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Predictors of intention to quit cigarette smoking among Chinese adults

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Abstract
Background: Cigarette smoking is the highest ranked preventable cause of morbidity and mortality with a significant economic burden in China. The objectives of this study were to examine predictors of intention to quit smoking as well as predictors of previous attempts to quit smoking among a sample of Chinese adult smokers (n=351).
Methods: A survey-based study was conducted by using a convenience sample of adults aged 18 years or older in China. Individuals who smoked at least one cigarette in the past 30 days were defined as smokers and considered as the study cohort. Multivariate logistic regression models were constructed to determine predictors of intention to quit smoking and previous attempts to quit smoking for three outcomes: intend to quit smoking in the next year vs. not, intend to quit smoking in the next 30 days vs. not, and previous attempts to quit smoking vs. not. All statistical analyses were conducted using SAS version 9.2 statistical package.
Results: Majority of smokers reported attempts to quit smoking at least once in the past (60.4%). Nearly half of the smokers indicated an intention to quit smoking in the next year (46.4%), and 31.3% in the next 30 days. Significant predictors of intention to quit cigarette smoking included age, gender, peer pressure, duration of past attempt, sibling's and close friend's tobacco use, inhalation when smoking, and addictive level. Predictors of previous attempts to quit smoking included duration of past attempt.
Conclusions: Findings suggest a high level of a previous quit attempt among smokers and somewhat high rate of intention to quit smoking in the future, underscoring the urgent need to develop effective interventions. Predictors associated with intention to quit smoking and previous attempts to quit smoking among Chinese adult smokers found in this study should be considered when designing interventions.

INTRODUCTION

Tobacco use causes above five million deaths per year and will cause over ten million deaths worldwide annually by 2020 [1]. Approximately 70% of ten million deaths that are caused by tobacco use are expected in developing countries by 2020 [2]. Tobacco use is associated with significant morbidity, predominantly leading to the heart and lung diseases. It is reported that cigarette smoking has a 30-fold increase in the incidence of cancer and over a 9-fold increase in the risk of heart attacks [3-9]. Its use is also a risk factor for chronic obstructive pulmonary disease (COPD) and cancers, including pharyngeal, esophageal, bladder, laryngeal, and pancreatic cancer [10-13].

In China, around 3000 deaths a day were attributed to smoking, reaching almost seven million deaths caused by smoking in 2005 [2, 14]. With a prevalence of about 67% male smokers in China, it is estimated that smoking will kill approximately one-third of Chinese men at their middle age or old age who are under 30 years old from smoking-related diseases by 2030 [15].

In China, over 320 million smokers consume an approximate 1.7 trillion cigarettes every year, which accounts for 40% of cigarettes smoked around the world and cost five billion U.S. dollars in 2000, which accounts for 3.1% of China's national health expenditures [2,16-18].

There are mainly three categories of available smoking cessation interventions, including behavioral interventions, drug interventions, and alternative interventions [19]. In terms of behavioral interventions, stage-based models of behavior indicate that changes in addictive behavior involving progression through several stages, from no desire to quit smoking to form an intention to quit smoking, followed by preparing for the behavior change, implementing the behavior change, and finally maintaining it [20,21]. Moreover, the United States Department of Health and Human Services (USDHHS) Clinical Practice Guideline for Treating Tobacco Use and Dependence recommended that smoking cessation intervention should start with assessing smoker's intention to quit smoking. For those smokers, a five 'A's step should be followed, that is, 'Ask about tobacco use', 'Advise to quit', 'Assess intention to quit', 'Assist with quitting', and 'Arrange follow-up' [22]. Having an intention to quit smoking is strongly associated with previous attempts to quit smoking and smoking cessation, therefore, it is an important preliminary step for quitting smoking [20, 23, 24]. Meanwhile, understanding the factors associated with previous quit attempts may provide better understanding of factors leading to the information of an intention to quit smoking. Smoking cessation interventions should be implemented to the smokers after such identification.

To date, predictors have been found to be significantly associated with intention to quit smoking in a previous study conducted in China include past quit attempts, duration of past attempt, Heaviness of Smoking Index (HIS), outcome expectancy of quitting , worry about future and overall opinion of smoking [20]. In terms of previous attempts to quit smoking, reported significant predictors include demographic and socio-economic characteristic factors, nicotine dependent level, motivation, self-efficacy, and previous quit attempts [25-38]. However, these findings were conducted in different countries other than in China. Furthermore, some possible predictors of intention to quit smoking and previous attempts to quit smoking such as peer pressure, sibling's and close friend's tobacco use, inhalation when smoking, and addictive level among the Chinese adult smokers have yet to be explored.

