Smoking Cessation in an Urban Population in China

Tingzhong Yang, MD; Aimei Mao, PhD, RN; Xueyiing Feng, MD; Shuhan Jiang, MS; Dan Wu, MD; Joan L Bottorff, PhD, RN; Gayl Sarbit, PhD; Xiaohe Wang, PhD

***Objective*: To examine smoking cessation among urban-based Chinese. *Methods*: Multi-stage random sampling was used to obtain a sample from 21 cities in China. Two logistic regression models were established to identify factors influencing quit intention and smoking cessation. *Results*: Prevalence of smoking cessation was 10.1%; 45.5% of smokers intended to quit. Women and professionals had higher cessation rates than men and nonprofessionals. Rates of quit intention were highest among managers and clerks, and lowest among those who used gifted tobacco, smoked alone, and reported addiction to nicotine. *Conclusion*: Individual and city level factors are associated with quit intention and smoking cessation among urban-dwelling Chinese smokers. This information should guide smoking cessation programs and inform health policy.**

***Key words*: smoking cessation, quit intention, tobacco control, China**

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Tobacco use is one of leading causes of premature mortality around the world. China leads the world in tobacco consumption and smoking-related deaths. A 2010 survey shows that 53% of Chinese men, 2% of the women, and 28% of the overall population currently smoke.[1] Concurrently, 70% of nonsmoking adults are exposed to secondhand smoke in a typical week.[1] Smoking rates are higher among rural dwellers, the less-educated, the middle-aged, and workers in service, manufacturing, or construction than comparative groups; these groups also have a lower quit rate.[1,2] Among daily smokers 20-34 years of age, smoking accounted for approximately one million deaths annually during the 1990s.[3] Approximately 100 million Chinese will die from smoking-related causes over the next 50 years if the current high prevalence of smoking persists.[4]

The health benefits of smoking cessation are well founded. It also is known that a majority of smokers would like to quit smoking and indeed attempt to quit many times.[5,6] The majority of quit attempts and successful cessation take place without professional support.[5,6] Studies in the Western countries, such as Australia, Western European countries, Canada, and the US, report that more than one-third of smokers (including both current smokers and ex-smokers) successfully quit smoking"[7-9] in China, however, only 19.6% of smokers successfully quit.[10] In the Western countries, 66%-75% of ex-smokers quit using unassisted methods;[7-9] yet, about 95% of ex-smokers in China quit unassisted.[10,11] However, our understanding of unassisted or self-quitting is far from complete.

Studies published in 2010 and 2011 have analyzed the factors that may influence smoking cessation.[10,11] However, most of them have only been conducted among specific groups[10,11] and the results from these studies may not reflect the situations of smokers in general. The objective of our study was to examine factors influencing quit intention and successful cessation in a representative sample of urban dwellers in China. We focused on urban dwellers because more than half of China's population resides in cities. We hypothesized that a range of personal and environmental determinants, such as social and economic status,[12,13] smoking patterns and nicotine dependence,[7,14,15]

Tingzhong Yang, Professor, Center for Tobacco Control Research, Zhejiang University School of Medicine, Hangzhou, China. Aimei Mao, Post-doctoral Research Fellow, Institute for Healthy Living and Chronic Disease Prevention, University of British Columbia, Kelowna, Canada. Xueyiing Feng, Shuhan Jiang, and Dan Wu, Research Assistants, Center for Tobacco Control Research, Zhejiang University School of Medicine, Hangzhou, China. Joan L Bottorff, Professor, School of Nursing, University of British Columbia, Kelowna, Canada. Gayl Sarbit, Knowledge Broker, Institute for Healthy Living and Chronic Disease Prevention, University of British Columbia, Kelowna, Canada. Xiaohe Wang, Professor, Department of Social Medicine, Hangzhou Normal University, Hangzhou, China. Correspondence Dr Yang; tingzhongyang@zju.edu.cn

and smoke-free rules in public venues,[2] would affect smokers' intention to quit and their chances to be successful at quitting. Given the fact that cigarette gifting is an important social custom in China,[16-18] we also hypothesized that gifted cigarette users may have a lower rate of smoking cessation than those who primarily rely on purchasing their own cigarettes. Because of limited access to smoking cessation resources, we assumed in this study that most of quitters, like quitters in other studies, would be those who quit through unassisted methods.[10,11] The information from this study will be essential for informing health policy, as well as designing and implementing appropriate smoking cessation programs.

