Risk factors associated with smoking behaviour in recreational venues: findings from the International Tobacco Control (ITC) China Survey

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ABSTRACT

Objective: To explore the determinants of smoking behaviour in recreational venues and to provide scientific bases for establishing smoke-free measures applying to these locations.

Methods: The International Tobacco Control (ITC) China Survey—a face-to-face cross-sectional survey of representative adult smokers from six cities (Shenyang, Beijing, Shanghai, Guangzhou, Changsha and Yinchuan) was conducted between April and August 2006. A total of 4815 smokers were selected using multistage sampling methods, and final analyses were conducted on 2875 smokers who reported patronising recreational venues at least once in the last six months. Multivariate logistic regression models were used to identify factors influencing the smoking behaviour within recreational settings.

Outcome measure: Whether a smoker reported smoking in recreational venues during the last 6 months.

Results: 84% of subjects reported smoking in recreational venues. 32.0% of patrons reported partial or complete bans on smoking in these locations. The following factors were significant predicators of smoking in recreational venues: absence of bans on smoking, support for non-bans, being aged 18–24 years, positive smoking-related attitudes, low number of health effects reported and not living in Beijing.

Conclusions: The findings point to the importance of informing Chinese smokers about the active smoking and passive smoking harmfulness in both building support for smoke-free laws and in reducing smokers' desire to smoke within recreational venues. They also point to the importance of good enforcement of smoke-free laws when implemented. Such strategies could also serve to de-normalise smoking in China, a key strategy for reducing smoking in general.

Developing countries (with low and middle incomes) are facing a rapidly growing epidemic of tobacco use; rates in these regions began increasing in the early 1970s, and currently, 82% of the world's 1.1 billion smokers are in developing countries, with over 50% in Asia alone.[1–3] One such country, the world's largest producer, consumer and victim of tobacco, is China.[4] Currently, China is home to 350 million smokers (30% of the world's smokers) and loses approximately one million people per year directly or indirectly because of tobacco-related deaths.[5–7] If the smoking situation cannot be controlled effectively, it is estimated that about two million smoking-related deaths will occur among Chinese men by the year 2025,[8] and 200 million children currently living in China will become smokers, 50 million of whom will die from smoking-attributable diseases.[9] According to the Report on Tobacco Control in China for 2007, 540 million non-smokers are suffering from secondhand smoke, including 180 million children aged below 15.[10]

Recreational venues (for example, restaurants, coffee shops and karaoke lounges) that allow smoking expose people to contexts in which smoking may be viewed as the norm. This may encourage their progression to more regular smoking.[11] [12] Further, the tobacco industry is actively promoting tobacco in recreational settings which may contribute to smoking uptake and relapse back to smoking for those trying to quit.[13–15] Recreational venues tend to be frequented by the trend-setters in society: the elite, in China. If smoking goes on in these recreational venues, then people get the idea that smoking is acceptable and that smoking in these public places is just the way things are. Thus, smoke-free laws in recreational settings would be a powerful way to "de-normalise" smoking in China.

China's high prevalence of smoking and tremendous burden from tobacco-induced diseases make tobacco prevention an essential health priority.[6] [16] However, China currently has no smoke-free law at the national level, let alone one aimed at the population within recreational venues, which are all common venues for smoking and passive smoking exposure. Most current prevention programmes are based on the social influence approach, which targets the proximal psychosocial variables believed to promote individuals to smoke.[17–19] Although such programmes are somewhat effective, the smoking-related risk factors utilised are based mainly on Western studies.[20] [21] Whether these factors have the same influence on Chinese smoking behaviour, especially in recreational venues, has not been identified to date. An examination of the behaviour, beliefs and characteristics of smokers who frequently patronise recreational venues may help in designing an appropriate and effective smoking prevention programme applying to these venues.

To bridge this data gap, the present study focused on smoking among adults within recreational settings. To the best of our knowledge, this is the first reported study to identify potential risk factors for smoking behaviour within recreational settings in China. In this study, we attempted to provide information on the determinants of smoking behaviour in recreational venues, and to develop a practical and effective

smoking intervention strategy for recreational venues by examining the behaviour, beliefs and opinions of smokers who patronised these venues.

METHODS
This section provides an outline of the methods used in the ITC China Survey. A more detailed description can be found in the paper by Wu *et al*.[22]

Sampling design
This study was the baseline survey for the International Tobacco Control (ITC) China Survey, a cohort survey of adult smokers and non-smokers, designed to evaluate tobacco control policies. Survey waves are being conducted every year over a five-year period.

The ITC China Survey used a stratified multistage cluster sampling design in which six cities were first selected based on geographical representations and levels of economic development. These six cities were Shenyang, Beijing, Shanghai, Guangzhou, Changsha and Yinchuan. Within each city, 10 street districts (Jie Dao) were randomly selected, with probability of selection proportional to the population size of the Jie Dao. Within each of these Jie Dao, two residential blocks (Ju Wei Hui) were selected, again with probability of selection proportional to the population size of the Ju Wei Hui, from which a city-identified list of family households was used to sample 300 dwelling units (households) from every Ju Wei Hui using a simple random sampling method without replacement. Information on age, gender and smoking status for all adults living in these 300 households was collected. The enumerated 300 households were then randomly ordered, and individuals 18 years or older who had smoked at least 100 cigarettes in their lifetime were then approached following the randomised order until 40 adult smokers were surveyed. To increase the sample size for women smokers, one male smoker and one female smoker from every selected household were surveyed whenever possible. The next birthday method[23] was used to select a respondent in households with more than one eligible male smoker.

Procedure
Once an individual was identified and agreed to participate, a face-to-face interview was scheduled. All interviews for adult smokers, lasting an average of 31 minutes, were conducted by trained research interviewers who administered a standardised questionnaire, including all the core items of the ITC policy surveys across the many countries (eight other countries at the time of the creation of the ITC China Survey) and some China-specific measures. The same interview protocol was used across every city to ensure identical interview and data collection procedures. The present analysis is limited to respondents from Wave 1, conducted between April and August 2006.

Measures
Demographic variables
Information regarding present residential city, age, gender, ethnicity, education (no education or elementary school = "low"; junior high school or high school/technical high school = "medium"; college, university or higher = "high"), marital status, and per month household income (HH income) (where: <1000 yuan (1 yuan = £0.09; €0.1) = "low"; 1000–2999 yuan = "medium"; ≥3000 yuan = "high"; don't know = "DK") was obtained through self-report. For daily smokers,

we directly asked on average, how many cigarettes, including factory made and "hand-rolled" cigarettes, they smoke per day. Weekly smokers were asked for the average cigarettes they smoked per week.

Reported smoking in entertainment venues
Smokers were asked a series of questions on whether they had gone to each of several entertainment venues in the past 6 months, and for each venue, whether they had smoked. The entertainment venues were restaurants, coffee shops and karaoke lounges.

Knowledge of health effects
Knowledge of the harmful effects of smoking was assessed by asking the respondents if they believed that cigarette smoking can cause coronary heart disease (CHD), stroke, impotence, premature ageing, emphysema, stained teeth in smokers, lung cancer in smokers, lung cancer in non-smokers and addiction to tobacco.

Extent of smoking restrictions
Reported smoking restrictions for the recreational venues were assessed by asking: "Which of the following best describes the rules about smoking in indoor entertainment places such as restaurants, coffee shops, and karaoke lounges that you go most often?" Response options include: (1) smoking is not allowed in any indoor areas; (2) smoking is allowed only in some indoor areas; and (3) no rules or restrictions.

Support for smoking restrictions
Support for smoking restrictions for these venues were established by asking: "For the restaurants or bars venues, please tell me if you think smoking should be allowed in all indoor areas, some indoor areas, not allowed indoors at all or DK (don't know)?"

Influence of surrounding friends/acquaintances
Friends/acquaintances smoking behaviour's influence was identified by asking: "Of the five closest friends or acquaintances that you spend time with on a regular basis, how many of them are smokers?" Responses were rated on a six-point scale (0 = none, 1 = one, 2 = two, 3 = three, 4 = four and 5 = five).

Attitude and belief factors
Smoking is a very common social practice in China and non-smoking is not yet adopted as a social norm. The beliefs of smoking among smokers may influence their openness to smoking within recreational settings. These effects were measured with three statements. The first statement was "You enjoy smoking too much to give it up.", with a five-point scale from strongly disagree to strongly agree. In analysis, these who chose "strongly disagree" or "disagree" are identified as "disagree", on the contrary those who chose "strongly agree" or "agree" are identified as "agree". Then, all were asked "What do you think about the smoking behaviour?" The possible answers are very good, good, neither good nor bad, bad and very bad. Those respondents who chose "good" or "very good" are identified as having positive beliefs for smoking. The last statement was "What do you think about the attitude of Chinese society to smoking?", with a five-point scale: "support", "disapprove", "neither supports nor disapproves" or "DK, cannot say".