The objectives of this study were to examine predictors of intention to quit smoking and previous attempts to quit smoking among a sample of Chinese adult smokers. Identifying these predictors is important in improving understanding of predictors of intention to quit smoking that were not yet known and in developing a culturally appropriate effective intervention that can help smokers quit.

METHODS

Study design and data source

A cross-sectional study utilizing a self-administered questionnaire was conducted in a convenience sample of adult smokers aged 18 years or older in China over October 30, 2009 to February 5, 2010.

The questionnaire was adapted from a previously used self-report survey [39, 40]. The survey was distributed at two sites (Nanjing, Jiangsu Province; Chuzhou, Anhui Province) in China, a government agency and a trading company. These two sites were used to include adult participants of diverse demographic and socioeconomic characteristics. Adults who visited these two sites were asked if they intended to anonymously participate in filling out a 15 - 20 minute survey regarding smoking. If they agreed, they were given a survey and asked to drop the completed survey in a sealed box that was available at each of these sites. Informed consent was provided with the survey and participation was voluntary. To assure the quality of the survey data obtained, the survey used translation and back-translation to obtain a conceptual equivalence from English to Chinese.

The self-administrated questionnaire, part of a larger study was divided into four sections: demographics characteristics; exposure to tobacco advertisements through media; tobacco use and experience; and nicotine dependence. Various demographic characteristics including gender, age, marital status, residence, monthly income, employment status, and educational level were examined. The exposure to tobacco advertisements of smoking assessed by whether respondents have been seen or heard advertisements about smoking from television (TV) advertisements or shows, radio advertisements or internet in the last month. Tobacco use and experience consists of questions like peer pressure by asking 'Would you smoke if a cigarette is offered by friends?', previous experience to quit smoking by asking 'How many times have you tried to quit in the past?', number of past quit attempts by asking 'How many times have you tried to quit for at least 24 hours in the past?', duration of past attempt by asking 'how much time did it last to quit more than 24 hours', sibling's tobacco use, and close friend's tobacco use, inhalation when smoking by asking 'Do you inhale when smoke?'. Nicotine dependence consists of six questions: 'How many cigarettes do you smoke every day?', 'How soon after you wake up do you smoke your first cigarette?',

'Which cigarette would you most hate to give up?', 'Do you find it hard to keep from smoking cigarettes in the places where you are not allowed to smoke?', 'Do you smoke if you are sick in bed?', and 'Do you smoke more during the first two hours of the day than during the rest of the day?' [41]. Measures of reasons to quit included: 'It was bad for health.', 'It is not good to smoke as becoming older.', 'Spouse, boyfriend or girlfriend didn't like it.', 'I was not doing well in sports.', 'I thought it was wrong.', and 'I do not look good doing it.'. 'Smokers' were defined as those who smoked at least one cigarette in the past 30 days, which was previously used and reported, by asking 'How many cigarettes did you smoke in the past 30 days?' [42].

Outcome measures

Three primary outcome variables were identified in this study: (1) intend to quit smoking in the next year vs. not, based on the question: 'Are you seriously thinking to quit smoking in the next year?', (2) intend to quit smoking in the next 30 days vs. not, based on the question: 'Are you seriously thinking to quit smoking in the next 30 days?', and (3) previous attempts to quit smoking vs. not, based on the question: 'How many times have you tried to quit smoking?'. Two models were used to assess the predictors of intention to quit smoking in this study which used the transtheoretical model (TTM) of behavioral change and took the stage of changes into consideration.

Statistical analysis

Test retest reliability test of the instrument was evaluated and all correlation coefficients were above 0.7. Cronbach's alpha was used to measure internal consistency of constructs with likert scales and all coefficients were above 0.7 [43].

Descriptive statistics and $\chi 2$-test were used to assess frequencies and associations of sample characteristics with the three outcomes. Univariate logistic regression analyses of participant characteristics were carried out with the outcome variables and results were presented as unadjusted odds ratio (OR) with 95% confidence interval (95% CI). Three multivariate logistic regression models were carried out to determine predictors of intention to quit smoking with the three outcomes after assessing co-linearity between the independent variables. Significant variables (at a priori significance level of 0.05) in the univariate analyses were included and backward elimination was used to arrive at the final models. Gender and age were kept in all multivariate models. Adjusted OR and 95% CI were calculated for predictors of the outcome variables in the models. All statistical analyses were conducted using SAS version 9.2 (SAS Institute, Cary, NC) statistical package at a priori significance level of 0.05.

RESULTS

A total of 1100 surveys were distributed. The response rate was 67.3% with 780 surveys returned. Forty inefficient surveys were removed because 12 participants returned a blank survey, two participants submitted the survey with pages removed, 19 participants returned partially completed surveys, and the seven remaining completed surveys could not be included due to inconsistency in responses. Among the 710 effectively returned surveys, smokers based on the study definition comprised 49.4% of the sample (n=351) and were considered as cohort in further analysis.