METHODS

Study Area and Participants

This study used a cross-sectional multistage sampling design. In Stage 1, 21 cities were selected based on geographic regions of China. Nine cities are located in the east; 5 are in the central region; and the remaining 7 are in the west. Sixty-eight percent of provinces in Mainland China were covered in this study. In stage 2, 2 residential districts were selected randomly from the main urban zones of each city. We excluded newly built districts and sub-districts because these districts were not the typical urban areas. They were previously rural areas and the social economic conditions there were less developed than those in the main urban zones. In Stage 3, 4 communities were selected randomly within each residential district. In Stage 4, a family household registration ("hukou") list was used to sample households randomly from the communities. Individuals aged 15 years and older, who had lived in their home for at least one year, were identified within each household. The selection of the individual participants followed the inclusion criteria of adult participants in national surveys on smoking patterns in China, in which individuals aged 15 and older were grouped into adult population.[19-21] Finally, one respondent was selected randomly from each family, with eligibility being determined by the birthdate closest to the contact date.[22]

Data Collection

A face-to-face interview was scheduled once an individual was identified and agreed to participate. All interviews were conducted using a structured self-administered questionnaire. Interviewers were the fourth-year medical students from a local medical college who received a one-day training on the study protocol and interviewing procedures. The survey was administered privately in participants' homes or in a designated quiet place, such as a backyard or community park. Interviews were conducted on Saturdays, Sundays, or during the evenings or other times when participants were available. Upon receiving survey instructions explained by an interviewer, the participant was asked to complete a survey questionnaire of approximately 30 minutes duration. Each participant was given an opportunity to clarify questions regarding the survey or survey items, and adequate time to complete the survey.

The same interview protocol was used across the 21 cities to assure homogeneity of interview and data collection. The data collection procedures have been employed extensively in research on smoking in China.[10,22]

Measures

Dependent variables. Information regarding smoking status, frequency and quantity of smoking, and smoking history was assessed using standard methods recommended by the World Health Organization.[23] A current smoker was defined as someone who smoked cigarettes at the time of the interview. Current smokers included daily smokers, who smoked every day, and occasional smokers, who smoked on some days.[2,23,24] Quitters were individuals who reported that they previously had smoked habitually for 6 or more months, but had completely stopped smoking at time of interview, and their behaviors were referred as "smoking cessation." Quit intention was measured by the question: "Do you plan to quit smoking?" The response options included: (1) yes, I will within a month; (2) yes, I will within 6 months; (3) yes, I will in more than 6 months; and (4) no, I do not plan to quit. Responses were coded dichotomously, with '1' referring to a 'no' response and '0' to a 'yes' response.

Individual-level independent variables. Individual-level data (social demographics) were collected on age, sex, ethnicity, education, occupation, and income.

(a) Smoking types. Respondents were asked whether they smoked alone or with others in most situations. Also, belief about nicotine dependence was measured by asking smokers whether or not they believed that they were addicted to nicotine.

(b) Smoking economic variables. Three variables were measured: (1) *price of cigarettes smoked* - participants were asked the price range of cigarettes they usually smoked (<5 Yuan, 5-10 Yuan, 10-15 Yuan, 15-20 Yuan); (2) *source of cigarettes* - participants were asked whether the cigarettes they smoked were self-paid or non-self-paid (gifted by others); and (3) *impact of cigarette prices on smoking behaviors* - participants were asked whether or not they decreased smoking because of the high price of cigarettes, with response options of no/ yes/ not certain.

