11 (0.79, 5.67)	0.80 (0.32, 1.97)	
College graduate	1.69 (0.88, 3.25)	1.68 (0.51, 5.48)	2.37* (1.00, 5.59)	2.16 (0.78, 6.03)	2.24 (0.86, 5.88)	
Drinking frequency						
Occasional drinker ^f (Ref)	1.00	1.00	1.00	1.00	1.00	
Nondrinker	1.36 (0.53, 3.49)	1.54 (0.50, 4.76)	0.93 (0.17, 5.19)	0.75 (0.21, 2.64)	7.18* (1.25, 41.15) ^g	
Frequent drinker ^h	0.93 (0.59, 1.46)	1.02 (0.58, 1.79)	1.07 (0.44, 2.59)	0.86 (0.50, 1.48)	1.66 (0.64, 4.26)	
Binge drinking						
No binge drinking (Ref)	1.00	1.00	1.00	1.00	1.00	
Occasional binge drinking ⁱ	1.07 (0.69, 1.68)	0.66 (0.36, 1.19)	2.06 (0.98, 4.31)	0.69 (0.40, 1.19)	3.60** (1.40, 9.29)	
Frequent binge drinking ^j	0.78 (0.45, 1.37)	0.48 (0.19, 1.19)	1.21 (0.55, 2.65)	0.43* (0.21, 0.90)	2.68 (0.96, 7.47)	
No. of smoking days						

	Current Smokers ^d (n = 545), AOR (95% CI)	Smoking by No. of Smoking Days		Smoking by Cigarette Consumption Per Day	
		Occasional Smokers ^b (n = 316), AOR (95% CI)	Regular Smokers ^c (n = 229), AOR (95% CI)	Very Light Smokers ^d (n = 369), AOR (95% CI)	Heavier Smokers ^e (n = 176), AOR (95% CI)
Occasional smoker (Ref)	1.00				
Regular smoker	2.80 ^{***} (1.82, 4.33)			1.00	1.00
Cigarette consumption per day					
Very light smoker (Ref)	1.00	1.00	1.00		
Heavier smoker	1.05 (0.68, 1.61)	2.01 [*] (1.04, 3.90)	0.70 (0.39, 1.25)	4.60 ^{***} (2.65, 7.96)	1.09 (0.47, 2.56)

Note. AOR = adjusted odds ratio; CI = confidence interval.

^aEach column reports separate multivariate logistic regression on having made a quit attempt in past year among different types of smokers. Current smokers reported smoking on at least 1 of the past 30 days.

^bOccasional smokers had smoked on 1–19 of the past 30 days.

^cRegular smokers had smoked on 20 of the past 30 days.

^dVery light smokers smoked 1–5 cigarettes on a smoking day on average.

^eHeavier smokers smoked > 5 cigarettes per day.

^fOccasional drinkers had drunk alcohol on 1–9 of the past 30 days.

^gSmall cell size (n = 9); prediction not reliable.

^hFrequent drinkers had drunk on 10 of the past 30 days.

ⁱOccasional binge drinkers reported binge drinking on 1–9 of the past 30 days.

^jFrequent binge drinkers reported binge drinking on 10 of the past 30 days.

* $P < .05$;

** $P < .01$;

*** $P < .001$.