Sample characteristics

Among the smokers, majority of respondents were male smokers (90.2%, n=304) and the majority were aged above 25 years (84.8%, n=278), with a sample mean age of 37.7 (±11.0). In this study, 60.4% of the smokers in the sample population reported a previous quit smoking attempt. Nearly half of the smokers indicated an intention to quit smoking in the next year (46.4%), 31.3% in the next 30 days (Figure 1). Figure 2 shows the percentage of each reason for previous attempts to quit smoking. The most commonly cited reason was that believing 'It was bad for health.' (n=186, 73.8%), followed by perceiving 'It is not good to smoke as becoming older.' (n=110, 44.0%) and that 'Spouse, boyfriend or girlfriend didn't like it.' (n=91, 36.4%). Other reasons include 'I was not doing well in sports.' (n=69, 27.4%), 'I thought it was wrong.' (n=64, 25.6%), and 'I do not look good doing it.' (n=56, 22.2%). Patient characteristics are summarized in Table 1 including results of $\chi 2$ test with previously defined outcome variables.

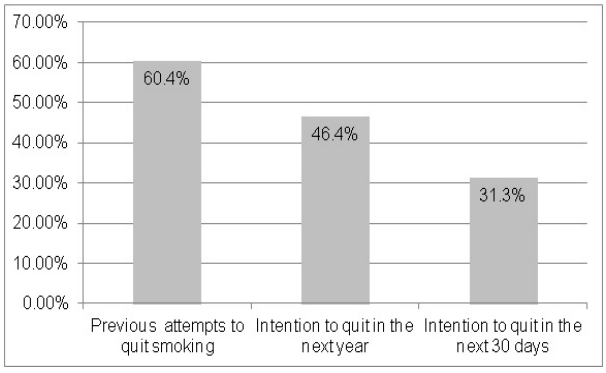

Figure1. Percentage of intention to quit among smokers in three models

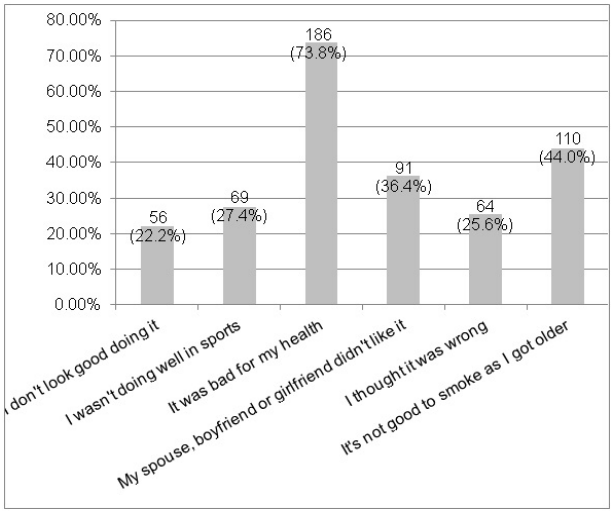

Figure2. Percentage of each reason for previous experience of attempts to quit smoking

Logistic regression results

Univariate logistic regression (unadjusted OR) and multivariate logistic regression (adjusted OR) results with the intention to quit and previous attempts to quit smoking outcome variables are presented in Table 2.

In terms of intention to quit smoking (Table 2), multivariate logistic regression analyses indicated that the smokers who had experience of quitting smoking for more than 24 hours at least once during their lifetime were more willing to quit smoking than those who never tried in all the three models (OR: 6.92, 95% CI: 3.77 – 12.71 in model 1, OR: 9.08, 95% CI: 4.22 – 19.56 in model 2, OR: 8.22, 95% CI: 4.57 – 14.79 in model 3). Participants whose siblings were also smokers were less likely to be willing to quit smoking than those whose siblings who were non-smokers in model 1 and model 2, respectively (OR: 0.47, 95% CI: 0.26 – 0.84 in model 1, OR: 0.38, 95% CI: 0.16 – 0.88 in model 2). In model 1, participants who were aged above 25 years were more likely to be willing to quit smoking than those aged between 18 and 25 years (OR: 2.85, 95% CI: 1.25-6.50), while participants who took the first cigarette 30 minutes after wake up were more likely to be willing to quit smoking than those who took the first cigarette within 30 minutes after wake up (OR: 2.69, 95% CI: 1.43 – 5.09). In model 2, male participants reported less likely to be willing to quit smoking than female participants (OR: 0.30, 95% CI: 0.11 – 0.87). Participants whose close friends were also smokers were less likely to be willing to quit smoking than those who were not (OR: 0.40, 95% CI: 0.17 – 0.94). Participants who indicated an intention to smoke if cigarettes were offered by friends were less likely to be willing to quit smoking compared to those who were not willing to smoke if cigarettes were offered (OR: 0.13, 95% CI: 0.05 – 0.35). Participants who inhaled when smoking were less likely to be willing to quit smoking than those who did not (OR: 0.22, 95% CI: 0.08 – 0.58)