Table 1 Demographic characteristics of those smoking in recreational venues vs those not smoking in those venues

Variables	Smoking No (%)	Not smoking No (%)	Test of significance
Total	2403 (83.6)	472 (16.4)	
Region			
Beijing	294 (75.4)	96 (24.6)	
Shenyang	385 (87.7)	54 (12.3)	
Shanghai	460 (87.1)	68 (12.9)	
Changsha	387 (83.4)	77 (16.6)	
Guangzhou	484 (84.3)	90 (15.7)	
Yinchuan	393 (81.9)	87 (18.1)	$\chi^2(5) = 30.60$, p<0.001
Gender			
Male	2342 (84.0)	446 (16.0)	
Female	61 (70.1)	26 (29.9)	$\chi^2(1) = 11.86$, p = 0.001
Age			
18–24	49 (87.5)	7 (12.5)	
25–39	515 (83.5)	102 (16.5)	
40–54	1290 (87.3)	187 (12.7)	
55+	549 (75.7)	176 (24.3)	$\chi^2(3) = 48.45$, p<0.001
Ethnicity			
Han nationality	2289 (83.5)	452 (16.5)	
Others	114 (85.1)	20 (14.9)	$\chi^2(1) = 0.23$, p = 0.633
Marital status			
Single	122 (80.8)	29 (19.2)	
Married	2166 (84.1)	411 (15.9)	
Others	115 (78.2)	32 (21.8)	$\chi^2(2) = 4.34$, p = 0.114
Education			
Low	196 (80.7)	47 (19.3)	
Medium	1593 (84.2)	300 (15.8)	
High	614 (83.1)	125 (16.9)	$\chi^2(2) = 2.10$, p = 0.351
Household income per month			
Low	333 (83.5)	66 (16.5)	
Medium	1566 (83.7)	306 (16.3)	
High	326 (83.8)	63 (16.2)	
DK (don't know)	178 (75.7)	57 (24.3)	$\chi^2(3) = 0.12$, p = 0.989
Continuous variable			
Age (years)			
Mean (SD)	47.36 (8.53)	50.41 (11.86)	t (2873) = 4.56, p<0.001

Data analysis

The data were analysed using SPSS for Windows, version 13.0. Pearson's χ^2 tests for categorical variables and t tests for continuous variables were employed to examine differences between those smoking in recreational venues and those not. For further analyses of the association between selected factors and smoking behaviour in recreational venues, we conducted both bivariate and multiple logistic regression analyses. In the adjusted analyses, we added demographic variables along with the predictor variables to obtain adjusted odds ratios for each of the predictor variables and their corresponding 95% confidence intervals (AOR, 95% CI). All analyses were conducted with weighted data using the "Complex samples" feature in SPSS to take the complex sampling design into account.

RESULTS

Demographic characteristics of the sample

The Wave 1 cooperation rates range approximately from 80.0% in Beijing and Guangzhou to 95.0% in Changsha. The response rates range from 39.4% in Yinchuan to 66.0% in Guangzhou. Data used in this study come from the 2875 smokers who completed the baseline survey and who reported visiting recreational venues during the last 6 months. The age of these respondents ranged between 18 and 82 years, with an average age of 47.9 (7.9) years.

Table 1 summarises the demographic characteristics of the subjects stratified by smoking status. A large majority (83.6%) of the patrons reported ever smoking in these venues, with 84.0% for males and 70.1% for females, respectively. The majority of patrons were males (97.0%), married (89.6%) and of Han ethnicity (95.3%). About 65.8% had completed high school education, and more than 86% reported per month household income greater than 1000 yuan. This is a high level of income relative to the average household income in China, which would be expected because the current sample was drawn from six major metropolitan cities in China, and because we restricted our analysis to those who went to recreational venues this population tends to have higher income.

Bivariate results

Comparisons of demographic characteristics between two groups are shown in table 1. Overall, both the educational attainment distribution and the marital status were almost equivalent across the two groups, and there were also no major differences regarding average monthly HH income (p values not significant at the α level of 0.05). However, compared with

Figure 1 Smoking behaviour within recreational settings among smokers who had been to these venues in the last six months across six urban cities of China.
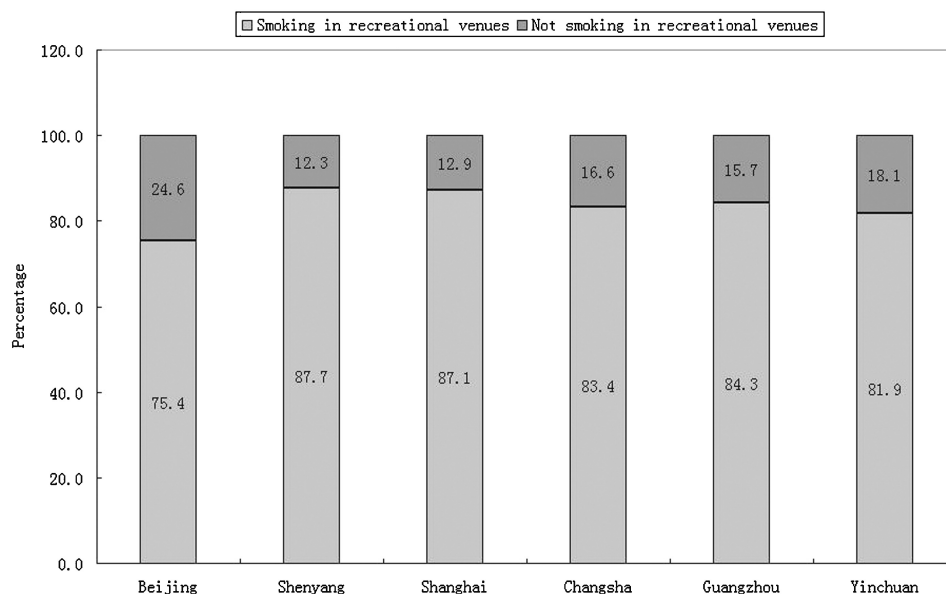
those not smoking in recreational venues, those smoking in recreational venues were more than three years younger (50.4 versus 47.4). Figure 1 presents the percentage of these smoking in recreational venues among all smokers reporting patronising recreational venues across six cities. A larger proportion of Shanghai and Shenyang respondents reported smoking in these venues compared to their counterparts in Changsha, Guangzhou and Yinchuan, with Beijing having the lowest percentage.

Associations between variables of interest and smoking behaviour within recreational venues are presented in table 2. There was considerable variation ($\chi^2 = 386.1$, p<0.001) in the reported extent of smoking restrictions. Only 32.0% of the patrons reported partial or complete bans on smoking in recreational venues of China, far fewer than that of bars in the United Kingdom, Canada, United States and Australia, which are considered to have the lowest levels of restrictions (fig 2).[24–26] Those not smoking (55.5%) in recreational venues were likely to express greater approval of bans on smoking, compared to those smoking (33.7%). Great variation was also observed for all individual smoking-related health effects, with the exception of stroke ($\chi^2 = 3.55$; p = 0.06). Patrons were most likely to agree that smoking causes stained teeth (87.7%) and lung cancer (72.9%). However, less than half (49.0%) agreed that smoking causes premature ageing. Only 36.2% and 18.1% agreed that smoking causes heart disease and impotence, respectively, and stroke was recognised by the lowest percentage of respondents as being caused by smoking (16.3%) (fig 3). There was also a significant difference between groups in the total number of diseases endorsed by respondents ($\chi^2 = 27.6$; p<0.001), with those smoking in recreational venues endorsing fewer diseases than those who did not smoke in recreational venues. Having a positive attitude towards smoking was more prevalent among those smoking in recreational venues. Those who perceived smoking as a good behaviour and that smoking is supported by Chinese society were more likely to smoke in recreational venues. "Enjoying smoking too much to give it up" was the most frequently cited reason for tobacco use within recreational settings. Those smoking in recreational venues were also far more likely to report having a greater number of their five closest friends who were also smokers.

Multivariate results

We next performed a complex sample multivariate logistic regression to assess the smoking risk factors within recreational settings. Table 3 displays the results of the logistic regression analyses, where the dependent variable was smoking vs not smoking in recreational settings. An overall opinion toward smoking of "very good" (AOR 30.64, 95% CI 3.94 to 238.25) and reported no bans or restrictions on smoking (AOR 14.36, 95% CI 9.41 to 21.91) were most strongly associated with smoking behaviour in recreational venues. Support for non-bans was also significantly related to this behaviour (OR 2.84, 95% CI 2.09 to 3.86). The strength of this association was increased after adjustment for demographic characteristics (AOR 2.87, 95% CI 2.12 to 3.89). Health knowledge of whether smoking causes lung cancer in smokers was associated with smoking behaviour within recreational settings (OR 0.63, 95% CI 0.47 to 0.84), and this protective association was reduced (AOR 0.62, 95% CI 0.45 to 0.84) after adjusting the demographic characteristics including marital status, education attainment, ethnicity, and average monthly HH income, but remained significant. For all other smoking-related diseases mentioned, with the exception of stroke and stained teeth, similar findings emerged. Most notably, the odds of not smoking in recreational settings were greater among patrons who endorsed all the eight diseases, and increased in a linear fashion with the total number of health effects reported ($\chi^2_{trend} = 28.4$; p<0.001). Those smokers living in Shenyang, Shanghai, Guangzhou, Changsha and Yinchuan were also more likely than those living in Beijing to smoke in recreational venues.

