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Secondhand Smoke Exposure and Smoking Behavior Among Young Adult Bar Patrons

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Abstract

Objectives—We described frequency of secondhand smoke (SHS) exposure among young adults patronizing bars and associations between SHS exposure, attitudes, and smoking behavior.

Methods—We collected cross-sectional surveys from randomized time–location samples of bar patrons aged 18 to 26 years in San Diego, California, and Oklahoma City and Tulsa, Oklahoma, in 2010 to 2011. Multivariate logistic regression evaluated associations between SHS exposure, attitudes about dangers of SHS, susceptibility to smoking initiation among nonsmokers, and quit attempts among current smokers.

Results—More than 80% of respondents reported past 7-day exposure to any SHS, and more than 70% reported exposure at a bar. Current smokers reported more SHS exposure in cars and their own homes than did nonsmokers. Among nonsmokers, SHS exposure was associated with susceptibility to initiation, but those who believed that SHS exposure is harmful were less susceptible. Belief that SHS is dangerous was associated with quit attempts among smokers.

Conclusions—Smoke-free environments and education about the harms of SHS may decrease tobacco use among young adults who frequent bars, where they are heavily exposed to SHS.

Tobacco use is a leading cause of preventable disease and death in the United States. In addition, secondhand smoke (SHS) exposure increases morbidity and mortality in individuals[1] through the development of conditions such as asthma,[2] coronary heart disease,[3] and lung cancer.[4] Clean indoor air policies are associated with reductions in tobacco-related morbidity, such as fewer hospital admissions for acute coronary syndrome,[5]

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Contributors

S. Kalkhoran conducted the data analysis and led the writing of the article. T. B. Neilands helped develop the survey instrument and the study design and supervised the data analysis. P. M. Ling originated the study, obtained funding, and supervised the data collection and analysis. All authors analyzed and interpreted the data and reviewed, revised, and approved the article.

Note. The article contents are solely the responsibility of the authors and do not necessarily represent the official views of the National Cancer Institute, TSET, or FAMRI.

Human Participant Protection

The study was approved by the committee on human research of the University of California, San Francisco.

reduced hospital admissions for asthma in children,[6] and decreased respiratory symptoms in bar workers.[7] Although clean indoor air laws have become more common over the past 20 years,[8] many people continue to be exposed to SHS daily.[9]

Young adulthood (18–26 years) is a critical time in which adult smoking patterns are formed,[10–12] and young adults are increasingly at risk for smoking initiation.[9] This is particularly true for young adult bar patrons, because about 1 in 3 young adults frequents bars, and both current smokers and susceptible never-smokers are more likely than committed non-smokers to patronize bars.[13] Furthermore, young adults, who are the youngest legal target for tobacco marketing, are frequently exposed to tobacco-marketing activities in bars,[14] and bars are a key policy battleground for clean indoor air policies.[15] Thus, young adult bar patrons remain an important subset of the young adult population exposed to tobacco products.

Young adults have high rates of SHS exposure,[16] but little is known about how this exposure relates to smoking initiation. Young adult smokers are more likely than older smokers to attempt to quit smoking and are more likely to be successful,[17] despite being less likely to be assisted in their efforts.[18,19] It is not known whether exposure to SHS undermines these quit attempts. Some preliminary evidence suggests that counseling nondaily smokers about the dangers of SHS enhances cessation more effectively than messages emphasizing the personal risk of smoking.[20] Understanding young adult SHS exposure and attitudes may help clinicians counsel young (frequently non-daily) smokers more effectively.[21,22]

Bars and clubs register high airborne nicotine levels in comparisons of public places,[23,24] and they may also be a significant source of SHS exposure for young adults. Previous studies in youths have shown an association between SHS exposure and smoking initiation,[25,26] and SHS exposure at bars may also facilitate young adult smoking initiation. SHS exposure among young adult bar patrons and its effects on smoking behavior have not been studied. We aimed to describe sources of SHS exposure among young adults patronizing bars and clubs and to assess associations between SHS exposure, attitudes regarding SHS exposure, and smoking behavior in this high-risk group. Our participants lived in jurisdictions with differing smoking laws: San Diego, California, which has smoke-free bars, and Oklahoma City and Tulsa, Oklahoma, which allow smoking in bars. Both California and Oklahoma have smoke-free indoor workplaces. Our hypothesis, which was based on theory and the literature, was that the smoke-free policy context, various demographic factors,[27] and current use of tobacco products[28,29] would influence whether participants reported exposure to SHS as well as their beliefs about the dangers of SHS. Specifically, we hypothesized that:

1. participants in San Diego would be less likely to report SHS exposure than participants in Oklahoma,
2. women would experience lower odds of SHS exposure than men,
3. individuals with lower levels of education would experience higher odds of SHS exposure than people with higher levels of education,
4. women and those with more education would be more likely than others to believe that SHS is dangerous to health,
5. daily and nondaily smokers would have higher odds than nonsmokers of being exposed to SHS smoke and lower odds of believing SHS exposure is dangerous,

6. SHS exposure would be positively associated with susceptibility to smoking initiation among nonsmokers and negatively associated with quit attempts among smokers, and
7. belief that SHS is dangerous would be negatively associated with susceptibility to smoking initiation among nonsmokers and positively associated with quit attempts among smokers.