DISCUSSION

Comparing the findings among the three models of this study, it indicates a high rate of a previous quit attempt (60.4%) and a somewhat high rate of intention to quit cigarette smoking within next year (46.4% in the next year, 31.3% in the next 30 days) among smokers in the sample population. This finding is slightly higher than that reported by Feng et al. [20] which indicated a general low (15% - 31%) level of interest in quitting smoking in six cities of China, however, much lower rate of intention to quit cigarette smoking than those reported in developed countries (65% - 81%) [44].

Among six reasons of intention to quit smoking, top two cited reasons were related to their concern for health, which believed it was harmful for health and perceived it is not good when getting older. These findings indicate that smokers may be benefit from an effective education-based intervention where intention to quit smoking can be strengthened. Efforts should be made to train physicians and other health professionals in educating patients about how to take proper smoking cessation actions for smokers who have already acknowledged the harmfulness of smoking. Another commonly cited reason was concern about their spouse, boyfriend or girlfriend's feelings that they didn't like it. This indicates that smokers' spouse, boyfriend or girlfriend can play important roles in smoking cessation, and provide an important supportive role in proposed interventions.

Demographic characteristics, including gender and age were found to be significant, while marital status, educational level, employment status, residency, and monthly income, were not found to be significant predictors of intention to quit smoking or previous attempts to quit smoking. Findings from literature have been inconsistent regarding these demographic characteristics. Our findings are consistent with some of previous studies [20, 45-47], inconsistent with several other studies, where income, and educational level were associated with intention to quit smoking or previous attempts to quit smoking [28-30, 48-50].

Participants who indicated peer pressure, measured by a possibility of smoking if cigarettes offered by friends, were less likely to be willing to quit smoking than those who were not. Furthermore, close friend's smoking status and sibling's tobacco use were both predictors in intention to quit models are consistent with previous studies [51,52]. Given China's smoking culture in which offering cigarettes to others is a traditional way of interacting in social events, gaining social acceptance, and showing their friendliness, any

intervention will have to take into consideration this social aspect. Future interventions that educate non-smokers with their family members or close friends who are smokers regarding the harms of second-hand smoking may aid in helping smokers quit through peer pressure. Social anti-smoking advertisements including TV advertisements, posters, shows, radio advertisements, and internet may also help in educating the public about smoking harms and possibly change the culture where offering cigarettes to friends or colleagues is e a way of interacting in social events, gaining social acceptance, and express of friendliness.

Table 1. Characteristics of intention to quit and previous attempts to quit smoking of Chinese adult smokers

		Intention to quit in the next year		**Intention to quit in the next 30 days**		**Previous attempts to quit smoking**	
Characteristic	Total No (%)	No. (%)	p-value	No. (%)	p-value	No. (%)	p-value
Demographic characteristics							
Gender							
Female	33 (9.8)	15 (50.0)	0.72	11 (37.9)	0.45	17 (53.1)	0.09
Male	304 (90.2)	122 (46.6)		77 (31.1)		110 (37.5)	
Age							
18-25	50 (15.2)	13 (31.0)	0.02*	9 (20.9)	0.08	23 (48.9)	0.13
>25	278 (84.8)	122 (49.8)		81 (35.2)		100 (37.3)	
Exposure to tobacco advertisements through media							
Smoking messages have seen or heard through television							
Against	149 (92.0)	58 (45.3)	0.04*	42 (33.6)	0.01**	54 (38.8)	0.29
For	13 (8.0)	7 (58.3)		9 (75.0)		3 (23.1)	
Tobacco use and experience							
Smoke if cigarette offered by friends							
No	50 (14.4)	24 (54.6)	0.20	26 (60.5)	0.01**	17 (37.8)	0.87
Yes	297 (85.6)	113(44.1)		64 (26.1)		112 (39.0)	
Try smoke in the next six months							
No	63 (18.3)	35 (62.5)	0.01*	33 (63.5)	0.01**	43 (74.1)	0.02*
Yes	281 (81.7)	101 (41.9)		56 (23.8)		158 (58.3)	
How many times tried to quit in the past							
Never	127 (42.3)	29 (26.6)	0.01**	18 (17.3)	0.01**	17 (13.9)	0.01**
≥ once	173 (57.7)	89 (56.7)		54 (36.5)		146 (86.4)	
Time to quit more than 24 hours							
≥ once	163 (48.1)	71 (64.6)	0.01**	71 (48.6)	0.01**	25 (15.8)	0.01**
Never	176(51.9)	43 (27.9)		19 (13.5)		104 (61.2)	
Sibling's tobacco use							
Non-smoker	161 (47.5)	81 (55.5)	0.01**	50 (36.8)	0.02*	54 (35.1)	0.11
Smoker	178 (52.5)	55 (36.7)		35 (24.1)		75 (43.9)	
Close friends smoke							
None	61 (18.2)	28 (56.0)	0.12	17 (60.7)	0.01**	17 (30.9)	0.19
Yes	274 (81.8)	105 (43.2)		67 (26.8)		108 (40.5)	
Inhalation when smoking							
No	47 (14.4)	21 (47.7)	0.87	19 (46.3)	0.02*	18 (38.3)	0.86
Yes	280 (85.6)	112 (45.3)		66 (28.2)		107 (39.6)	
Nicotine dependence							
First cigarette take after wake up							
>30mins	197 (64.2)	97 (65.1)	0.01**	56 (32.6)	0.40	76 (39.8)	0.10
≤30mins	110 (35.8)	43 (27.9)		25 (27.5)		33 (30.3)	