(c) Smoking restrictions. Information on smoking restrictions in public places, workplaces, and households was gathered. The measurement and coding methods have been described elsewhere.[2]

City-level independent variables. There were 2 regional-level independent variables representing geological and economic diversities of the 21 participating cities. Each city was classified by

Table 1
The Differences in Smoking Cessation Rates and Quit Intention among Different Groups

Group	N (weighted % sample)	Weighted prevalence of smoking cessation	N (weighted % sample)	Weighted prevalence of quit intention
Socio-demographics				
Age		χ^2=1.96, p = .7436		χ^2=7.25, p = .1233
<25	1029(15.5)	9.8	900(15.6)	48.0
25-34	1475(20.2)	8.6	1333(20.4)	49.2
35-44	1486(20.4)	9.8	1346(20.4)	40.1
45-54	1232(20.1)	12.2	1135(11.2)	43.6
55+	1024(23.9)	9.8	946(24.0)	46.7
Sex		χ^2=134.41, p < .0001		χ^2=0.027, p = .8699
Male	5249(83.4)	4.7	5048(88.4)	45.2
Female	997(16.6)	37.3	612(11.6)	47.4
Ethnicity		χ^2=0.18, p = .6753		χ^2=1.01, p = .3164
Han	5965(96.9)	10.0	5427(96.9)	45.2
Other	281(3.1)	11.5	233(3.1)	52.5
Education		χ^2=19.80, p = .0002		χ^2=21.98, p < .0001
Elementary school or less	1288(21.1)	2.7	1265(22.9)	62.4
Junior high school	3026(45.4)	7.1	2823(46.9)	33.5
High school	1016(18.5)	20.2	825(16.4)	50.7
Junior college or college	916(15.0)	17.0	747(13.8)	46.7
Occupation		χ^2=45.19, p < .0001		χ^2=45.71, p < .0001
Managers and clerks	1041(14.3)	5.3	977(15.1)	81.8
Professionals	762(10.2)	17.2	711(10.8)	50.8
Commerce and service	1766(27.1)	5.3	1660(28.6)	29.3
Operations	1284(19.1)	4.2	1079(17.0)	36.2
Students	504(13.3)	25.6	445(13.0)	46.6
Retired	256(3.4)	12.7	222(3.3)	54.8
Other	633(12.6)	12.7	566(12.2)	43.0
Income/Person/Year (RMB)		χ^2=2.42, p = .2977		χ^2=15.44, p = .0004
<10,000	2509(39.7)	6.4	2402(41.3)	57.8
10,000-	2197(33.3)	12.1	1960(32.6)	28.0
20000-	1540(27.0)	13.0	1298(26.1)	47.6
Smoking Types				
Co-smoking		χ^2=0.05, p = .8302		χ^2=38.64, p < .0001
Smoking with others	4319(65.3)	10.4	3862(65.1)	63.70
Alone	1927(34.7)	9.5	1798(34.9)	11.4

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geographic region (eastern, central, and western) in China. The economic diversity of each city was coded using per capita Gross Domestic Product provided by national sources (GDP, which were categorized as <20000 RMB (1USD = 6.1RMB), 20000-29999 RMB, and 30000+ RMB).[25]

Data Analysis

All data were entered into a database using Microsoft Excel. The dataset was then imported into

Table 1 (continued)