METHODS

Young adults patronizing bars and clubs are a hard-to-reach population that is extremely difficult to study. Adults aged 18 to 26 years are less likely to be included in population-based surveys because of their mobility and low usage of telephone landlines, which are used in most random-digit-dialing surveys.[30] Internet samples tend to over-represent more highly educated populations with easier and quicker access[31]; although mobile phone sampling improves on these limitations, response rates tend to be low.[30] To address these concerns, we used time–location sampling to generate a random sample of young adult bar and club patrons in San Diego, Oklahoma City, and Tulsa between September 2010 and June 2011. We chose these sites to leverage evaluation research activities focused on tobacco use among young adults in bars and nightclubs. Our sampling method, which was developed to reach underserved populations, uses specific venues and time intervals to recruit members of the population being studied.[32–34] Random selection of venues, dates, and times affords members of the target population similar chances of being enlisted, approximating probability sampling.[32–34]

In each city, we interviewed between 6 and 20 local young adults to determine which bars and nightclubs (and which nights of the week) were popular with the target population. We recruited key informants from bars and through referrals by other participants because of their familiarity with the local bar scene. For example, key informants in each city included local bartenders, musicians, disc jockeys, party promoters, or staff of the local free newspaper. In each city, our sample came from the 3 to 5 neighborhoods that contained most of the bars most popular among young adults. Trained study personnel visited randomly selected venues, dates, and times from our informants' leads, approached all individuals present at the time of sampling who appeared to be younger than 30 years, and invited those whose self-reported age was between 18 and 26 years to complete a paper-and-pencil questionnaire (response rate = 61.4%). In the total 3-city sample, 3095 bar patrons (30% of those approached) were ineligible because of age.

We obtained permission to collect data from bar managers at every venue, and, when applicable, we paid bar entry fees. Bar managers gave permission for surveying on-site but did not receive any additional incentive for allowing data collection. Over the course of the study, 84 different venues were approached, and 20 refused to allow surveying. Participants completed verbal informed consent. Patrons who appeared to be intoxicated or who were unable or unwilling to complete the verbal informed consent procedure were not included. We offered detailed study information to all participants in an information sheet, business card, and access to the study Web site, which also contained a copy of the informed consent form. After data collection, we cross-checked age against self-reported date of birth and the date of the survey, and only included in the analysis participants aged 18 to 26 years by date of birth. Participants received $5 for completing the survey.

Measures

Smoking status and sites of secondhand smoke exposure—Consistent with standard adolescent–young adult measures, participants reported the number of days in the

past 30 days they smoked at least 1 cigarette; we classified them into 3 groups: nonsmokers (smoked 0 days), nondaily smokers (smoked 1–29 days), and daily smokers (smoked 30 days). As in previous research,[35,36] we scored nonsmokers' responses to the question, "Do you think you will smoke a cigarette in the next year?" on a 5-point Likert scale; we coded any response other than "definitely not" as being susceptible to smoking initiation. We coded participants who reported that in the past 12 months, they had stopped smoking tobacco for 1 day or longer because they were trying to quit as having made a quit attempt. Participants indicated on a checklist "each of the places where you were exposed to other people's tobacco smoke in the past 7 DAYS" (responses were "in your home," "in a car," "indoors at work," and "at a bar or club").

Attitudes toward secondhand smoke exposure—Participants reported agreement with 2 statements: "I believe that second-hand tobacco smoke is dangerous to a non-smoker's health" and "Inhaling smoke from someone else's cigarettes harms the health of babies and children" on a 5-point Likert scale. Consistent with previous studies that used these measures,[36] we coded those who responded "a great deal" to both questions as strongly believing that SHS is dangerous.

Demographics—We calculated each respondent's age by the self-reported date of birth and divided age into 3 categories (18–20, 21–23, and 24–26 years), similar to categories used in previous studies.[27] These categories distinguish the youngest adults (18–20 years), who are not yet of age to purchase alcohol but may legally purchase tobacco, from those beginning to frequent bars (21–23 years) and from those who have been permitted to buy cigarettes and alcohol for some time. We constructed logit plots of all variables that could potentially be included as continuous variables in our models, and the logit plot for age was nonlinear, suggesting the variable should be categorized rather than included as a continuous variable. Race/ethnicity categories were non-Hispanic White, non-Hispanic African American, non-Hispanic other, and Hispanic. Education categories were high school only or college dropout, college student, and college graduate.