*P<0.05

** P<0.005

Total numbers do not add up to 351 due to missing observations.

Table 2. Univariate and multivariate logistic regression of intention to quit smoking among the three models.

	Intention to quit in the next year		Intention to quit in next 30 days		Previous attempts to quit smoking	
	Unadjusted OR (95% CI)	Adjusted OR (95% CI)	Unadjusted OR (95% CI)	Adjusted OR(95% CI)	Unadjusted OR(95% CI)	Adjusted OR(95% CI)
Demographic characteristics						
Gender						
Female	Reference		Reference		Reference	
Male	0.87 (0.41-1.86)		0.74 (0.33-1.64)	0.30 (0.11-0.87)	1.89 (0.90-3.93)	
Age						
18-25	Reference		Reference		Reference	
>25	2.21 (1.10-4.46)	2.85 (1.25-6.50)	2.05 (0.94-4.49)		1.61 (0.86-3.00)	
Tobacco use and experience						
Smoke if cigarette offered by friends						
No	Reference		Reference	Reference	Reference	
Yes	0.66 (0.35-1.25)		0.23 (0.12-0.45)	0.13 (0.05-0.35)	0.95 (0.50-1.81)	
Time to quit more than 24 hours						
Never	Reference	Reference	Reference	Reference	Reference	Reference
≥ once	4.82 (2.96-7.84)	6.92 (3.77-12.71)	5.44 (2.95-10.04)	9.08 (4.22-19.56)	8.38 (4.95-14.20)	8.22 (4.57-14.79)
Siblings tobacco use						
Non smoker	Reference	Reference	Reference	Reference	Reference	
Smoker	0.47 (0.29-0.74)	0.47 (0.26-0.84)	0.55 (0.33-0.92)	0.38 (0.16-0.88)	0.69 (0.44-1.08)	
Close friends smoke						
None	Reference		Reference	Reference	Reference	
Yes	0.60 (0.32-1.10)		0.38 (0.20-0.71)	0.40 (0.17-0.94)	0.66 (0.35-1.23)	
Inhalation when smoking						
None	Reference		Reference		Reference	
Yes	0.91 (0.48-1.73)		0.46 (0.23-0.90)	0.22 (0.08-0.58)	0.95 (0.50-1.79)	
Nicotine dependence						
First cigarette take after wake up						
≤30mins	Reference	Reference	Reference		Reference	
>30mins	1.85 (1.11-3.08)	2.69 (1.43-5.09)	6.08 (3.40-10.88)		0.66 (0.40-1.08)	

It is not surprising that inhalation when smoking and addictive level were found significant predictors of intention to quit smoking. We examined a number of variables indicating addictive level based on the Fagerström Test for nicotine dependence [53], including cigarette consumption, time to first cigarette taken after wake up, cigarette one would hate most to give up, how hard it is to refrain from smoking when not allowed, and smoking when sick, smoking more in the first two hours vs. rest of the day. Our finding is consistent with several studies [20,54-56]. Smokers who had lower addictive level, measured by the first cigarette taken more than 30 minutes of wake up compared with those who had higher addictive level, measured by the first cigarette taken within 30 minutes of wake up, were more likely to be willing to quit smoking. This finding suggested that when preparing a smoking cessation intervention, inhaling when smoking and addictive level need to be considered in both behavioral and medication interventions. Smokers with a habit of inhaling when smoking can be treated with interventions that decrease frequency of inhaling prior to dropping the habit, while smokers with high addictive level can be treated with interventions that decrease the amount and frequency of cigarette use prior to quitting smoking completely to provide a better chance of a successful quit attempt later [20].