DISCUSSION

Bans on smoking in public spaces are becoming increasingly common in many countries.[27–31] There are variations between countries where smoking is prohibited and in the strategies used to achieve these bans. In China, governments have imposed some smoke-free laws in public places, but many areas, especially recreational venues, such as restaurants and bars, have been exempted (fig 2). As a result, smokers within these settings have been able to smoke anywhere, at any time, and with little awareness of the dangers of smoking to themselves

Table 2 Characteristics associated with whether smoking respondents reported smoking in recreational settings

Variables	Smoking No (%)	Not smoking No (%)	Test of significance
Reported level of bans			
Total indoor area	124 (5.2)	131 (27.8)	
Some indoor area	463 (19.3)	179 (37.9)	
No restrictions	1816 (75.6)	162 (34.3)	$\chi^2(2) = 386.1$, p<0.001
Support for indoor restrictions			
Total indoor area	351 (14.6)	143 (30.3)	
Some indoor area	459 (19.1)	119 (25.2)	
DK (don't know)	113 (4.7)	33 (7.0)	
No restrictions	1480 (61.6)	177 (37.5)	$\chi^2(3) = 107.6$, p<0.001
Smoking causes lung cancer in smokers			
Yes	1724 (71.7)	373 (79.0)	
No/DK	679 (28.3)	99 (21.0)	$\chi^2(1) = 10.60$, p = 0.001
Smoking causes CHD			
Yes	842 (35.0)	199 (42.2)	
No/DK	1561 (65.0)	273 (57.8)	$\chi^2(1) = 8.66$, p = 0.003
Smoking causes stroke			
Yes	379 (15.8)	91 (19.3)	
No/DK	2024 (84.2)	381 (80.7)	$\chi^2(1) = 3.55$, p = 0.060
Smoking causes impotence			
Yes	411 (17.1)	110 (23.3)	
No/DK	1992 (82.9)	362 (76.7)	$\chi^2(1) = 10.23$, p = 0.001
Smoking causes emphysema			
Yes	1470 (61.2)	317 (67.2)	
No/DK	933 (38.8)	155 (32.8)	$\chi^2(1) = 6.01$, p = 0.014
Smoking causes stained teeth			
Yes	2102 (87.5)	420 (89.0)	
No/DK	301 (12.5)	52 (11.0)	$\chi^2(1) = 0.83$, p = 0.361
Smoking causes premature ageing			
Yes	1141 (47.5)	267 (56.6)	
No/DK	1262 (52.5)	205 (43.4)	$\chi^2(1) = 13.03$, p<0.001
Smoking causes lung cancer in non-smokers			
Yes	1312 (54.6)	300 (63.6)	
No/DK	1091 (45.4)	172 (36.4)	$\chi^2(1) = 12.86$, p<0.001
Total number of health effects reported			
⩽1	411 (17.1)	64 (13.6)	
2	272 (11.3)	32 (6.8)	
3	348 (14.5)	49 (10.4)	
4	366 (15.2)	81 (17.2)	
5	404 (16.8)	90 (19.1)	
6	301 (12.5)	76 (16.1)	
7	183 (7.6)	46 (9.7)	
8	118 (4.9)	34 (7.2)	$\chi^2(7) = 27.6$, p<0.001
Tobacco is addictive			
Disagree	199 (8.3)	41 (8.7)	
Neither disagree nor agree	133 (5.5)	37 (7.8)	
Agree	2071 (86.2)	394 (83.5)	$\chi^2(2) = 3.95$, p = 0.139
Enjoying smoking too much to give it up			
Disagree	823 (34.2)	193 (40.9)	
Neither disagree nor agree	273 (11.4)	50 (10.6)	
Agree	1307 (54.4)	229 (48.5)	$\chi^2(2) = 7.68$, p = 0.022
Overall opinion of smoking behaviour			
Very good	42 (1.7)	1 (0.2)	
Good	121 (5.0)	19 (4.0)	
Neither good nor bad	1047 (43.6)	153 (32.4)	
Bad	870 (36.2)	203 (43.0)	
Very bad	322 (13.4)	96 (20.3)	$\chi^2(4) = 36.76$, p<0.001

Table 2 Continued

Variables	Smoking No (%)	Not smoking No (%)	Test of significance
Attitude of Chinese society to smoking			
Disapprove/neither/DK	1303 (54.2)	296 (62.7)	
Support	1100 (45.8)	176 (37.3)	$\chi^2(1) = 11.51$, p = 0.001
Cigarettes per day			
0–10	720 (30.0)	251 (53.2)	
11–20	1267 (52.7)	165 (35.0)	
21–30	212 (8.8)	29 (6.1)	
31+	204 (8.5)	27 (5.7)	$\chi^2(3) = 95.1$, p<0.001
Smokers of five closest friends			
None	37 (1.5)	15 (3.2)	
One	66 (2.7)	25 (5.3)	
Two	157 (6.5)	67 (14.2)	
Three	402 (16.7)	91 (19.3)	
Four	462 (19.2)	93 (19.7)	
All	1278 (53.2)	181 (38.3)	$\chi^2(5) = 62.32$, p<0.001

and others. The continuing problem of smoking in recreational venues has resulted in pressure on governments to ban smoking in these locations where it is still allowed. But the efficacious design of smoking control strategies for these venues is hampered by the relative absence of information, because few studies have focused specifically on this population. This study, to our knowledge, is the first publicly to explore the determinants of indoor smoking within recreational settings in China.

Tobacco consumers' beliefs about the harmfulness of second-hand smoke and their support for smoke-free laws are an important determinant of their smoking behaviour. For comparable respondents who supported no restrictions or bans in some indoor areas, the odds of smoking increased by 187% and 34%, respectively (table 3). It has been well documented that an individual's own smoking behaviour influences their attitudes to tobacco control policies.[32] [33] However, these attitudes, in turn, may vary according to the enforcement status of restrictions.[34] It could be argued that patrons in recreational venues without any smoking restrictions would be more susceptible to smoking. As shown in table 3, the odds of those who are exposed to limited bans or no bans at all to take up smoking more were 3.1 and 14.4 times higher than those exposed to total bans on smoking in recreational venues. Similar to previously published results, smokers were less likely to support smoke-free laws than non-smokers,[35] with only 37.3% respondents showing support for such laws, a considerably lower rate than found in the ITC Four Country Survey.[36] Additionally, our respondents who were in favour of smoking bans, more often advocated technical solutions (such as ventilation and smoking rooms) with support rates as high as 54%; however, these concepts are often rejected by public health advocates.

The extent to which smokers understand the magnitude of these health risks has a strong influence on their smoking behaviour. Consistent with previous studies,[37–39] both table 2 and table 3 indicated that smokers who haven't perceived greater health risk from smoking are more likely to smoke within recreational settings. Although there was a poor level of knowledge both in those smoking in recreational venues and those not (fig 3) in this study, the association increased after adjusting the demographic characteristics including marital status, education attainment, ethnicity and average monthly HH income (table 3). Different findings were noted by Smith[40]

and Rosliza,[41] but Oncken[42] and the present study showed evidence to support that the intention to give up smoking in public places is more prevalent among smokers with a good knowledge of the effects of smoking compared with smokers with poor knowledge. Figure 3 showed that only 18.1% believed it could lead to impotence and only 17% acknowledged a potential relation between smoking and stroke risk. This illustrates the significant gaps in smokers' understanding of the risks of smoking. To bridge these gaps, antismoking education campaigns are needed in China.

The higher support rates in the US, Canada, UK and Australia are in large measure due to the dissemination of the strong evidence from many studies about the harmfulness of second-hand smoke. In these four countries, as in many other Western countries, knowledge about the harmfulness of secondhand smoke is considerably higher than in China. It thus would seem to follow that efforts to inform the Chinese public of the same studies about the harmfulness of secondhand smoke would help build the foundation for stronger support for smoke-free laws, and also for lowered prevalence of smoking in recreational venues and in other places where secondhand smoke would be particularly important to decrease or eliminate, such as in one's home and in cars, particularly in the presence of children.

The most important determinant of behaviour is behavioural intention, which, in turn, is influenced by one's overall evaluation of the behaviour (attitude).[43] A positive attitude towards smoking was more prevalent among those recreational venues smokers, as shown in table 2. The percentage of those smoking within recreational settings and those not, who enjoyed smoking too much to give it up, and who believed that Chinese society supported smoking, was 54.4% versus 48.5%, and 45.8% versus 37.3%, respectively. Parallel to the findings of previous research,[44–46] positive beliefs about smoking were also found to be related to the smoking behaviour in public places. A smoker who responded with an attitude towards smoking of "very good" will be about 31 times more likely to smoke in public compared to a smoker who perceives it as "very bad".

Offering cigarettes to one another has become a means of social interaction and a friendly gesture, especially in entertainment spaces. Meanwhile, the need to gain social acceptance from peers exerting tacit pressure and influence also promotes smoking. To this end, smoking is used as a symbol of personality and independence. Therefore, it is no surprise to find that having "closest" smoking friends increased the odds of

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Figure 2 Reported prevalence of bans on smoking in recreational venues of China and bars of the UK, US, Canada and Australia, among smokers who had been to these venues in last six months.
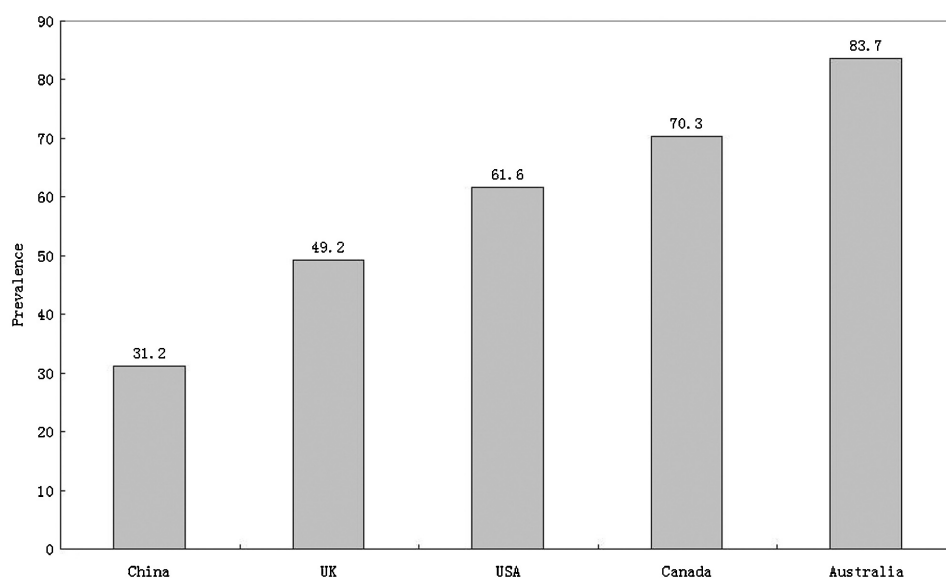
smoking more by 3.81 times, increasing in a linear fashion with the number of "closest" smoking peers reported (table 3). This was consistent with previously published reports.[46–48] Of course, this phenomenon is possibly due to overstating the influence of peers, with selection and projection increasing the relation between peers' and smokers' behaviour. It could be argued that those who already smoke are more likely to seek out and spend time with other smokers, and those who smoke tend to overestimate the smoking prevalence of their friends.