Data Analysis

We performed descriptive analyses of SHS exposure in each of the 4 locations (work, home, car, and bar) for each city, and we used multivariate logistic regression models to examine associations of age, gender, race/ethnicity, education, and smoking status with SHS exposure at each location. We also used multivariate logistic regression models to examine associations between demographic factors and belief that SHS is dangerous. To check for differential effects by location, we assessed 2-way interactions between location and each predictor among participants in all 3 cities in multivariate logistic regression models. We calculated both city-specific results and overall results from the pooled data for all sites.

We then examined associations of SHS exposure and belief that SHS is dangerous with smoking behavior. We used multivariate logistic regression models to assess the association between SHS exposure at the various sites and (1) susceptibility to smoking initiation among nonsmokers and (2) previous quit attempts among smokers, with control for demographics. To check for differential effects by location, we assessed 2-way interactions between location and each predictor (e.g., site of SHS exposure or belief that SHS is dangerous) among all current smokers in multivariate logistic regression models. The location interaction term was significant only for SHS exposure in a bar for susceptibility to smoking initiation and SHS exposure in cars for quit attempts; therefore, for all other sites of exposure and for SHS attitudes, we pooled the data from all locations in multivariate analyses. We performed analyses with SPSS version 20 (SPSS Inc, Chicago, IL).

RESULTS

We gathered data from 3819 young adults (Table 1). Generally, participants from the 3 sites were demographically similar, although Tulsa had more participants aged 18 to 20 years and more daily smokers. Oklahoma City had more female participants, and San Diego had more Hispanics (34%) and college graduates (37%).

Secondhand Smoke Exposure

Participants reported SHS exposure during the past week when indoors at work, at home, in a car, or at a bar (Figure 1, Table 1). More than 80% of respondents at each site reported any exposure to SHS over the past 7 days; the proportion was significantly lower in San Diego than in the 2 Oklahoma sites (odds ratio [OR] = 0.62; 95% confidence interval [CI] = 0.50, 0.77). More than 70% reported exposure at a bar. The lowest exposure rates were reported in indoor workplaces; these were also significantly lower in California than in Oklahoma (OR = 0.49; 95% CI = 0.37, 0.65).

We determined associations of SHS exposure in various locations and demographic factors with smoking status separately for each city, evaluated interaction terms by location for significance, and then pooled data from all 3 cities (Table 2). We found that lower educational level was associated with SHS exposure indoors at work, at home, and in a car; Hispanics were more likely to report SHS exposure indoors at work but less likely to report exposure in a car or at a bar; women were less likely to report work and home SHS exposure but more likely to report SHS exposure at a bar; and younger people were more likely to report SHS exposure at home and less likely to report exposure at a bar. We also observed a significant association between reporting SHS exposure at home and in a car and being a daily or nondaily smoker.

Belief that SHS exposure is dangerous was significantly associated with female gender (Table 3). Nondaily and daily smokers were significantly less likely than nonsmokers to endorse strong beliefs that SHS is dangerous.

Susceptibility to Smoking Initiation and Quit Attempts

In a nonsmoker subgroup analysis, 2-way interactions between location and SHS exposure were significant only for SHS exposure at a bar and were otherwise not significant, so we pooled data for all locations except bars. Among nonsmokers, we found an association between reporting any SHS exposure over the preceding 7 days and susceptibility to smoking initiation (OR = 1.37; 95% CI = 1.03, 1.81). Reporting SHS exposure in a car and susceptibility to smoking initiation were also associated (OR = 1.76; 95% CI = 1.39, 2.22). For bar SHS exposure, we analyzed the 3 study sites separately; in Tulsa, SHS exposure at a bar was negatively associated with susceptibility to smoking initiation (OR = 0.62; 95% CI = 0.40, 0.94). Odds for susceptibility to smoking initiation were significantly lower among nonsmokers who strongly believed that SHS exposure was harmful than among nonsmokers who lacked this belief (OR = 0.35; 95% CI = 0.28, 0.43).

In a smoker subgroup analysis, 2-way interactions between location and SHS exposure were significant only for SHS exposure in a car, so we pooled data for all other locations. We found no association between quit attempts and any SHS exposure over the past 7 days or between quit attempts and SHS exposure at a bar, at home, or indoors at work. For car SHS exposure, we analyzed the 3 study sites separately; in Oklahoma City, SHS exposure in a car was associated with having made an attempt to quit smoking (OR = 2.40; 95% CI 1.67, 3.44). Smokers who strongly believed that SHS exposure was harmful were significantly more likely than other smokers to have attempted to quit (OR = 1.28; 95% CI = 1.04, 1.58).