This study has certain limitations. The cross-sectional study design prevents a causal-effect conclusion and the generalizability of the sample might be limited based on a convenience sample and data collection in only two cities in China, as we are unable to describe nonparticipants. The limited sample size might have affected our power to detect significant difference with some variables.

Despite these limitations, this study examines predictors of intention to quit smoking as well as predictors of previous attempts to quit smoking among a sample of Chinese adult smokers by using multivariate models considering stage-based transtheoretical model of the intention to quit smoking, categorized by intention to quit smoking in the next year, and next 30 days. While some predictors of an intention to quit such as that duration of past attempt (time to quit more than 24 hours) was previously described [20], new predictors of intention to quit smoking among Chinese smokers included age (>25 years old), gender (being a male smoker), peer pressure (smoke if cigarettes offered by friends), sibling's and close friend's tobacco use (sibling's tobacco use and close friends smoke), inhalation when smoking, and addictive level (first cigarette take after wake up). Predictors of previous attempts to quit smoking included duration of past attempt. The high rate of previous attempts to quit smoking and somewhat high rates of intention to quit smoking within the next year found in this study demonstrate an urgent need of effective smoking cessation intervention in the Chinese population. Future studies should focus on incorporating the predictors identified in this study in prevention and intervention strategies, such as incorporating non-smokers in the educational smoking cessation intervention and prevention strategies that influence peer pressure surrounding smokers.

CONCLUSIONS

Findings suggest a high level of a previous quit attempt among smokers and somewhat high rate of intention to quit smoking in the future, underscoring the urgent need to develop effective interventions that can ensure successful cessation among those who want to quit. Predictors associated with intention to quit smoking and previous attempts to quit smoking among Chinese adult smokers found in this study should be considered when designing interventions.

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Ethics approval

The study involved human subjects, so the protocol of the study was submitted to the Institutional Review Boards (IRBs) at the University of Houston, the Committee for the Protection of Human Subjects, and was approved for data collection. The IRBs deemed the protocol to be exempt from federal human subjects' regulations because the survey was anonymous and did not expose the participants to risk. The subjects that were included in the study were Chinese adults aged 18 years and older. Those who were aged below 18 years were excluded. All surveys were voluntarily completed by the participants. No personal information or identifier was asked in the questionnaire to maintain the confidentiality and anonymity of the participants. The informed consent was printed on the cover page of the survey. Also, questions based on the consent, if any, were solved orally by investigators prior to completion of the questionnaire.

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Competing interests

None declared.

REFERENCES

1. Geneva: World Health Organization. 2002. The World Health Report 2002: Reducing Risks, Promoting Healthy Life.http://www.who.int/whr/2002/en/index.html [Access date: March 20, 2012].
2. The World Health Organization. 2003. Tobacco & Health in the Developing World. A Background Paper for the High Level Round Table on Tobacco Control and Development Policy. http://ec.europa.eu/health/archive/ph_determinants/life_style/tobacco/documents/who_en.pdf [Access date: March 20, 2012].
3. Wynder EL, Stellman SD. Comparative epidemiology of tobacco-related cancers. Cancer Res. 1977; 37(12): 4608-22.
4. Walser T, Cui X, Yanagawa J, Lee JM, Heinrich E, Lee G, et al. Smoking and lung cancer: the role of inflammation. Proc Am Thorac Soc. 2008; 5(8): 811-5.
5. Proctor RN. Tobacco and the global lung cancer epidemic. Nat Rev Cancer. 200; 1(1): 82-6.
6. Sasco AJ, Secretan MB, Straif K. Tobacco smoking and cancer: a brief review of recent epidemiological evidence. Lung Cancer. 2004; 45 Suppl 2: S3-9.
7. Youlden DR, Cramb SM, Baade PD. The International Epidemiology of Lung Cancer: geographical distribution and secular trends. J Thorac Oncol. 2008; 3(8): 819-31.
8. Lightwood JM, Glantz SA. Short-term economic and health benefits of smoking cessation: myocardial infarction and stroke. Circulation. 1997; 96(4): 1089-96.
9. Yusuf S, Hawken S, Ounpuu S, Dans T, Avezum A,

Lanas F, et al. Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study): case-control study. Lancet. 2004; 364(9438): 937-52.