As shown in table 3, compared to smokers in Beijing, smokers in Yinchuan, Changsha, Guangzhou, Shanghai and Shenyang are more likely to smoke in recreational venues, with the odds ratios ranging from 1.77 to 2.74. This phenomenon may be partly due to the variations between districts where smoking is prohibited and in the strategies used to achieve these bans.

Limitations

Our results need to be considered in light of the following limitations. First, these results are based on the baseline data from the ITC China survey. The cross-sectional nature of these data cannot address the causality of the associations between variables. The second limitation of this study is the lack of information on the absent smokers. It is possible that absentees had a higher smoking possibility within recreational settings and a lower level of health effects than those surveyed. This may have caused underestimation of the smoking prevalence and the influence of the health effects. Third, cigarette smoking among women was traditionally unacceptable in Chinese culture. For a long time, this had served as a protective factor against smoking among women; so the sample and results of the present study are almost exclusively male. Thus, the suggested interventions based on the current study should be targeted more towards men. Finally, it is important to note that these results derive from smokers in the most affluent and most highly educated cities, with the most comprehensive tobacco control policies, in China. As such, the findings may not be generalised to the rest of the people living in rural areas. Similarly, we should expect health knowledge to be substantially lower among the majority of Chinese smokers,

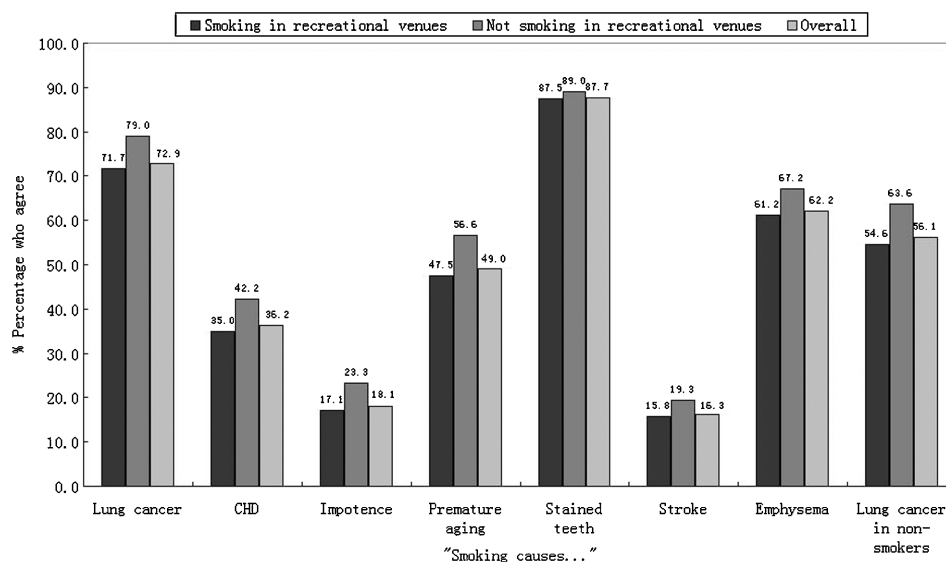**Figure 3** "Proportion who agree that smoking can cause…" by smoking-related diseases.

Table 3 Crude and adjusted odds ratio of recreational venues smoking risk factors and its 95% confidence interval

Variables	Crude OR (95% CI)	AOR (95% CI)*
Reported level of bans		
Total indoor area	Reference	Reference
Some indoor area	3.12 (2.21 to 4.39)	3.14 (2.18 to 4.53)
No restrictions	14.05 (9.28 to 21.28)	14.36 (9.41 to 21.91)
Support for indoor restrictions		
Total indoor area	Reference	Reference
Some indoor area	1.31 (1.00 to 1.73)	1.34 (1.01 to 1.77)
DK	1.61 (0.92 to 2.83)	1.62 (0.93 to 2.81)
No restrictions	2.84 (2.09 to 3.86)	2.87 (2.12 to 3.89)
Believe smoking causes lung cancer in smokers	0.63 (0.47 to 0.84)	0.62 (0.45 to 0.84)
Believe smoking causes CHD	0.75 (0.58 to 0.95)	0.74 (0.58 to 0.96)
Believe smoking causes stroke	0.86 (0.63 to 1.16)	0.86 (0.63 to 1.19)
Believe smoking causes impotence	0.66 (0.48 to 0.91)	0.66 (0.48 to 0.91)
Believe smoking causes premature ageing	0.69 (0.54 to 0.88)	0.68 (0.53 to 0.88)
Believe smoking causes stained teeth	0.85 (0.60 to 1.22)	0.85 (0.59 to 1.21)
Believe smoking causes emphysema	0.73 (0.58 to 0.92)	0.72 (0.58 to 0.90)
Believe smoking causes lung cancer in non-smokers	0.68 (0.51 to 0.90)	0.68 (0.51 to 0.91)
Total number of health effects reported		
$\leqslant 1$	Reference	Reference
2	0.97 (0.56 to 1.67)	0.96 (0.56 to 1.66)
3	0.86 (0.55 to 1.34)	0.84 (0.55 to 1.29)
4	0.60 (0.36 to 0.10)	0.58 (0.36 to 0.95)
5	0.61 (0.43 to 0.86)	0.60 (0.41 to 0.86)
6	0.51 (0.32 to 0.81)	0.50 (0.31 to 0.79)
7	0.57 (0.36 to 0.91)	0.56 (0.34 to 0.91)
8	0.47 (0.27 to 0.82)	0.45 (0.25 to 0.81)
Trend test	$\chi^2_{trend} = 28.4,$	$p_{trend} < 0.001$
Tobacco is addictive		
Agree	Reference	Reference
Neither disagree nor agree	0.84 (0.53 to 1.35)	0.82 (0.51 to 1.30)
Disagree	0.98 (0.64 to 1.48)	0.99 (0.65 to 1.51)
Enjoying smoking too much to give it up		
Disagree	Reference	Reference
Neither disagree nor agree	1.01 (0.61 to 1.66)	1.13 (0.74 to 1.74)
Agree	0.89 (0.63 to 1.25)	1.10 (0.78 to 1.55)
Overall opinion of smoking behaviour		
Very good	30.40 (3.93 to 235.46)	30.64 (3.94 to 238.25)
Good	2.19 (1.17 to 4.07)	2.20 (1.16 to 4.18)
Neither good nor bad	1.76 (1.21 to 2.56)	1.80 (1.23 to 2.63)
Bad	1.20 (0.86 to 1.66)	1.24 (0.90 to 1.70)
Very bad	Reference	Reference
Attitude of Chinese society to smoking		
Disapprove/neither/DK	Reference	Reference
Support	1.27 (1.00 to 1.60)	1.27 (1.00 to 1.60)
Cigarettes per day		
0–10	Reference	Reference
11–20	2.75 (2.15 to 3.52)	2.81 (2.17 to 3.64)
21–30	2.95 (1.65 to 5.26)	2.99 (1.67 to 5.33)
31+	2.30 (1.40 to 3.79)	2.43 (1.48 to 3.40)
Smokers of five closest friends		
None	Reference	Reference
One	1.99 (0.66 to 6.01)	2.13 (0.72 to 6.32)
Two	1.52 (0.64 to 3.64)	1.55 (0.66 to 3.61)
Three	2.60 (1.05 to 6.41)	2.56 (1.09 to 6.05)
Four	2.89 (1.07 to 7.83)	2.79 (1.08 to 7.23)
All	4.05 (1.70 to 9.65)	3.81 (1.67 to 8.68)
Region		
Beijing	Reference	Reference
Shenyang	2.80 (1.83 to 4.28)	2.74 (1.75 to 4.29)
Shanghai	2.57 (1.83 to 3.63)	2.68 (1.90 to 3.79)
Changsha	2.04 (1.46 to 2.84)	2.06 (1.45 to 2.92)
Guangzhou	1.92 (1.41 to 2.60)	2.12 (1.54 to 2.92)

Continued

Table 3 Continued

Variables	Crude OR (95% CI)	AOR (95% CI)*
Yinchuan	1.84 (1.27 to 2.67)	1.77 (1.21 to 2.61)
Gender		
Male	1.85 (0.97 to 3.53)	1.84 (0.96 to 3.49)
Female	Reference	Reference
Age		
18–24	2.74 (0.97 to 7.74)	3.27 (1.05 to 10.17)
25–39	1.15 (0.78 to 1.70)	1.21 (0.82 to 1.80)
40–54	1.74 (1.11 to 2.72)	1.74 (1.10 to 2.76)
55+	Reference	Reference

OR, odds ratio; CI, confidence interval; AOR, adjusted odds ratio.
*Adjusted odds ratio: adjusting the potential confounding demographic characteristics including marital status, education attainment, ethnicity, and average monthly household (HH) income. DK, don't know.

particularly those living in middle-income and lower-income areas where smoke-free restrictions are non-existent.

Implications

Compared with Western countries, little has been done with regard to tobacco control in China, especially in recreational venues. Although only a first step, the findings from this survey present a valuable basis to move forward on tobacco control within recreational settings, by exploring the determinants of public smoking behaviour in these venues. All such information is of great importance in policy-making, which is urgently needed to decrease the high smoking prevalence within recreational settings. Results of this study call for a prevention policy aimed at this special population, and strategies to reduce smoking in recreational venues, as in smoking behaviour in general, should involve educating the Chinese public about the hazards of secondhand smoke, associating smoking behaviour with negative rather than positive images, and in trying to denormalise smoking. These are the strategies that have proved to be effective in many other countries, and provide a superb set of strategies for China to apply as it increases its efforts to combat the single most important cause of death and disability in the world's most populous country.