DISCUSSION

We found high rates of SHS exposure in both California and Oklahoma: California has had smoke-free policies for public places, indoor workplaces, restaurants, and bars since 1998; Oklahoma's legislation, which is newer, encompasses fewer locations, allows smoking in bars, and preempts localities from enacting stronger policies than the state policy. At all 3 study sites, the pattern of exposure to SHS was similar, with the least exposure indoors at work and the most at bars. This pattern is consistent with previous research showing that clean air laws implemented in public places do not result in increases in smoke exposure in private spaces.[37] Instead, public smoking bans may encourage voluntary policies in private locations, such as cars and homes.[37,38]

The lowest exposures in both California and Oklahoma were in indoor workplaces, for which both states have clean air policies, and implementation appears to be strong. More stringent implementation of smoke-free policies provides workers with greater protection from the harmful effects of SHS exposure,[39] and such policies have led to decreases in respiratory symptoms[40] and improved spirometry[7] in hospitality workers. However, at least 70% of participants in every city reported SHS exposure at a bar. The reason for continued exposure in California despite smoke-free bar legislation could be exemptions in the legislation, poor enforcement of the laws, or smoking that occurs just outside open doors or windows of bars (e.g., on patios). Previous research has shown less compliance with smoke-free legislation in bars than in other public places.[41] Exposure to SHS outside of bars has been linked to elevated tobacco exposure biomarkers and may still have negative health effects.[42] Bars are a significant source of SHS exposure for young adults, and similarly high exposure rates at bars and restaurants have been reported among college students.[43]

Participants with less education were more likely than more highly educated participants to report SHS exposure at an indoor workplace in both Oklahoma City and San Diego and exposure in a car in all cities. This is consistent with previous studies showing that less educated individuals are more likely to report having workplaces without smoke-free policies.[27,44,45] Nondaily and daily smokers were significantly more likely than nonsmokers to report SHS exposure both at home and in a car. This is consistent with previous studies showing that homes whose residents are all non-smokers have a higher prevalence of household smoking bans than those containing at least 1 smoker[28] and that nonsmokers are more[29] Initiatives to promote smoke-free homes and workplaces, in addition to decreasing SHS exposure in those areas, are believed to be important in promoting smokers' attempts to quit or to reduce tobacco consumption.[46,47] It is thus important to encourage clean indoor air policies in both public and private locations.

The belief that SHS exposure is harmful was strongly associated with less susceptibility to smoking initiation and with previous quit attempts. Education regarding the risks of SHS exposure may thus be useful both to prevent smoking and to encourage early cessation among young adults. Exposure to SHS in a car was associated with smoking susceptibility among nonsmokers, and exposure in a car has been shown to be associated with smoking initiation in adolescents,[25] suggesting that smoke-free cars may be a useful strategy to discourage smoking initiation in young people. However, SHS exposure was not consistently associated with quit attempts among smokers, suggesting that SHS exposure may be a more important factor in smoking initiation than in cessation in this population.

Limitations

We focused on reported SHS exposures in young adult bar patrons in only 2 states; therefore, the ability to generalize these results and apply them to other populations is unknown. Our time–location sampling methods, although useful in helping to access the

hard-to-reach young adult population, could not reach individuals who did not patronize bars. However, bars and clubs are an efficient way to reach young adults, including those not attending college, a population with higher risk that is less easily accessible than college students. Because our data relied on self-reports, we could not determine how the questions were being interpreted and whether reported SHS exposure referred to actual smoking in a particular location or smoking adjacent to that location. Further studies assessing SHS exposure at bars should address the location of SHS exposure—in particular, whether the exposure took place in an indoor or an outdoor space.

We assessed SHS exposure subjectively, with the participants stating whether they had been exposed at a particular location during the previous week. Pilot testing of a more detailed measure of frequency of exposure and number of hours exposed indicated that the measure was too difficult for participants to complete accurately in this setting. Future studies could validate self-reports with observations of smoke-free policy implementation and enforcement in all venues surveyed, tests of participants' cotinine levels, or measurements of air nicotine levels. Finally, our data were observational and cross-sectional; therefore, although associations could be observed, causality could not be determined.