10. Profita M, Sala A, Bonanno A, Riccobono L, Ferraro M, Grutta SL, et al. Chronic obstructive pulmonary disease (COPD) and neutrophil infiltration: role of cigarette smoke and cyclooxygenase products. Am J Physiol Lung Cell Mol Physiol. 2010; 298(2): L261-9.
11. Dennish GW, Castell DO. Inhibitory effect of smoking on the lower esophageal sphincter. N Engl J Med. 1971; 284(20): 1136-7.
12. Hemelrijck MV, Michaud DS, Connolly GN, Kabir Z. Tobacco use and bladder cancer patterns in three western European countries. J Public Health. 2009; 31(3): 335-44.
13. Fuchs CS, Colditz GA, Stampfer MJ, Giovannucci EL, Hunter DJ, Rimm EB, et al. A prospective study of cigarette smoking and the risk of pancreatic cancer. Arch Intern Med. 1996; 156(19): 2255-60.
14. Gu D, Kelly TN, Wu X, Chen J, Samet JM, Huang JF, et al. Mortality attributable to smoking in China. N Engl J Med. 2009; 360(2): 150-9.
15. Zhang H, Cai B. The impact of tobacco on lung health in China. Respirology. 2003 Mar;8(1): 17-21.
16. Mackay J, Eriksen M. The tobacco atlas. Geneva, Switzerland, World Health Organization, Myriad Editions Limited, 2002. http://www.who.int/tobacco/media/en/title.pdf [Access date: March 17, 2010].
17. Sarna L, Cooley ME, Danao L. The global epidemic of tobacco and cancer. Semin Oncol Nurs. 2003; 19(4): 233-43.
18. Sung HY, Wang L, Jin S, Hu TW, Jiang Y. Economic burden of smoking in China, 2000. Tob Control. 2006; 15:i5-11.
19. Marlow SP, Stoller JK. Smoking cessation. Respir Care. 2003; 48(12): 1238-54; discussion 1254-6.
20. Feng G, Jiang Y, Li Q, Yong HH, Elton-Marshall T, Yang J, et al. Individual-level factors associated with intentions to quit smoking among adult smokers in six cities of China: findings from the ITC China Survey. Tob Control. 2010; 19 Suppl 2: i6-11.
21. Prochaska JO, DiClemente CC, Norcross JC. In search of how people change. Applications to addictive behaviors. Am Psychol. 1992; 47(9): 1102-14.
22. Clinical Practice Guideline Treating Tobacco Use and Dependence 2008 Update Panel, Liaisons, and Staff. A clinical practice guideline for treating tobacco use and dependence: 2008 update. A U.S. Public Health Service report. Am J Prev Med. 2008; 35(2): 158-76.
23. DiClemente CC, Prochaska JO, Fairhurst SK, Velicer WF, Velasquez MM, Rossi JS. The process of smoking cessation: an analysis of precontemplation, contemplation, and preparation stages of change. J Consult Clin Psychol. 1991; 59(2):295-304.
24. Prochaska JO, Goldstein MG. Process of smoking cessation. Implications for clinicians. Clin Chest Med. 1991; 12(4): 727-35.
25. Hyland A, Borland R, Li Q, Yong HH, McNeill A, Fong GT, et al. Individual-level predictors of cessation behaviours among participants in the International Tobacco Control (ITC) Four Country Survey. Tob Control. 2006; 15 Suppl 3:iii83-94.
26. Hyland A, Li Q, Bauer JE, Giovino GA, Steger C, Cummings KM. Predictors of cessation in a cohort of current and former smokers followed over 13 years. Nicotine Tob Res. 2004; 6 Suppl 3: S363-9.
27. Nides MA, Rakos RF, Gonzales D, Murray RP, Tashkin DP, Bjornson-Benson WM, et al. Predictors of initial smoking cessation and relapse through the first 2 years of the Lung Health Study. J Consult Clin Psychol. 1995; 63(1): 60-9.
28. Venters MH, Kottke TE, Solberg LI, Brekke ML, Rooney B. Dependency, social factors, and the smoking cessation process: the doctors helping smokers study. Am J Prev Med. 1990; 6(4): 185-93.
29. Vanasse A, Niyonsenga T, Courteau J. Smoking cessation within the context of family medicine: which smokers take action? Prev Med. 2004; 38(3): 330-7.
30. Hatziandreu EJ, Pierce JP, Lefkopoulou M, Fiore MC, Mills SL, Novotny TE, et al Quitting smoking in the United States in 1986. J Natl Cancer Inst. 1990; 82(17): 1402-6.
31. Tucker JS, Ellickson PL, Orlando M, Klein DJ. Predictors of attempted quitting and cessation among young adult smokers. Prev Med. 2005; 41(2): 554-61.
32. Borland R, Owen N, Hill D, Schofield P. Predicting attempts and sustained cessation of smoking after the introduction of workplace smoking bans. Health Psychol. 1991; 10(5): 336-42.
33. Hellman R, Cummings KM, Haughey BP, Zielezny MA, O'Shea RM. Predictors of attempting and succeeding at smoking cessation. Health Educ Res. 1991; 6(1): 77-86.
34. Zimmerman RS, Warheit GJ, Ulbrich PM, Auth JB. The relationship between alcohol use and attempts and success at smoking cessation. Addict Behav. 1990; 15(3): 197-207.
35. Clark MA, Kviz FJ, Crittenden KS, Warnecke RB. Psychosocial factors and smoking cessation behaviors among smokers who have and have not ever tried to quit. Health Educ Res. 1998; 13(1): 145-53.
36. Burt RD, Peterson AV Jr. Smoking cessation among high school seniors. Prev Med. 1998; 27(3): 319-27.
37. Dijkstra A, de Vries H, Bakker M. Pros and cons of quitting, self-efficacy, and the stages of change in smoking cessation. J Consult Clin Psychol. 1996; 64(4): 758-63.
38. Woodruff SI, Conway TL, Edwards CC. Sociodemographic and smoking-related psychosocial predictors of smoking behavior change among high