Group	N (weighted % sample)	Weighted prevalence of smoking cessation	N (weighted % sample)	Weighted prevalence of quit intention
Belief about Nicotine Dependence		χ^2=0.34, p = .5596		χ^2=26.35, p < .0001
No addiction	4059(61.3)	10.9	3610(60.7)	66.9
Addiction	2187(38.7)	8.7	2050(39.3)	12.2
Smoking Economic Variables				
Source of cigarettes		χ^2=0.20, p = .6609		χ^2=16.54, p < .0001
Self- paid	5873(94.2)	10.2	5313(94.1)	47.0
Non-self-paid	373(5.8)	8.6	346(5.9)	20.1
Smoking Restrictions				
Restrictions in public place		χ^2=2.67, p = .1017		χ^2=0.59, p = .4436
No or part	463(8.3)	14.5	419(7.9)	49.7
Complete	5526(91.7)	9.1	5028(92.1)	50.3
Restrictions at home		χ^2=110.18, p < .0001		χ^2=3.63, p = .0569
No or part	2633(41.1)	4.2	3149(52.2)	37.5
Complete	3613(58.9)	14.1	2511(47.8)	44.3
Restrictions in workplace		χ^2=24.98, p < .0001		χ^2=0.36, p = .5459
No or part	3435(53.0)	6.1	2426(44.6)	43.8
Complete	2811(47.0)	14.1	3234(55.4)	46.8
Regional Variable				
Location		χ^2=0.0521,p = .9743		χ^2=0.9597, p = .6189
East	2132(45.9)	9.9	1913(45.9)	53.3
Center	1010(12.1)	8.5	902(12.3)	49.8
West	3104(42.1)	10.7	2845(41.8)	57.3
Per Capita GDP (Yuan)		χ^2=0.3223, p = .8511		χ^2=0.0616, p = .9697
<20,000	1906(41.2)	10.7	1880(13.0)	56.1
20,000	2080(46.5)	11.4	1906(45.8)	54.7
30,000+	2050(40.4)	8.3	1874(22.2)	46.1

SAS (version 9.3) for statistical analyses.[26] Descriptive statistics were calculated for smoking cessation and quit intention prevalence. Chi-square analyses were conducted to determine the associations between smoking cessation or quit intention, and the selected regional and individual variables using SAS survey procedures.[26] These associations were confirmed by a multilevel logistic regression model using NLMIXED procedure of SAS.[27-29]

To build the multilevel logistic regression model, we started with the Null Model, a 2-level model with random intercepts. A constant was the sole predictor accounting for variation in smoking cessation across these cities. In this base, we entered all individual and regional level variables as fixed main effects to form a final model for evaluating the impact of the variables on smoking cessation. We operationalized our dependent variables of smoking cessation and quit intention as a binary response (no smoking cessation = 1, smoking cessation = 2; no quit attempt = 1, quit intention = 2). The independent variables were those emerged as statistically significant (significant level: 0.1) in the Chi-square tests. All variables with their categories are listed in Table 1. The first category of each variable served as reference in the logistic regression analysis. Backward stepwise regression is the preferred method for exploratory analyses, where analysis begins with a full or saturated model and variables are eliminated from the model in an iterative process. Model fitting was assessed by the likelihood of a change in the -2log. Significance of the random parameter variance estimates was assessed using the Wald joint χ^2 test statistic.[28]

All analyses were weighted.[29,30] Weights included: (1) sampling weight, which is the inverse of the

Table 2
Results of Multiple Logistic Regression

Group	Null model (smoking cessation, OR, 95% CI)	Full Model (smoking cessation, OR, 95% CI)	Null model (quit intention, OR, 95% CI)	Full model (quit intention OR, 95% CI)
Individual Level				
Sex				
Male		1.00		
Female		12.23(5.12-29.21)**		
Occupation				
Managers and clerks		1.00		1.00
Professionals		2.87(1.13-7.31)*		0.24(0.08-0.81)*
Commerce and service		1.09(0.65-1.87)		0.10(0.29-0.38)**
Operations		0.68(0.38-1.16)		0.20(0.08-0.60)**
Students		1.05(0.54-1.89)		0.23(0.07-0.66)**
Retired		1.10(0.44-2.80)		0.35(0.12-1.04)
Others		1.33(0.73-2.43)		0.21(0.08-0.58)**
Restrict smoking at home				
No or part		1.00		
Restriction		2.70(1.51-4.75) **		
Restrict smoking in workplace				
No or part		1.00		
Restriction		1.86(1.09-3.23)*		
Source of cigarettes				
Self-paid				1.00
Non-self-paid				0.25(0.12-0.51)**
Belief about nicotine dependence				
No addiction				1.00
Addiction				0.15(0.05-0.46)**
Smoking situation				
Smoking with others				1.00
Alone				0.28(0.15-0.51)**
Fixed parameters	**7.5586(0.6957) ** **	**3.0759(0.5893)***	**0.5242(0.03292)****	**0.5213(0.07498)****
Random parameters between regions	**12.1875(1.8947)***	**5.0427(0.3587)****	**0.5242(0.03292)****	**15.0559(2.2300)****