Conclusions

Despite increased implementation of smoking restrictions in public places, the majority of young adults we surveyed reported SHS exposure outside the home. Enforcement of smoking bans appears to be variable: workplaces seem to have very good enforcement, and bars seem to have the least enforcement. Although participants in California reported less SHS exposure at bars than did Oklahoma participants, more than 70% of respondents were still exposed at bars. Better enforcement of clean air laws in bars and consideration of initiatives to decrease smoking just outside of bars (on the street or in patios), may decrease this exposure.[48] Smoke-free vehicle policies may also significantly decrease SHS exposure and may be particularly important in light of the high air nicotine levels noted in cars.[49] Some states, such as California, already have laws banning smoking in cars with children present, but these could be expanded to include protection of the adult population as well.

Clinicians seeing young adult patients should screen for and counsel against SHS exposure, reinforce education about the health hazards associated with SHS exposure, recommend adherence to clean indoor air policies, and promote voluntary measures, such as making cars and homes smoke free.[38] At the same time, smoke-free laws should be fully implemented to achieve their maximal effect, providing more widespread protection to the population. These are important steps in protecting the young adult population, many of whom still experience significant exposure, from the harmful health effects of SHS.

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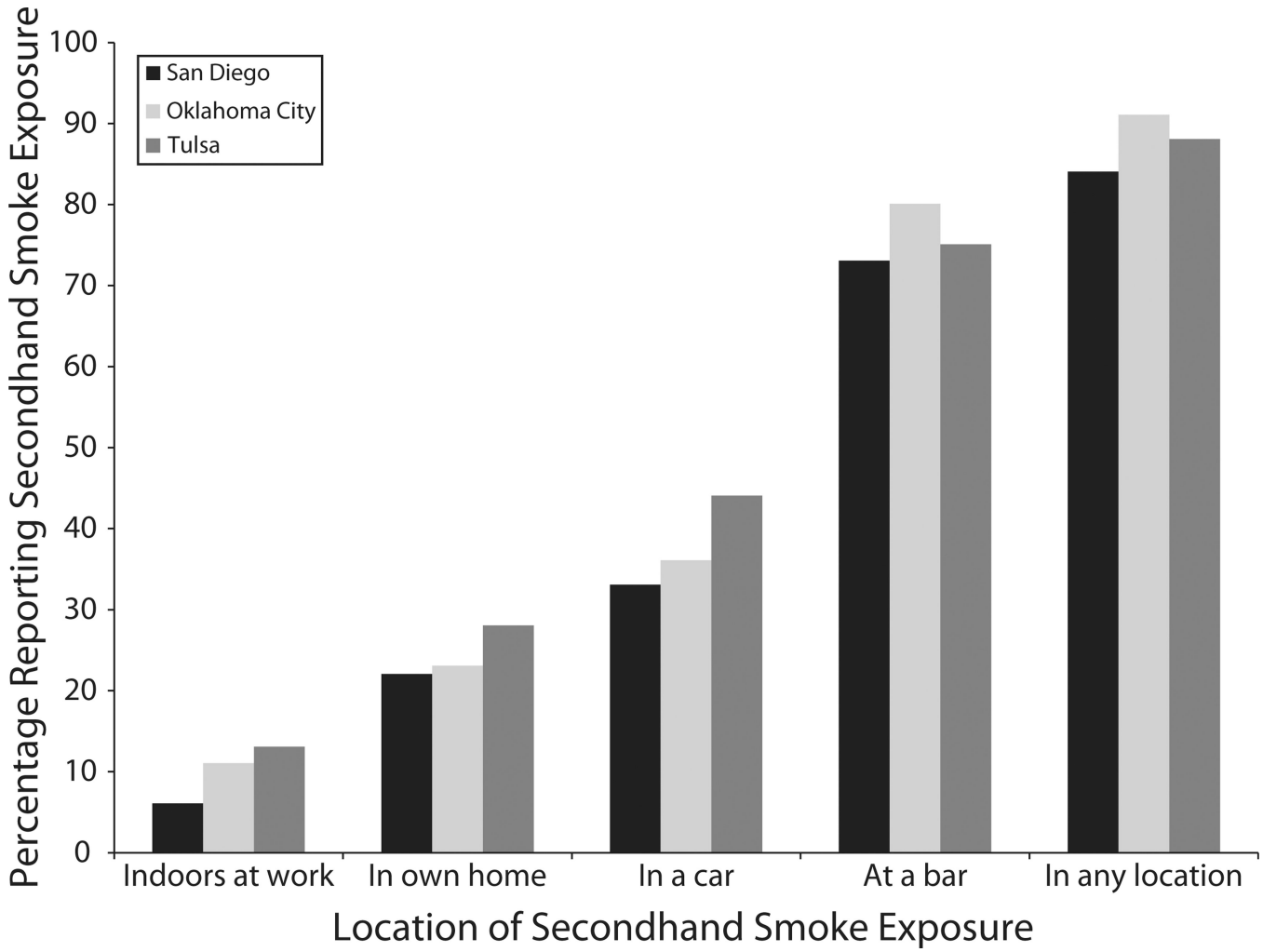

FIGURE 1.
Locations where young adult bar patrons reported secondhand smoke exposure in the past week: San Diego, CA, and Oklahoma City and Tulsa, OK, 2010–2011.