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娱乐场所吸烟行为相关危险因素：国际烟草控制政策评估研究（ITC）中国调查结果

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摘要

目的： 探讨娱乐场所吸烟行为相关因素，为制定针对这些场所禁烟措施提供科学依据。

方法： 国际烟草控制政策评估研究（ITC）中国基线调查是一项以面对面方式进行的横断面调查，覆盖六个城市（沈阳、北京、上海、广州、长沙和银川）具有代表性的成年吸烟者，调查时间为2006年4-8月。调查采用多阶段抽样方法，共选取4815名吸烟者，本研究最终对2875名报告在过去六个月内曾至少光顾过一次娱乐场所的吸烟者进行了分析。采用多元Logistic回归模型确定娱乐场所中吸烟行为的影响因素。

结局变量： 光顾娱乐场所的吸烟者是否曾在该场所吸过烟。

结果： 84%的研究对象报告曾在娱乐场所有过吸烟行为。32.0%的调查对象报告所去娱乐场所部分或完全禁止吸烟。下列因素与吸烟者在娱乐场所吸烟行为呈显著相关：无禁烟规定，不支持禁烟，年龄在18-24岁之间，对吸烟持积极态度，认为吸烟对健康危害较少，及非北京居民。

结论： 向中国吸烟者宣传关于主动吸烟和被动吸烟危害知识对提高他们对禁烟法律规支持程度乃至降低其在娱乐场所吸烟愿望都具有重要意义。结果还提示，在实施禁烟法规时执行的力度非常重要。同时这些策略还有助于扭转人们视吸烟为正常行为的观念，而这正是总体上实现减少吸烟的一项关键性策略。

发展中国家（中低收入国家）烟草流行水平正快速上升，这些地区的吸烟率早在二十世纪七十年代初就已开始上升，目前，全世界11亿吸烟者当中82%在发展中国家，其中亚洲地区就占有超过50%，[1,3]而这其中，中国便是全球最大的烟草生产国、消费国和受害国。[4]目前，中国有3.5亿吸烟者（占全世界吸烟者总数的30%），每年直接或间接死于烟草相关疾病的人数高达100万。[5,7]如果当前吸烟状况得不到有效控制，估计到2025年，中国每年将有200万人因吸烟而死亡，[8]另外还会有2亿中国儿童成为吸烟者，其中5000万最将死于吸烟相关疾病。[9]根据《2007年中国控烟报告》，中国有5.4亿非吸烟者遭受着二手烟危害，其中包括1.8亿15岁以下儿童。[10]

在允许吸烟的娱乐场所（如餐厅、咖啡店和卡拉OK厅等），人们认为在这一环境中吸烟为正常行为，这就可能更进一步促使他们产生吸烟行为。[11][12]此外，烟草企业一直积极地在娱乐场所推广烟草产品，这也成为促使人们开始吸烟和尝试戒烟者复吸的重要原因。[13,15]在经常光顾娱乐场所者中，很多是潮流的引领人群，譬如中国的精英人群。如果娱乐场所吸烟行为持续下去，那么就会让人们认为吸烟是可以接受的行为，是这些公共场所的常态。因此，在中国实施娱乐场所控烟法律法规，将成为扭转人们视吸烟为正常行为这一错误观念的有力工具。

由于中国吸烟率很高，各种烟草相关疾病所致沉重负担，使控烟工作成为摆在我们面前需要优先解决的公共卫生问题。[6][16]然而，中国目前还没有全国性的控烟法规，更谈不上专门针对娱乐场所的控烟法规——而这些场所正是吸烟和被动吸烟高发地点。最新的预防措施采取的是社会影响手段，针对被认为会促使个人吸烟行为的相关心理社会变量。[17,19]虽然这一措施在一定程度上是有效的，但是其中采用的吸烟相关危险因素主要都来自西方国家研究结果。[20][21]目前，这些因素是否对中国吸烟者的吸烟行为有同样影响，特别是在娱乐场所吸烟，尚不明确。对经常光顾娱乐场所吸烟者的行为、认识和特征进行探讨，可能有助于制定更有针对性和更有效的控烟措施。

为填补这方面研究空白，本研究专门以出入娱乐场所成年吸烟者为研究对象。据我们所知，这是首次针对中国娱乐场所吸烟行为可能危险因素的研究。在本研究中，我们希望提供关于娱乐场所吸烟行为的各种决定因素信息，并通过探讨光顾这些场所吸烟者的行为、认识和观点，制定出实用、有效的娱乐场所吸烟行为干预策略。

方法

本部分是对ITC中国调查所用方法的一个简要介绍，详细细节请参考Wu等人的文章。[22]

抽样设计

本次调查是国际烟草控制政策评估研究（ITC）中国调查的基线调查。ITC中国调查是针对成年吸烟者和非吸烟者的前瞻性队列调查，其目的是为了对烟草控制政策进行评估。

ITC中国调查采用分层多阶段整群抽样设计，首先根据各城市的地理位置和经济发展水平选择六个城市，包括北京、上海、广州、沈阳、长沙和银川。然后在每个城市使用按容量比例概率法（PPS法）随机选择10个街道，入选概率与各街道的人口数成正比。在每个街道中，同样使用PPS法选择两个居委会，入选概率与各居委会的人口数量成正比。然后对每个居委会编制一份完整的家庭住址清单，从清单上使用简单随机抽样法选择300户家庭。对这300户家庭进行访问，收集家庭内所有成人年龄、性别和吸烟状况等信息。将300户家庭按随机排序，对其中年龄在18岁以上，曾经吸过100支以上卷烟的成人按照上述随机顺序进行调查，直到完成40名成年吸烟者调查。为提高女性吸烟者的样本规模，对有条件的家庭调查1名男性吸烟者和1名女性吸烟者。如果一户家庭有1名以上男性同时达到调查标准，则采用下次生日法确定该家庭的调查对象。

调查程序

调查对象一经选定并同意参与调查则与其预约面对面调查时间。成年吸烟者访谈持续时间平均为31分钟，由经过培训的调查员负责进行访谈。调查员采用标准化问卷，其中包括多国（在开展ITC中国调查时还有其他8个国家）ITC政策调查中使用的核心问题以及一些专门针对中国的问题。各城市使用统一的访谈程序，确保访谈过程和数据收集过程的一致性。本文仅就2006年4-8月完成的第一轮调查对象进行分析。

变量指标

人口统计学变量

通过调查对象自报的方式收集其居住城市、年龄、性别、民族、教育程度（低=未受教育或小学文化程度；中=初中或中学/职业高中文化程度；高=大学或以上）、婚姻状况和家庭月收入（低：<1000元/月；中：1000-2999元/月；高：>3000元/月；不知道/无法回答）等信息。对于每日吸烟者，直接询问其平均每日吸烟量，包括机制卷烟和手卷烟。对每周吸烟者，则询问其平均每周吸烟量。

娱乐场所吸烟情况

对吸烟者询问一系列问题，了解他们在过去6个月内是否去过娱乐场所，同时在娱乐场所中是否有吸烟行为。娱乐场所包括餐厅、咖啡厅和卡拉OK厅。

吸烟对健康危害的认识

询问调查对象是否认为吸烟会导致吸烟者患冠心病、中风、阳痿、加速衰老、肺气肿和牙齿发黄，吸烟者患肺癌，非吸烟者患肺癌，吸烟成瘾等问题，从而评估其对吸烟健康危害的认识。

无烟政策强度

采用下列问题评估报告娱乐场所禁烟政策的强度："下面哪一项能够最恰当地描述了你最经常去的室内娱乐场所的吸烟规定，如饭店、咖啡厅、歌厅等？"答案选项包括：（1）"不能在室内任何区域吸烟"，（2）"只能在室内某些区域吸烟"，及（3）"没有规定或限制"。

对无烟政策支持程度

采用以下问题对在娱乐场所中无烟政策的支持情况进行评估："在餐厅、酒吧，你认为应该有怎样的禁烟规定？不能在室内任何区域吸烟，只能在室内某些区域吸烟，没有规定或限制，不知道/无法回答。"

周围朋友/熟人的影响

采用以下问题来确定周围朋友/熟人吸烟行为的影响："你最经常交往的5个同事、朋友或熟人（家人除外）中有几个人吸烟？"答案分6个等级（0=没有，1=1个，2=2个，3=3个，4=4个，5=5个）。

态度和认识因素

在中国吸烟是很常见的社会行为，不吸烟还没有成为一个社会规范。吸烟者对吸烟的认识会影响其对在娱乐场所吸烟的接受程度。对态度和认知因素采取三个表述进行测定：（1）"认为吸烟是一种享受，所以很难戒掉"（采用5分量表，范围从"非常同意"到"非常反对"），在分析时，选择"非常反对"或者"反对"的人归为"反对"，而选择"非常同意"或者"同意"的人归为"同意"。然后询问所有调查对象："你对吸烟的总体看法是什么？" 答案选项包括："很好"、"好"、"不好也不坏"、"不好"和"很不好"，选择"好"和"很好"的调查对象被认为对吸烟有正面认识。最后一个表述是"我们的现实社会对吸烟的态度是什么？"（答案分4个等级："支持"、"反对"、"即不支持也不反对"、"不知道/无法回答"）。

数据分析

采用Windows系统下SPSS13.0软件进行数据分析。采用Pearson's x^2检验和t检验分别对分类变量和连续变量进行分析，检验吸烟者在娱乐场所采取吸烟和不吸烟行为的差异。使用单因素和多因素Logistic回归分析探讨选定因素和娱乐场所吸烟行为之间的关系。在调整分析中，我们加入了人口学变量和预测变量，以便得出每个预测变量的调整比值比和95%可信区间（AOR，95%CI）。针对调查所采用的复杂抽样设计，所有分析均采用SPSS软件的"复杂样本"功能，对数据进行加权处理分析。