***p < .05; **p < .01**

probability of selection, calculated at region, city, district, and community levels, and lastly multiplied together for each level. We did not consider households in our weighting, because there are similar numbers of family members for most of the families under the context of family planning in China (3 persons) so that the probability of selection is the same; (2) non-response weight, which is comprised of household and individual aspects. Household level non-response weights were made in city, whereas individual level non-response weights were made for a combination of each city, age, and sex and their corresponding weighting was the inverse of the response rate. Overall non-response weight was the product of household and individual weights; (3) post-stratification weight, which was made by the combination of sex (male, female) and age (<25years old, 25-, 35, 45, 55 and more) based on estimated distributions of these characteristics from a national survey.[31] The final overall subject-level weight was calculated as the product of the above 3 weights. Chi-square analyses were weighted using the overall subject-level weights, and the multilevel analyses were weighted

using city level and subject level weights respectively.[29,30] As there is no weight statement available for the NLMIXED procedure, these analyses were weighted through a macro method in this study.[29]

RESULTS

A total of 18,875 individuals were identified as potential participants for this study; of these, 17,124 were effectively contacted and agreed to participate in the survey. The number of completed valid questionnaires was 16,866.

The sample included 5660 current smokers, accounting for a smoking prevalence of 30.6% (95% CI: 27.6, 33.5). The daily smoking prevalence was 20.5(95% CI: 17.2, 23.7), occasional smoking prevalence was 10.1(95% CI: 8.1, 12.2).The average number of cigarettes smoked each day was 13.75(95% CI: 12.41, 15.11). Subsequent analysis included 6246 for smoking cessation outcome and 5660 for quit intention outcome. Among study participants, 586 were quitters, reflecting a quitting prevalence of 10.1% (95% CI: 4.2, 16.0); 2842 had tried to quit but relapsed. The successful quitting rate, referring to the percentage of successful quitters among all the smokers who had tried to quit was 23.7% (95% CI: 10.6, 6.2). Among the current smokers 2674 reported an intention to stop smoking sometime in future; so the prevalence of quit intention was 45.5% (95% CI: 38.7, 52.3).

Among the current smokers 15.3% (95% CI:10.7,19.9) consumed the cigarette brands less than 5 Yuan a pack; 40.1% (95% CI:36.0, 44.2) used the brands of 5 to 10 Yuan; 28.8% (95% CI:24.8, 32.8) used the brands of 10 to 15 Yuan; 8.6% (95% CI:6.5,10.8) used the brands of 15 to 20 Yuan, and 7.1% (95% CI:5.7, 8.7) used the brands of over 20 Yuan. The majority of current smokers reported paying for their own cigarettes; 5.9% (95% CI: 4.8, 7.0) often used non-self-paid (gifted) cigarettes. Among current smokers, 34.9% (95% CI: 30.6, 39.2) smoked alone; 39.3% (95% CI: 34.5, 44.1) believed that they were addicted to cigarettes.

Most of the public places [92.6% (95% CI: 87.1, 97.1)] were reported to have “no smoking” signs or other signs about smoking restrictions. However, 36.8% (95% CI: 32.4, 41.7) of all participants saw people smoke in the public places with smoking restriction rules. Less than one-third of the participants [31.5% (95% CI: 27.6, 35.4)] reported complete smoking bans in their workplaces and 20% of them stated that there were complete smoking bans in their homes.

As shown in Table1, smoking cessation was significantly associated with such factors as sex, education, occupation, and complete restrictions on smoking at home and in the workplaces. Quit intention was associated with education, occupation, income, source of cigarettes, perceived addiction to cigarette smoking, smoking situation, and complete restrictions on smoking at home.

