

# Health knowledge and perception of risks among Chinese smokers and non-smokers: findings from the Wave 1 ITC China Survey

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## ABSTRACT

**Background** Awareness of health risks of smoking is strongly associated with smoking behaviour. However, there are no population-based studies of smoking-related health knowledge in China.

**Objective** The aim of current study was to use a population-based sample from the International Tobacco Control China Wave 1 survey to examine variations between current, former and never smokers' health knowledge about smoking and the impact of health knowledge awareness on smokers' intention to quit.

**Methods** A face-to-face interview was conducted with 5986 adult smokers and non-smokers from six cities in China. Respondents were asked whether they believed smoking causes heart disease, stroke, impotence, lung cancer, emphysema, stained teeth, premature ageing in smokers and lung cancer in non-smokers. Current smokers were also asked additional questions on how smoking affects their current and future health as well as whether they had plans to quit smoking and if they believe they would have health benefit from quitting.

**Findings** The overall awareness of health risks of smoking in China was low compared to developed countries. Current smokers in China were less likely than non-smokers and former smokers to acknowledge the consequences of smoking. Current smokers who were more aware of the health consequences of smoking were more likely to intend to quit smoking.

**Conclusion** These findings highlight the need to increase awareness about the health effects of smoking in China, particularly among current smokers to increase quitting.

## INTRODUCTION

At present, approximately 1.3 billion people smoke and more than 5 million people die globally from smoking each year.<sup>1</sup> In contrast to the decline in smoking prevalence among high income countries, tobacco use continues to rise in low and middle-income countries.<sup>1</sup> As a consequence, global tobacco consumption is still increasing and smoking attributable death is projected to rise beyond eight million deaths per year by 2030.

Approximately one-third of the world's smokers—350 million—live in China. Recent estimates suggest that more than a third of Chinese over the age of 15 are smokers, with dramatic differences between genders: approximately 66% of Chinese males smoke compared to only 3% of Chinese females.<sup>2</sup> In addition, more than 70% of all Chinese, or over 600 million Chinese people, are

regularly exposed to secondhand smoke.<sup>3</sup> Given that smoking is a major contributor to chronic obstructive pulmonary disease and lung cancer, both of which are leading causes of death in China, the health burden from tobacco use in China is daunting: tobacco use is estimated to have caused approximately one million premature deaths in 2000 and the death toll is projected to double by 2020 if the present smoking trends continue.<sup>4 5</sup> Overall, up to 100 million Chinese smokers currently under 30 years old are projected to die from smoking.<sup>1</sup> Thus, the success of global tobacco control relies to a large extent upon reductions of smoking in China.

Tobacco control policies have emerged more slowly in China than in many other countries in the region. Until October 2008, Chinese cigarette packages carried obscure health warnings printed on the side of the pack with the vague text-only message that, 'Smoking may harm your health'. Although tobacco advertisements have been banned from mass media, such as TV, radio and newspapers, tobacco companies have successfully used sponsorships and promotions to maintain a visible marketing presence.<sup>6</sup> To date, China does not have a national law to restrict smoking in workplaces and other indoor public venues, while smoking remains common in healthcare facilities and educational facilities.<sup>7</sup> In short, both the state of existing tobacco control regulations in China and their enforcement remain at an early stage.

A primary focus of tobacco control is to raise awareness of the health risks of smoking, and this may be particularly true in low and middle-income countries, most of which have not engaged in campaigns to educate the public on the hazards of smoking. Although increases in perceptions of risk are not always sufficient to reduce smoking on their own, increases in health knowledge are strongly associated with reductions in smoking initiation, increases in cessation behaviour and long-term abstinence from smoking.<sup>1 8 9</sup> Increases in health knowledge also provide support for other tobacco control measures, such as increases in taxation and more comprehensive workplace smoking restrictions.

In China, as in many other low and middle-income countries, there is little published information about the level of health knowledge about smoking.<sup>1</sup> A study conducted among industrial workers in Shanghai two decades ago found that only 53% of smokers and 76% of non-smokers were generally aware that smoking is harmful to health, and only 51% of smokers reported that smoking



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causes lung cancer.<sup>10</sup> A more recent study among Chinese physicians found that a majority knew that smoking causes lung cancer and other chronic obstructive pulmonary disease, but only two-thirds (67%) knew that smoking could cause heart disease.<sup>11</sup> These findings are particularly troubling given that smoking is a primary risk factor for heart disease, another leading cause of premature death in China.<sup>12</sup> Similar gaps in knowledge have been identified in other studies with healthcare providers.<sup>13 14</sup> However, to our knowledge, there are no population-based studies of smoking-related health knowledge in China.