TABLE 1

Demographic Characteristics of Young Adult Bar Patrons in Study of Secondhand Smoke Exposure: San Diego, CA, and Oklahoma City and Tulsa, OK, 2010–2011

Variable	San Diego (n = 1305), No. (%)	Oklahoma City (n = 1264), No. (%)	Tulsa (n = 1250), No. (%)
Gender			
Men	676 (52)	538 (43)	658 (53)
Women	629 (48)	724 (57)	588 (47)
Age, y			
18–20	9 (< 1)	34 (3)	173 (14)
21–23	630 (48)	755 (60)	646 (52)
24–26	666 (51)	475 (37)	431 (34)
Race/ethnicity			
White	560 (43)	747 (59)	810 (65)
African American	44 (3)	161 (13)	109 (9)
Hispanic	442 (34)	181 (14)	106 (8)
Other	256 (20)	174 (14)	221 (18)
Smoking status			
Nonsmoker	671 (53)	673 (54)	506 (42)
Nondaily smoker	419 (33)	379 (31)	395 (33)
Daily smoker	184 (14)	188 (15)	308 (25)
Education			
High school only/college dropout	270 (21)	210 (17)	229 (18)
College student	551 (42)	827 (65)	774 (62)
College graduate	482 (37)	227 (18)	242 (19)
SHS exposure			
Indoors at work	83 (6)	135 (11)	163 (13)
At home	291 (22)	295 (23)	344 (28)
In a car	435 (33)	449 (36)	549 (44)
At a bar	956 (73)	1009 (80)	935 (75)
In any location	1094 (84)	1146 (91)	1096 (88)
Belief that SHS is harmful	484 (37)	542 (43)	410 (33)

Note. SHS = secondhand smoke.

TABLE 2

Multivariate Logistic Regressions Showing Associations Between Demographic Factors and Secondhand Smoke Exposure Among Young Adult Bar Patrons: San Diego, CA, and Oklahoma City and Tulsa, OK, 2010–2011

SHS Exposure	San Diego, No. or AOR (95% CI)	Oklahoma City, No. or AOR (95% CI)	Tulsa, No. or AOR (95% CI)	Interaction by Location *P*	Pooled Data for All Locations, No. or AOR (95% CI)
Indoors at work					
Total	1265	1235	1191		3691
Women	0.76 (0.47, 1.22)	0.67 (0.46, 0.98)	0.77 (0.54, 1.09)	.86	0.73 (0.58, 0.91)
Age, y				.92	
18–20	…[a]	0.83 (0.27, 2.56)	1.41 (0.86, 2.33)		1.29 (0.84, 1.98)
21–23	0.95 (0.59, 1.53)	0.74 (0.50, 1.09)	0.76 (0.52, 1.12)		0.79 (0.62, 1.003)
24–26 (Ref)	1.00	1.00	1.00		1.00
Race/ethnicity				.42	
African American	2.26 (0.81, 6.33)	0.79 (0.42, 1.48)	1.09 (0.56, 2.10)		1.02 (0.67, 1.54)
Hispanic	1.57 (0.93, 2.65)	1.21 (0.71, 2.07)	1.37 (0.76, 2.46)		1.38 (1.01, 1.87)
Other	0.85 (0.42, 1.73)	0.99 (0.58, 1.71)	1.28 (0.82, 1.99)		1.08 (0.79, 1.46)
White (Ref)	1.00	1.00	1.00		1.00
Education				.34	
High school only/college dropout	2.04 (1.14, 3.66)	2.77 (1.39, 5.53)	1.55 (0.86, 2.78)		1.99 (1.41, 2.82)
College student	0.80 (0.44, 1.46)	1.69 (0.90, 3.17)	1.24 (0.75, 2.07)		1.25 (0.91, 1.72)
College graduate (Ref)	1.00	1.00	1.00		1.00
Smoking status				.017	
Nondaily smoker	0.86 (0.51, 1.47)	1.11 (0.70, 1.76)	1.95 (1.26, 3.03)		1.30 (0.997, 1.70)
Daily smoker	1.35 (0.73, 2.53)	3.34 (2.12, 5.25)	3.08 (1.99, 4.79)		2.61 (1.53, 2.84)
Nonsmoker (Ref)	1.00	1.00	1.00		1.00
At home					
Total	1268	1237	1190		3695
Women	0.84 (0.64, 1.11)	0.72 (0.54, 0.96)	0.80 (0.61, 1.05)	.73	0.79 (0.67, 0.93)
Age, y				.51	
18–20	1.80 (0.42, 7.72)	1.10 (0.45, 2.71)	2.45 (1.60, 3.74)		2.01 (1.42, 2.83)
21–23	1.33 (0.997, 1.78)	1.23 (0.90, 1.66)	1.59 (1.17, 2.17)		1.36 (1.15, 1.62)
24–26 (Ref)	1.00	1.00	1.00		1.00