Table 2 shows the result of the multilevel logistic regression analysis. Smoking cessation prevalence was higher in women and professionals. Complete restrictions on smoking at home and workplace were positively related to higher quit prevalence. Quit intention was higher among managers and clerks, and lower among those who used non-self-paid (gifted) cigarettes, smoked alone, and perceived addiction to cigarette smoking.

DISCUSSION

This study is the first in China to explore both individual and regional variations in smoking cessation and intention to quit smoking. The approach used in this study is supported by ecological models which suggest that behavioral events are influenced by both individual and environmental variables.[32] Furthermore, understanding environmental influences on smoking cessation is of significant importance from a public health perspective, especially for policy intervention at the regional level. The ‘null’ model, for example, showed the proportion of variation explained by attributes of living in different cities. In both the smoking cessation model and quit intention model the random effects were significant, which likely reflects the influence of both regional cultural and socioeconomic heterogeneity on smoking cessation and quit intention. In the 2 full models the random effects were significant, too, because no regional variables included in this study entered the equations. Further research should explore other regional level variables to explain the regional variations. After adding individual-level variables to the null model for estimating the final model the fixed effect retained its significance. This indicated that some important potential individual level variables were not included in this study.

Many studies have explored factors that may influence smoking cessation. However, these studies generally have been conducted with specific groups[10,11] and the findings may not be able to generalize to a wider population. The findings of this study came from a representative urban population in China, and therefore, have important application value and practical significance.

The smoking cessation prevalence was 10.1%, which was lower than previous findings in China.[10] Also, compared with Western countries,[5,6] China has a much lower quitting rate, reflecting the differences in social and economic development and tobacco control efforts between China and the Western countries. This study showed that 45.5% of Chinese smokers intended to quit, which is higher than the findings in our prior study (24.9%).[33] The increased rate of quit intention may reflect joint tobacco control efforts made in recent years by Chinese governments, social organizations, and international organizations. In this study 23.7% of the smokers who tried to quit smoking had quit successfully, which is higher than the figures in the Western countries.[5,6] A prior study at the national level in China found that only 3.1% of quitters

used pharmacotherapy and 3.0% used counseling services.[10] Another study also suggested that only 4.3% of the quitters had received cessation help,[11] which means that more than 95% of the smokers who had quit smoking successfully did so through unassisted cessation approaches. Although this study did not examine whether or not the quitters sought help in their quit attempts, most of them were likely in the same situation as quitters in other studies. The high prevalence of unassisted cessation might be a cultural norm. Different from the West, the Chinese culture emphasizes spirit and willpower in shaping people's behaviors. As a result, Chinese smokers may tend to change their smoking by themselves rather than by seeking outside help. In the final model, several variables were significantly associated with current smoking. The results of this study showed higher smoking cessation prevalence among women than men. This finding may reflect social norms in China. Smoking is overwhelmingly a male phenomenon in China and traditional negative attitudes towards women's smoking are still dominant.[34] These attitudes may place additional pressures on women smokers to quit smoking. However, China should be alert still to the possible diffusion of smoking among Chinese females as shown in Western countries.[35]

The findings also showed higher smoking cessation prevalence among professionals than in other groups. It is possible that professionals have greater health awareness in general as well as better knowledge of the health risks of tobacco smoking and advanced quitting skills.[14] Also, quit intention was higher in managers and clerks than others. Because this group assumes the role of social management it is possible that they are more easily affected by tobacco control movements. These findings support other studies that show higher quit intention and successful cessation prevalence rates among groups of higher social status.[12, 13] This phenomenon will complicate tobacco control in China further where health resources and social benefits are unequally allocated among the subpopulations.[36,37] The disadvantaged social groups that are marginalized already by a lack of health resources, will be burdened additionally by smoking-attributed health problems.