结果

样本的人口学特征

第一轮调查的合作率从北京、广州约80%到长沙95%不等，应答率从银川的39.4%到广州66.0%不等。本研究所采用的数据来自完成基线调查，报告在过去六个月中曾光顾过娱乐场所的2875名吸烟者。这些调查对象的年龄区间为18-82岁，平均年龄47.9±7.9岁。表1是对研究对象按吸烟状态分层后的人口学特征信息。光顾娱乐场所的人中大多数（83.6%）报告曾在这些场所吸烟，其中男性为84.0%，女性为70.1%。这些人多数为男性（97.0%）、已婚（89.6%）、汉族（95.3%）。大约65.8%为高中毕业，86%以上报告家庭月收入超过1000元。按照中国的平均家庭收入水平，这一收入是比较高的，其原因可能是由于选择的六个城市均为大都会城市，同时由于将分析范围限定在曾经光顾过娱乐场所的人群，而这一人群的收入水平相对较高。

表1 在娱乐场所吸烟及不吸烟者人口学特征

变量	吸烟	不吸烟	显著性检验
	人数(%)	人数(%)	
总计	2403 (83.6)	472 (16.4)	
地区			
北京	294 (75.4)	96 (24.6)	
沈阳	385 (87.7)	54 (12.3)	
上海	460 (87.1)	68 (12.9)	
长沙	387 (83.4)	77 (16.6)	
广州	484 (84.3)	90 (15.7)	
银川	393 (81.9)	87 (18.1)	$x^2(5)=30.60, P <0.001$
性别			
男	2342 (84.0)	446 (16.0)	
女	61 (70.1)	26 (29.9)	$x^2(1)=11.86, P =0.001$
年龄			
18-24	49 (87.5)	7 (12.5)	
25-39	515 (83.5)	102 (16.5)	
40-54	1290 (87.3)	187 (12.7)	
55+	549 (75.7)	176 (24.3)	$x^2(3)=48.45, P <0.001$
民族			
汉族	2289 (83.5)	452 (16.5)	
其它	114 (85.1)	20 (14.9)	$x^2(1)=0.23, P =0.633$
婚姻状况			
单身	122 (80.8)	29 (19.2)	
在婚	2166 (84.1)	411 (15.9)	
其它	115 (78.2)	32 (21.8)	$x^2(2)=4.34, P =0.114$
教育			
初中及以下	196 (80.7)	47 (19.3)	
高中/中专	1593 (84.2)	300 (15.8)	
大专及以上	614 (83.1)	125 (16.9)	$x^2(2)=2.10, P =0.351$
家庭月收入			
低	333 (83.5)	66 (16.5)	
中等	1566 (83.7)	306 (16.3)	
高	326 (83.8)	63 (16.2)	
不知道/无法回答	178 (75.7)	57 (24.3)	$x^2(3)=0.12, P =0.989$
年龄			
均数(标准差)	47.36 (8.53)	50.41 (11.86)	$t(2873)=4.56, P<0.001$

单因素分析结果

在娱乐场所吸烟与非吸烟两人群间的各种人口特征比较见表1。总体看，两组教育水平和婚姻状况分布情况基本一致，同时家庭月收入也无显著差异（p值在 α 水平为0.05）。但与在娱乐场所未吸烟者相比，吸烟人群年龄要小3岁以上（分别为50.4岁和47.4岁）。图1是六城市中报告所有曾光顾娱乐场所的吸烟者中曾在该场所有吸烟行为的比例。上海和沈阳调查对象报告在娱乐场所吸烟的比例高于长沙、广州和银川，而北京最低。

表2是有关变量与娱乐场所吸烟行为间的相关性。不同人群报告限制吸烟的范围存在很大差异（$x^2=386.1$, p

<0.001）。有32%的调查对象回答他们所光顾的娱乐场所部分或完全禁止吸烟，这比英国、加拿大、美国和澳大利亚酒吧的水平低很多，而这些国家的酒吧被认为是限制程度最低的（图2）。[24-26]与曾在娱乐场所吸烟者（33.7%）相比，未吸烟者赞同禁止吸烟的比例更高（55.5%）。此外，调查还发现除中风外（$x^2=3.55$, p=0.06），在娱乐场所吸烟和未吸烟者相比，对吸烟相关的健康影响的认识也存在很大差异。光顾过娱乐场所的调查对象最同意的是吸烟会导致牙齿发黄（87.7%）和肺癌（72.9%）。不过，不到一半（49.0%）的调查对象认同吸烟会导致加速衰老，仅有36.2%和18.1%的人认为吸烟可以导致心
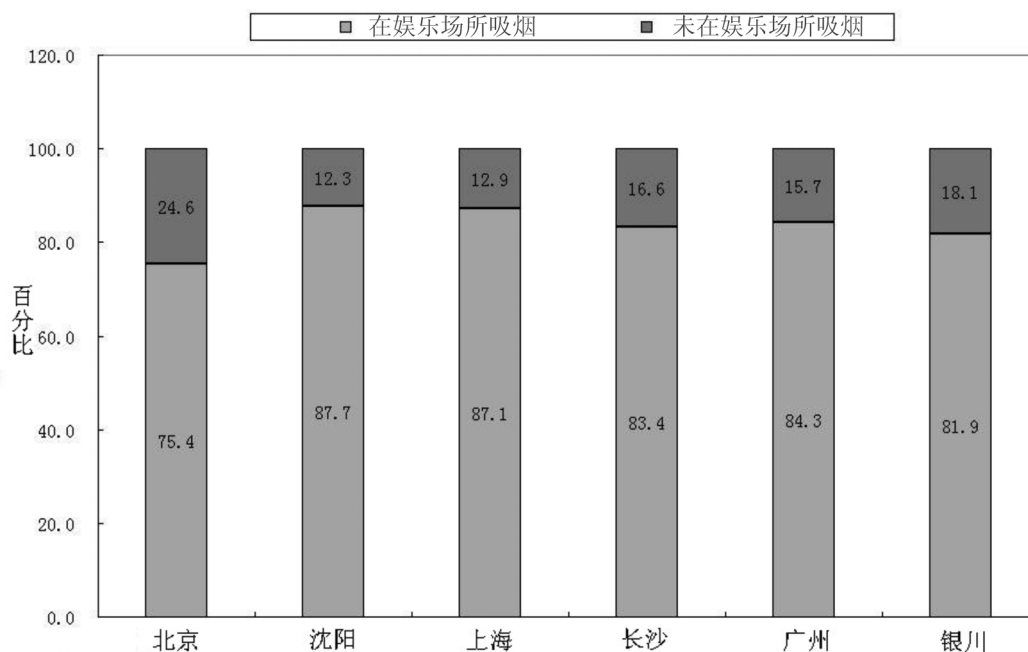
在娱乐场所吸烟 　未在娱乐场所吸烟

图1 中国六城市 在调查前6个月去过室内娱乐场所的吸烟者在娱乐场所的吸烟行为

脏病和阳痿，对吸烟导致中风的认同率最低（16.3%）（图3）。此外，不同人群间认同疾病的总数也存在显著性差异（$x^2=27.6$，p<0.001），在娱乐场所吸烟者认同的疾病数目少于未吸烟者。在娱乐场所吸烟者中对吸烟持正面态度的更为普遍。认为吸烟是一种好的行为，中国社会支持吸烟的调查对象更易在娱乐场所吸烟。"认为吸烟是一种享受，所以很难戒掉"为在娱乐场所吸烟最常见理由。在娱乐场所吸烟者报告其5名最亲密好友中吸烟者的人数也要高得多。

多因素分析结果

而后我们进行了复杂抽样Logistic回归模型分析娱乐场所吸烟行为的相关影响因素。结果见表3，其中因变量为过去六个月中是否曾在娱乐场所吸烟。对吸烟总体看法"很好"（AOR：30.64，95%CI：3.94-238.25）和没有禁烟规定或限制（AOR：14.36，95% CI：9.41-21.91）两个因素与

娱乐场所吸烟行为之间的相关性最强。认为娱乐场所对吸烟应没有规定或限制也与娱乐场所吸烟行为显著相关（OR：2.84，95% CI：2.09-3.86），在调整人口学特征后，相关性强度进一步提高（AOR：2.87，95% CI 2.12-3.89）。关于吸烟会导致肺癌认识则在很大程度上避免吸烟行为的产生（OR：0.63，95% CI：0.47-0.84），虽然这种抑制关系随着调整婚姻状况、教育水平、民族和家庭月收入等人口学特征后有所下降（AOR：0.62，95% CI：0.45-0.84），但仍具有显著相关。对于前面提到的其它吸烟相关疾病，除中风和牙齿发黄外，均得出相似结果。最值得注意的是，认同吸烟可导致全部8种疾病的调查对象在娱乐场所未吸烟的比例更高，随着了解吸烟相关疾病数目的增加，调查对象在娱乐场所的吸烟概率在减小，并呈明显的线性递减趋势（趋势 $x^2=28.4$，p=0.001）。沈阳、上海、广州、长沙和银川的吸烟者在娱乐场所吸烟的比例高于北京。

表2 与吸烟者在室内娱乐场所吸烟行为潜在相关的变量

变量	吸 烟 人数（%）	未吸烟 人数（%）	显著性检验
禁烟规定			
不能在室内任何区域吸烟	124 (5.2)	131 (27.8)	
只能在某些区域吸烟	463 (19.3)	179 (37.9)	
没有规定或限制	1816 (75.60)	162 (34.3)	$x^2(2)=386.1$, P<0.001
对禁烟规定的支持			
不能在室内任何区域吸烟	350 (14.6)	143 (30.3)	
只能在某些区域吸烟	459 (19.1)	119 (25.2)	
不知道	113 (4.7)	33 (7.0)	
没有规定或限制	1482 (61.6)	177 (37.5)	$x^2(3)=107.6$, P<0.001