SHS Exposure	San Diego, No. or AOR (95% CI)	Oklahoma City, No. or AOR (95% CI)	Tulsa, No. or AOR (95% CI)	Interaction by Location *P*	Pooled Data for All Locations, No. or AOR (95% CI)
Race/ethnicity				.021	
African American	0.87 (0.38, 1.99)	0.93 (0.60, 1.46)	1.55 (0.96, 2.50)		1.10 (0.82, 1.49)
Hispanic	0.96 (0.69, 1.33)	1.23 (0.81, 1.86)	1.998 (1.27, 3.15)		1.18 (0.94, 1.46)
Other	1.27 (0.88, 1.83)	1.19 (0.80, 1.79)	0.89 (0.61, 1.28)		1.11 (0.89, 1.38)
White (Ref)	1.00	1.00	1.00		1.00
Education				.57	
High school only/college dropout	1.38 (0.95, 2.01)	1.76 (1.07, 2.89)	1.10 (0.70, 1.72)		1.36 (1.06, 1.74)
College student	0.96 (0.69, 1.35)	1.17 (0.77, 1.79)	0.92 (0.63, 1.34)		0.99 (0.80, 1.22)
College graduate (Ref)	1.00	1.00	1.00		1.00
Smoking status				.076	
Nondaily smoker	2.25 (1.64, 3.08)	1.79 (1.30, 2.48)	2.32 (1.67, 3.24)		2.11 (1.75, 2.53)
Daily smoker	4.97 (3.41, 7.25)	6.53 (4.51, 9.45)	4.39 (3.10, 6.20)		5.08 (4.13, 6.25)
Nonsmoker (Ref)	1.00	1.00	1.00		1.00
		In a car			
Total	1268	1237	1193		3698
Women	1.09 (0.85, 1.41)	1.02 (0.79, 1.33)	1.28 (0.995, 1.65)	.31	1.14 (0.98, 1.32)
Age, y				.006	
18–20	0.90 (0.21, 3.95)	1.31 (0.59, 2.87)	2.51 (1.67, 3.78)		2.05 (1.47, 2.86)
21–23	1.44 (1.11, 1.88)	0.81 (0.61, 1.06)	1.38 (1.04, 1.82)		1.18 (1.01, 1.38)
24–26 (Ref)	1.00	1.00	1.00		1.00
Race/ethnicity				.85	
African American	0.71 (0.34, 1.47)	0.97 (0.65, 1.44)	0.92 (0.58, 1.45)		0.89 (0.68, 1.18)
Hispanic	0.69 (0.51, 0.93)	0.90 (0.61, 1.31)	0.92 (0.58, 1.45)		0.79 (0.65, 0.97)
Other	1.03 (0.74, 1.44)	0.92 (0.63, 1.34)	0.86 (0.62, 1.20)		0.95 (0.78, 1.16)
White (Ref)	1.00	1.00	1.00		1.00
Education				.33	
High school only/college dropout	1.78 (1.25, 2.53)	2.41 (1.54, 3.79)	1.59 (1.05, 2.41)		1.88 (1.50, 2.37)
College student	1.53 (1.13, 2.07)	1.50 (1.03, 2.17)	1.37 (0.97, 1.92)		1.46 (1.20, 1.77)
College graduate (Ref)	1.00	1.00	1.00		1.00
Smoking status				.25	
Nondaily smoker	2.36 (1.79, 3.11)	2.28 (1.72, 3.02)	2.31 (1.73, 3.07)		2.31 (1.97, 2.72)