About one-third (34.9%) of current smokers in the study were found to smoke alone and this was associated with lower quit intention. Several studies have reported smoking alone to be associated with higher frequency and intensity of tobacco use, more nicotine dependence, and less intention to quit.[7,14,15] Similarly, this study revealed that those who perceived being addicted to nicotine were less likely to consider quitting. It should be mentioned that 39.7% of smokers thought they were addicted to nicotine in this study, which was higher than the actual figure (27.1%) measured by FTND (Fagerström Test for Nicotine Dependence).[14] This disparity suggests that many smokers overestimated their nicotine dependence status, and that there is a need to provide information about nicotine dependence.

The study has confirmed findings of a previous study that a complete ban on smoking in households and workplaces is positively associated with successful quitting.[2] Unfortunately, less than half of the respondents reported that their workplaces and households had smoking restrictions. Therefore, supporting smoking bans in workplaces and promoting the establishment of smoke-free homes is likely to be an important step to increase smoking cessation. Findings of the study showed that smoking bans in public places were not associated with increased smoking cessation, which is contradictory to experiences in jurisdictions outside of China.[38,39] Although 18 of the 21 cities had enacted regulations to restrict smoking in public places at the time of this study, compliance with the regulations was low. Unlike in industrial societies, agrarian social mores persist in China. Awareness of legal constraints among the public is low, and compliance with laws is typically weak.[40-42] Finding ways to enforce existing smoking ban policies will be important not only to raise public awareness of the perils of secondhand smoke, but also to increase chances for successful quitting among the smokers. In reality, it is easier to implement a smoking restriction policy in workplaces than in public places because of strong administrative structures and the "acquaintance society" in workplaces. The "acquaintance society," also known as "social relation society, " or "back door society, " is a popular social phenomenon in China, which emphasizes the rule of man rather than the rule of law.[43] Whereas the "acquaintance society" may weaken the legal functions, it imposes restrictions over its members. Smokers in workplaces do not want to lose "face" among acquaintances by disobeying a smoking restriction policy.[24] This situation also applies to smoking restrictions at home, which in part, explain the relationship between household smoking restrictions and higher quitting prevalence, as shown in the study. Perhaps most salient in Chinese culture is the value of family to individuals and society. Chinese family values emphasize collective interests over individual's interests. A strong sense of obligation and responsibility to family is a cherished virtue. In this context, smoking may be perceived as a threat to familial health and financial solvency. Family and peer influences have been associated with smoking behavior in China.[16,24,44] A previous study found that 92% of smokers had received the most advices to quit smoking from family members.[22] Together, these factors may contribute to the effectiveness of smoking restrictions in households, as shown in the study.

In the current study, smokers who used non-self-paid (gifted) cigarettes had a lower intention to quit smoking, possibly due to a source for free cigarettes. Cigarette gifting is an important social cus-

tom in China, particularly among males.[16-18] Offering and receiving cigarettes shows respect for both the sender and the receiver. In many countries, population-based strategies have been proven effective in supporting smoking cessation.[45-48] Furthermore, based on the findings from this study, there are large numbers of smokers currently intending to quit smoking. An effective population-based strategy to combat cigarette gifting would be to redesign the current attractive packaging of cigarettes to make them unsuitable as gifts.

The study has 2 limitations. First, it is cross-sectional, which precludes causal inference. However, the study is large-scaled and its results are likely a strong indicator of the extent and degree of smoking cessation-related issues within the Chinese urban population. Second, the sampling frame focuses on urban areas of China and covers just 21 socio-economically heterogeneous cities. Hence, findings of the study are not generalizable to all of China.

Conclusion

This study explored successful cessation and quit intention prevalence and their determinants in a large urban population in China. Findings from this exploratory study offer directions for policymakers to develop and implement effective tobacco control policies and interventions. Given the enormity of the Chinese smoking-related healthcare burden, reductions in smoking inevitably will increase both population life expectancy and healthy life expectancy.

Human Subjects Statement

This project was approved by the Ethics Committee of the Medical Center, Zhejiang University, and verbal consent was obtained from all respondents prior to commencement of the data collection.

Conflict of Interest Statement

No conflicts of interest noted.

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