表2续

表2 与吸烟者在室内娱乐场所吸烟行为潜在相关的变量

变量	吸 烟 人数（%）	未吸烟 人数（%）	显著性检验
吸烟导致吸烟者患肺癌			
是	1724 (71.7)	373 (79.0)	
不是	679 (28.3)	99 (21.0)	$x^2(1)$=10.60, P=0.001
吸烟导致冠心病			
是	842 (35.0)	199 (42.2)	
不是	1561 (65.0)	273 (57.8)	$x^2(1)$=8.66, P=0.003
吸烟导致中风			
是	379 (15.8)	91 (19.3)	
不是	2024 (84.2)	381 (80.7)	$x^2(1)$=3.55, P=0.060
吸烟导致阳萎			
是	411 (17.1)	110 (23.3)	
不是	1992 (82.9)	362 (76.7)	$x^2(1)$=10.23, P=0.001
吸烟导致肺气肿			
是	1470 (61.2)	317 (67.2)	
不是	933 (38.8)	155 (32.8)	$x^2(1)$=6.01, P=0.014
吸烟导致牙齿发黄			
是	2102 (87.5)	420 (89.0)	
不是	301 (12.5)	52 (11.0)	$x^2(1)$=0.83, P=0.361
吸烟导致加速衰老			
是	1141 (47.5)	267 (56.6)	
不是	1262 (52.5)	205 (43.4)	$x^2(1)$=13.03, P<0.001
吸烟导致非吸烟者患肺癌			
是	1312 (54.6)	300 (63.6)	
不是	1091 (45.4)	172 (36.4)	$x^2(1)$=12.86, P<0.001
烟草相关疾病的知晓数目			
≤1	411 (17.1)	64 (13.6)	
2	272 (11.3)	32 (6.80)	
3	348 (14.5)	49 (10.4)	
4	366 (15.2)	81 (17.2)	
5	404 (16.8)	90 (19.1)	
6	301 (12.5)	76 (16.1)	
7	183 (7.6)	46 (9.7)	
8	118 (4.9)	34 (7.2)	$x^2(7)$=27.6, P<0.001
烟草是使人成瘾的物质			
不同意	199 (8.3)	41 (8.7)	
无所谓	133 (5.5)	37 (7.8)	
同意	2071 (86.2)	394 (83.5)	$x^2(2)$=3.95, P=0.139
认为吸烟是一种享受，所以很难戒掉			
不同意	823 (34.2)	193 (40.9)	
无所谓	273 (11.4)	50 (10.6)	
同意	1307 (54.4)	229 (48.5)	$x^2(2)$=7.68, P =0.022

表2续

表2 与吸烟者在室内娱乐场所吸烟行为潜在相关的变量

变量	吸烟 人数（%）	未吸烟 人数（%）	显著性检验
对吸烟的总体看法			
很好	42 (1.7)	1 (0.2)	
好	121 (5.0)	19 (4.0)	
无所谓	1047 (43.6)	153 (32.4)	
不好	870 (36.2)	203 (43.0)	
很不好	322 (13.4)	96 (20.3)	$x^2(4)=36.76$, P <0.001
现实社会对吸烟的态度			
无所谓	1303 (54.2)	296 (62.7)	
支持	1100 (45.8)	176 (37.3)	$x^2(1)=11.51$, P =0.001
每天吸烟支数			
0-10	720 (30.0)	251 (53.2)	
11-20	1267 (52.7)	165 (35.0)	
21-30	212 (8.8)	29 (6.1)	
≥31	204 (8.5)	27 (5.7)	$x^2(3)=95.1$, P<0.001
经常交往的5个同事或家人中吸烟人数			
0	37 (1.5)	15 (3.2)	
1	66 (2.7)	25 (5.3)	
2	157 (6.5)	67 (14.2)	
3	402 (16.7)	91 (19.3)	
4	462 (19.2)	93 (19.7)	
5	1278 (53.2)	181 (38.3)	$x^2(5)=62.32$, P<0.001

讨论

越来越多的国家都在禁止公共场所吸烟。[27-31] 这些国家禁烟策略及实施方法存在很大差异。在中国，政府制定了一些公共场所无烟法规，但是很多区域，特别是餐厅和酒吧等娱乐场所并未被纳入其中（图2）。因此，这些场所中的吸烟者便可以在任何时间、任何地点吸烟，全然不顾吸烟对自己和他人的危害。娱乐场所吸烟这一长期以来的问题使政府感到有必要在这些场所禁止吸烟。但是对这些场所控烟策略的有效设计受到了相关信息缺乏的制约，因为目前尚没有专门针对这一场所人群的研究。据我们所知，本次研究是首次对中国娱乐场所室内吸烟相关因素进行探讨。

吸烟者对二手烟危害的认识及无烟法规的态度是影响其吸烟行为的重要因素之一。在具可比性的不支持禁烟和仅在室内部分区域禁烟的调查对象中，吸烟的比例分别高187%和34%（表3）。有充分证据显示，个人吸烟行为会影响其对控烟政策的态度。[32 33] 而控烟政策的实施情况又会反过来影响个体的吸烟行为。[34] 可以认为，在没有任何吸烟限制的娱乐场所，吸烟者更倾向于采取吸烟行为。如表3所示，光顾部分禁烟和无禁烟规定场所调查对象的吸烟概率分别是出入完全禁烟场所者的3.1倍和14.4倍。与以往研究结果相似，控烟政策在吸烟者中的支持率低于非吸烟者，[35]本研究中仅有37.3%的调查对象支持禁烟规定，远低于ITC四国在吸烟者中开展的研究。[36] 此外，我们调查对象支持禁烟者中很多倾向于采用所谓技术性的办法（如通风和设置吸烟室），其支持率高达54%，然而，这些观点通常是公共卫生倡导者们所反对的。

吸烟者对吸烟危害健康的认识水平对其吸烟行为有很大影响。与以往研究结果一致，[37-39]表2和表3都表明，对吸烟危害健康知晓程度低者更易在娱乐场所有吸烟行为。尽管在本研究中，所有调查对象关于吸烟危害健康相关知识知晓水平普遍较低（图3），但调整了包括婚姻状况、受教育水平、民族和家庭月收入等人口学特征因素后，这种相关性有所增强（表3）。Smith[40] 和Rosliza[42] 的研究得出了不同的结论，但是Oncken[42] 的研究和本次研究都显示，对吸烟危害知识知晓程度高的吸烟者更倾向于放弃在公共场所吸烟行为。图3表明，仅有18.1%认为吸烟可以导致阳痿，17%认为吸烟与中风有关。这表明吸烟者对吸烟危害相关知识认识严重缺乏。为弥补这些缺陷，在中国有必要开展控烟相关知识方面教育活动。

美国、加拿大、英国和澳大利亚之所以对娱乐场所禁烟支持率很高，很大程度上得益于许多二手烟危害研究结果的发布。这四国同很多其他西方国家一样，对二手烟危害的认识水平都远高于中国。因此，有必要采取措施，向中国公众介绍同样的关于二手烟危害的研究成果，以获得对无烟法律法规的更有力支持，进而为降低娱乐场所和其它二手烟危害严重场所的吸烟率奠定基础，如在家庭、车辆中，特别是有儿童存在的场合禁烟。

思想决定行动，而态度又是影响思想的一个重要方面。[43] 如表2所示，对吸烟持积极态度的调查对象更易在娱乐场所有吸烟行为。"认为吸烟是一种享受，所以很难戒掉"和认为"中国的现实社会支持吸烟"的调查对象，在娱乐场所吸烟和非吸烟的比例分别为54.4%对48.5%，和45.8%对
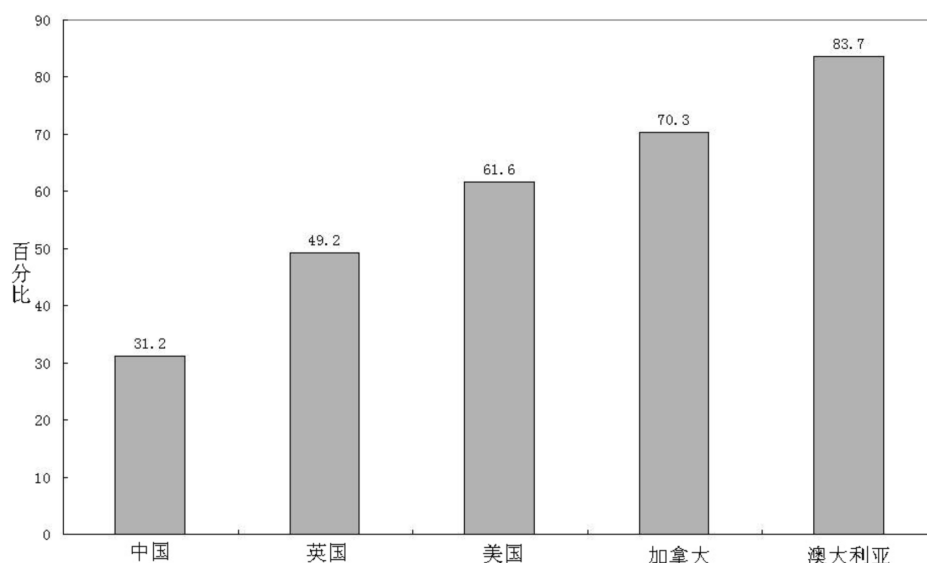
图2 中国娱乐场所与英国、美国、加拿大、澳大利亚酒吧有全面或部分禁烟规定的比例

37.3%。与以往的研究结果一致，[44-46] 研究还发现对吸烟所持积极态度与在公共场所吸烟行为有关。认为吸烟"非常好"的调查对象在娱乐场所吸烟概率是认为吸烟"非常差"者的31倍。