SHS Exposure	San Diego, No. or AOR (95% CI)	Oklahoma City, No. or AOR (95% CI)	Tulsa, No. or AOR (95% CI)	Interaction by Location *P*	Pooled Data for All Locations, No. or AOR (95% CI)
Daily smoker	6.39 (4.42, 9.22)	10.44 (7.06, 15.45)	7.17 (5.15, 9.986)		7.58 (6.17, 9.30)
Nonsmoker (Ref)	1.00	1.00	1.00		1.00
		At a bar			
Total	1267	1236	1193		3696
Women	1.32 (1.02, 1.72)	1.36 (1.02, 1.82)	1.25 (0.95, 1.65)	.95	1.32 (1.13, 1.54)
Age, y				.16	
18–20	0.65 (0.16, 2.66)	0.28 (0.13, 0.59)	0.54 (0.35, 0.81)		0.49 (0.35, 0.68)
21–23	1.21 (0.93, 1.59)	0.78 (0.57, 1.07)	1.18 (0.86, 1.60)		1.06 (0.90, 1.26)
24–26(Ref)	1.00	1.00	1.00		1.00
Race/ethnicity				.078	
African American	0.57 (0.30, 1.09)	0.89 (0.58, 1.37)	0.55 (0.35, 0.85)		0.68 (0.52, 0.90)
Hispanic	0.70 (0.52, 0.93)	0.72 (0.48, 1.08)	0.59 (0.37, 0.93)		0.68 (0.56, 0.84)
Other	1.6 (1.1, 2.4)	0.81 (0.53, 1.23)	1.08 (0.74, 1.58)		1.15 (0.92, 1.45)
White (Ref)	1.00	1.00	1.00		1.00
Education				.3	
High school only/college dropout	0.98 (0.68, 1.41)	0.94 (0.55, 1.61)	0.86 (0.55, 1.37)		0.95 (0.74, 1.22)
College student	0.88 (0.65, 1.20)	0.68 (0.45, 1.04)	0.89 (0.61, 1.29)		0.84 (0.68, 1.02)
College graduate (Ref)	1.00	1.00	1.00		1.00
Smoking status				.001	
Nondaily smoker	1.68 (1.25, 2.26)	0.83 (0.61, 1.14)	1.19 (0.87, 1.61)		1.20 (1.01, 1.43)
Daily smoker	1.35 (0.91, 1.995)	1.14 (0.74, 1.76)	2.28 (1.56, 3.34)		1.58 (1.25, 1.99)
Nonsmoker (Ref)	1.00	1.00	1.00		1.00

Note. AOR = adjusted odds ratio; CI = confidence interval; SHS = secondhand smoke.

[a]In some analyses, this category did not yield estimates owing to a small sample size.

TABLE 3

Multivariate Logistic Regressions Showing Associations Between Demographic Factors and Young Adult Bar Patrons' Belief That Secondhand Exposure Is Dangerous: San Diego, CA, and Oklahoma City and Tulsa, OK, 2010–2011

Variable	San Diego (n = 1265), AOR (95% CI)	Oklahoma City (n = 1235), AOR (95% CI)	Tulsa (n = 1188), AOR (95% CI)	Interaction by Location *P*	Pooled Data for All Locations (n = 3688), AOR (95% CI)
Women	2.10 (1.65, 2.68)	2.71 (2.12, 3.46)	1.96 (1.52, 2.52)	.15	2.22 (1.92, 2.55)
Age, y				.35	
18–20	1.22 (0.32, 4.67)	0.88 (0.42, 1.84)	0.72 (0.48, 1.08)		0.78 (0.56, 1.09)
21–23	0.64 (0.50, 0.83)	0.89 (0.69, 1.15)	0.77 (0.59, 1.02)		0.77 (0.66, 0.89)
24–26 (Ref)	1.00	1.00	1.00		1.00
Race/ethnicity				.31	
African American	1.36 (0.70, 2.65)	1.37 (0.95, 1.96)	0.76 (0.48, 1.21)		1.14 (0.88, 1.47)
Hispanic	1.32 (0.99, 1.75)	1.01 (0.71, 1.43)	1.02 (0.65, 1.62)		1.12 (0.92, 1.36)
Other	1.46 (1.06, 2.02)	1.45 (1.02, 2.06)	0.99 (0.71, 1.38)		1.28 (1.05, 1.54)
White (Ref)	1.00	1.00	1.00		1.00
Education				.32	
High school only/college dropout	0.81 (0.57, 1.15)	0.59 (0.39, 0.89)	1.20 (0.79, 1.82)		0.83 (0.66, 1.03)
College student	0.89 (0.67, 1.19)	0.83 (0.60, 1.15)	1.30 (0.93, 1.82)		0.98 (0.82, 1.17)
College graduate (Ref)	1.00	1.00	1.00		1.00
Smoking status				.08	
Nondaily smoker	0.47 (0.36, 0.61)	0.48 (0.37, 0.64)	0.47 (0.35, 0.63)		0.48 (0.41, 0.56)
Daily smoker	0.36 (0.24, 0.53)	0.74 (0.52, 1.05)	0.39 (0.28, 0.54)		0.48 (0.39, 0.58)
Nonsmoker (Ref)	1.00	1.00	1.00		1.00

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