school smokers. Addict Behav. 2008; 33(2): 354-8.

39. Peters RJ Jr., Kelder SH, Prokhorov A, Amos C, Yacoubian GS, Agurcia CA, et al. The relationship between perceived youth exposure to anti-smoking advertisements: how perceptions differ by race. J Drug Educ. 2005; 35(1): 47-58.
40. Peters RJ, Kelder SH, Prokhorov A, Springer AE, Yacoubian GS, Agurcia CA et al. The relationship between perceived exposure to promotional smoking messages and smoking status among high school students. Am J Addict. 2006; 15(5): 387-91.
41. Fagerström K. Time to first cigarette; the best single indicator of tobacco dependence? Monaldi Arch Chest Dis. 2003; 59(1): 91-4.
42. Wechsler H, Rigotti NA, Gledhill-Hoyt J, Lee H. Increased levels of cigarette use among college students: a cause for national concern. JAMA. 1998; 280(19): 1673-8.
43. Cronbach, LJ. Coefficient alpha and the internal structure of tests. Psychometrika. 1951; 16:297-334.
44. Hyland A, Laux FL, Higbee C, Hastings G, Ross H, Chaloupka FJ et al. Cigarette purchase patterns in four countries and the relationship with cessation: findings from the International Tobacco Control (ITC) Four Country Survey. Tob Control. 2006; 15 Suppl 3: iii59-64.
45. Yang G, Ma J, Chen A, Zhang Y, Samet JM, Taylor CE, et al. Smoking cessation in China: findings from the 1996 national prevalence survey. Tob Control. 2001; 10(2): 170-4.
46. Fagan P, Augustson E, Backinger CL, O'Connell ME, Vollinger RE Jr, Kaufman A, et al. Quit attempts and intention to quit cigarette smoking among young adults in the United States. Am J Public Health. 2007; 97(8): 1412-20.
47. Martin RA, Rohsenow DJ, MacKinnon SV, Abrams DB, Monti PM. Correlates of motivation to quit smoking among alcohol dependent patients in residential treatment. Drug Alcohol Depend. 2006; 83(1): 73-78.
48. Hymowitz N, Cummings KM, Hyland A, Lynn WR, Pechacek TF, Hartwell TD. Predictors of smoking cessation in a cohort of adult smokers followed for five years. Tob Control. 1997; 6 Suppl 2: S57-62.
49. Abdullah AS, Yam HK. Intention to quit smoking, attempts to quit and successful quitting among Hong Kong Chinese smokers: population prevalence and predictors. Am J Health Promot. 2005; 19(5): 346-54.
50. Yang T, Abdullah AS, Mustafa J, Chen B, Yang X, Feng X. Factors associated with smoking cessation among Chinese adults in rural China. Am J Health Behav. 2009; 33(2): 125-34.
51. Wetter DW, Kenford SL, Welsch SK, Smith SS, Fouladi RT, Fiore MC, et al. Prevalence and predictors of transitions in smoking behavior among college students. Health Psychol. 2004; 23(2): 168-77.
52. Park S, Weaver TE, Romer D. Predictors of the transition from experimental to daily smoking among adolescents in the United States. J Spec Pediatr Nurs. 2009; 14(2):102-11.
53. Heatherton TF, Kozlowski LT, Frecker RC, Fagerström KO. The Fagerström Test for Nicotine Dependence: a revision of the Fagerström Tolerance Questionnaire. Br J Addict. 1991; 86(9): 1119-27.
54. Oakes W, Chapman S, Borland R, Balmford J, Trotter L. "Bulletproof skeptics in life's jungle": which self-exempting beliefs about smoking most predict lack of progression towards quitting? Prev Med. 2004; 39(4): 776-82.
55. Riou França L, Dautzenberg B, Falissard B, Reynaud M. Are social norms associated with smoking in French university students? A survey report on smoking correlates. Subst Abuse Treat Prev Policy. 2009; 4:4.
56. Stoll K. Correlates and predictors of tobacco use among immigrant and refugee youth in a Western Canadian city. J Immigr Minor Health. 2008; 10(6):567-74.