互相敬烟已经成为了一种社交手段和友好表示，尤其在娱乐场所，同时，为获得社会认可及来自同龄人压力和影响也是促使光顾娱乐场所者吸烟的因素。从这个角度看，吸烟被作为一种个性和独立的标志。因此，结果显示关系"亲密"好友吸烟可使其吸烟概率增至3.81倍，同时随着好友吸烟人数增加，调查对象吸烟概率也呈线性增长（表3）。这与已有研究结论一致。[46-48] 当然，这一现象可能夸大了同龄人对吸烟行为的影响，认为吸烟可以提高同伴和吸烟者的关系。有些吸烟者更倾向与那些与其有共同吸烟爱好的人交往，同时吸烟者可能高估自己朋友中的吸烟率。

如表3所示，与北京相比，银川、长沙、广州、上海和沈阳的吸烟者更倾向于在娱乐场所吸烟，其比值比在1.77-2.74之间。这一现象可能部分是由于不同地区禁烟规定及实施程度的差异所致。

局限性
对于我们的研究结果需要注意下列局限性。首先，这些结果是根据ITC中国调查的数据得出。这些数据是横断面的，因此不能在变量之间建立因果关系。其次是缺乏对未接受调查的吸烟者信息，与已调查的吸烟者相比，未接受调查的吸烟者在娱乐场所吸烟的可能性更高，同时对吸烟健康危害的认识水平更低。这可能导致对娱乐场所吸烟率和吸烟健康危害认识的影响低估。第三，女性吸烟在中国传统意识中不被接受。长期以来，一直是女性免受烟害的一个保护性因素，而
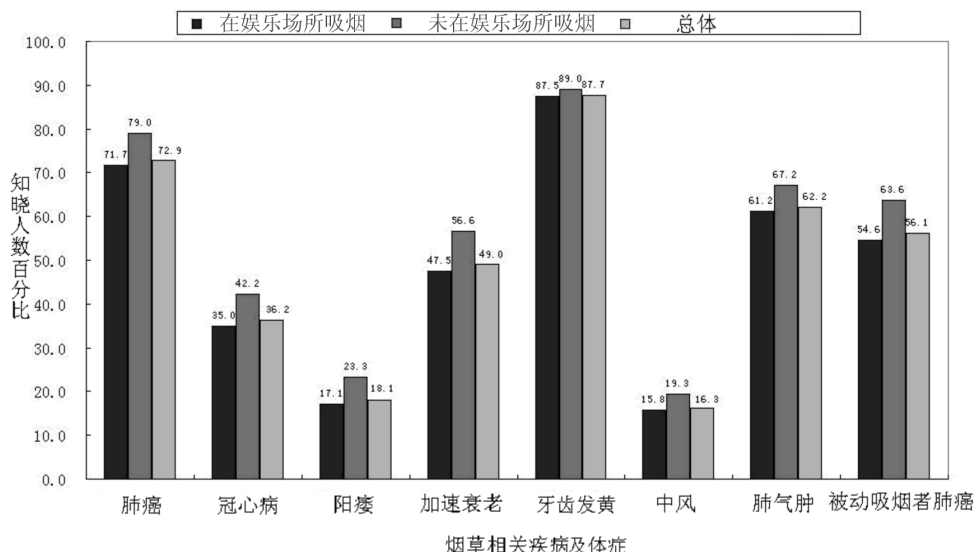

图3 调查对象对烟草相关疾病的知晓情况

本次研究的样本和结果基本都是针对男性的，因此，根据本次研究衍生出的干预措施也应该是针对男性的。最后，需要注意的是，此次研究结果来自中国富裕程度和教育程度最高的几个城市，同时这些城市的控烟政策也是最为全面的。因此，本研究结果不能推广到农村地区。同样，我们还应意识到，中国吸烟者当中绝大多数人对吸烟危害健康的认识要低得多，特别是在中低收入且没有任何禁烟要求的地区。

表3 室内娱乐场所吸烟行为相关因素的非条件Logistic回归模型分析结果

变量	OR(95%CI)	AOR(95%CI)
禁烟规定		
不能在室内任何区域吸烟	1.00	1.00
只能在某些区域吸烟	3.12 (2.21-4.39)	3.14 (2.18-4.53)
没有规定或限制	14.05 (9.28-21.28)	14.36 (9.41-21.91)
对禁烟规定的支持		
不能在室内任何区域吸烟	1.00	1.00
只能在某些区域吸烟	1.31 (1.00-1.73)	1.34 (1.01-1.77)
不知道	1.61 (0.92-2.83)	1.62 (0.93-2.81)
没有规定或限制	2.84 (2.09-3.86)	2.87 (2.12-3.89)
吸烟导致吸烟者患肺癌	0.63 (0.47-0.84)	0.62 (0.45-0.84)
吸烟导致冠心病	0.75 (0.58-0.95)	0.74 (0.58-0.96)
吸烟导致中风	0.86 (0.63-1.16)	0.86 (0.63-1.19)
吸烟导致阳萎	0.66 (0.48-0.91)	0.66 (0.48-0.91)
吸烟导致加速衰老	0.69 (0.54-0.88)	0.68 (0.53-0.88)
吸烟导致牙齿发黄	0.85 (0.60-1.22)	0.85 (0.59-1.21)
吸烟导致肺气肿	0.73 (0.58-0.92)	0.72 (0.58-0.90)
吸烟导致非吸烟者患肺癌	0.68 (0.51-0.90)	0.68 (0.51-0.91)
对健康总的影响		
≤1	1.00	1.00
2	0.97 (0.56-1.67)	0.96 (0.56-1.66)
3	0.86 (0.55-1.34)	0.84 (0.55-1.29)
4	0.60 (0.36-0.10)	0.58 (0.36-0.95)
5	0.61 (0.43-0.86)	0.60 (0.41-0.86)
6	0.51 (0.32-0.81)	0.50 (0.31-0.79)
7	0.57 (0.36-0.91)	0.56 (0.34-0.91)
8	0.47 (0.27-0.82)	0.45 (0.25-0.81)
趋势检验	$x^2_{trend}=28.4,$	$P_{trend}<0.001$
烟草是使人成瘾的物质		
同意	1.00	1.00
无所谓	0.84 (0.53-1.35)	0.82 (0.51-1.30)
不同意	0.98 (0.64-1.48)	0.99 (0.65-1.51)
认为吸烟是一种享受，所以很难戒掉		
反对	1.00	1.00
无所谓	1.01 (0.61-1.66)	1.13 (0.74-1.74)
同意	0.89 (0.63-1.25)	1.10 (0.78-1.55)
25-39	1.15 (0.78-1.70)	1.21 (0.82-1.80)
40-54	1.74 (1.11-2.72)	1.74 (1.10-2.76)
≥55	1.00	1.00
表3续		
对吸烟的总体看法		
很好	30.40 (3.93-235.46)	30.64 (3.94-238.25)
好	2.19 (1.17-4.07)	2.20 (1.16-4.18)
无所谓	1.76 (1.21-2.56)	1.80 (1.23-2.63)
不好	1.20 (0.86-1.66)	1.24 (0.90-1.70)
很不好	1.00	1.00
现实社会对吸烟的态度		
不支持	1.00	1.00
支持	1.27 (1.00-1.60)	1.27 (1.00-1.60)
每天吸烟支数		
0-10	1.00	1.00
11-20	2.75 (2.15-3.52)	2.81 (2.17-3.64)
21-30	2.95 (1.65-5.26)	2.99 (1.67-5.33)
≥31	2.30 (1.40-3.79)	2.43 (1.48-3.40)
经常交往的5个同事、朋友或家人中吸烟人数		
0	1.00	1.00
1	1.99 (0.66-6.01)	2.13 (0.72-6.32)
2	1.52 (0.64-3.64)	1.55 (0.66-3.61)
3	2.60 (1.05-6.41)	2.56 (1.09-6.05)
4	2.89 (1.07-7.83)	2.79 (1.08-7.23)
5	4.05 (1.70-9.65)	3.81 (1.67-8.68)
地区		
北京	1.00	1.00
沈阳	2.80 (1.83-4.28)	2.74 (1.75-4.29)
上海	2.57 (1.83-3.63)	2.68 (1.90-3.79)
长沙	2.04 (1.46-2.84)	2.06 (1.45-2.92)
广州	1.92 (1.41-2.60)	2.12 (1.54-2.92)
银川	1.84 (1.27-2.67)	1.77 (1.21-2.61)
性别		
男性	1.85 (0.97-3.53)	1.84 (0.96-3.49)
女性	1.00	1.00
年龄		
18-24	2.74 (0.97-7.74)	3.27 (1.05-10.17)
25-39	1.15 (0.78-1.70)	1.21 (0.82-1.80)
40-54	1.74 (1.11-2.72)	1.74 (1.10-2.76)
≥55	1.00	1.00

注:AOR为调整了人口学潜在混杂因素包括　婚姻状况、受教育程度、民族、家庭月收入1.oo表示参照组。

意义

与西方国家相比，中国的控烟工作还有许多空白，尤其在娱乐场所控烟方面。虽然这次研究仅是初步探讨，但通过探讨娱乐场所吸烟行为的影响因素所得出的结果却可以为进一步开展娱乐场所的控烟工作提供重要基础。这些信息对于控烟政策的制定非常重要，也是降低娱乐场所高吸烟率所亟需的。本研究的结果证实，中国需要制订专门针对这一场所人群的预防政策，减少其在娱乐场所吸烟，这其中需要对中国公众开展健康教育，提供关于二手烟危害的知识，意识到吸烟行为是负面、而非正面的一种形象，进而扭转人们视吸烟

为正常行为的错误观念。这些策略都已由其他国家实践证明是有效的，应用到中国，会有力地遏制吸烟—这个全世界人口最多的国家—中国最重要的致死、致残原因。

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