The purpose of this study was to examine beliefs about the health risks of smoking in China among never, former and current smokers. The study also examined sociodemographic differences in the levels of health beliefs, as well as associations with intentions to quit smoking among current smokers.

## METHODS

The ITC China Survey is a prospective cohort survey of 800 adult smokers and 200 adult non-smokers in each of six cities in China: Beijing, Shanghai, Guangzhou, Shenyang, Changsha and Yinchuan. The six cities in the ITC China Survey were selected based on geographical representativeness and levels of economic development. In each city, the ITC China Survey employed a multistage cluster sampling design. Ten street districts (Jie Dao) were randomly selected from each city 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 proportional to the population size of the Ju Wei Hui. Within each selected Ju Wei Hui, a complete list of addresses of the dwelling units (households) was first compiled, and then a sample of 300 households were drawn from the list by simple random sampling without replacement in each city.

In the enumeration process, 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 adult smokers and non-smokers were subsequently approached following the randomised order until 40 adult smokers and 10 adult non-smokers were surveyed. Because of low smoking prevalence among women, one male smoker and one female smoker from every selected household were surveyed whenever possible to increase the sample size for female smokers. At most, one non-smoker was interviewed per household. Where there was more than one person in a sampling category to choose from in a household, the next birthday method was used to select the individual to be interviewed. Up to four visits to a household were made in order to interview the target person(s) within that household. All surveys were conducted 'face-to-face.'

The findings reported here are from Wave 1 of the ITC China Survey, which was conducted between April and August 2006. The Wave 1 cooperation rates, calculated as ratio of completed interviews among the total number of successfully contacts in the initial sample recruitment plan, ranged from 80.0% in Beijing and Guangzhou to 95.0% in Changsha. The response rate, calculated as the ratio of completed interviews among the total number of respondents selected in the initial sample plan, ranged from 39.4% in Yinchuan to 66.0% in Guangzhou. Additional information on survey rates is available in the ITC China technical report.<sup>15</sup>

The enumerators and survey interviewers were organised and trained by China Center for Disease Control (CDC) staff in each city, with supervision from the ITC China Project team at the

China National CDC. Several quality control procedures were put in place, including making MP3 recordings for each of the 800 smoker interviews in each of the six cities, with subsequent random monitoring. All materials and procedures used in the ITC China Survey were reviewed and cleared for ethics by the research ethics board at the University of Waterloo and by the institutional review board at China National Center for Disease Control and Prevention. Additional detail on the ITC China survey is described elsewhere.<sup>15</sup>

## Measures

### Demographic variables

Age, gender, education and income were recorded in the survey. Age was categorised into four groups as '18–24; 25–39; 40–54; 55+'. Education level was categorised into 'low (no education and elementary school); middle (junior high school and high school); high (college and higher)'. Household monthly income was classified as '1000 yuan and under; 1001–5000 yuan; 5001 yuan and above'.

### Smoking status classification

Respondents who had smoked at least 100 cigarettes in their lifetime and who were smoking at the time of the survey were classified as current smokers. Smokers who smoked at least 100 cigarettes in their lifetime but who were not smoking at the time of the survey were classified as former smokers. Those respondents who had smoked fewer than 100 cigarettes were classified as never smokers.

For current smokers, intention to quit was measured by 'Are you planning to quit in the next month, 6 months, beyond 6 months, or not at all?' and categorised into two groups; 1='In the next month/6 months/beyond 6 month' and 0='not at all'.

### Health knowledge of smoking

Respondents were asked whether they believed smoking causes heart disease, stroke, impotence, lung cancer, emphysema, stained teeth, premature ageing in smokers and lung cancer in non-smokers. Responses were coded as 0='no/don't know' versus 1='yes.' A *health knowledge scale* was created by summing the number of 'yes' responses across the 8 diseases/health effects (range=0 to 8).

### Other health beliefs

For current smokers, other health beliefs were measured by asking if respondents agreed with the following statements: (1) 'Every cigarette you take damages your health'; (2) 'Tobacco is addictive'; and (3) 'Your cigarette smoke is dangerous to non-smokers'. Responses were given on a five-point Likert scale where 1='strongly disagree' and 5='strongly agree'. Current smokers were also asked three additional questions: (1) 'How much do you think you would benefit from health and other gains if you were to quit smoking permanently in the next 6 months'; (2) 'To what extent, if at all, has smoking damaged your health'; and (3) 'How worried are you, if at all, that smoking will damage your health in the future?' Response categories were 'not at all', 'a little', 'very much' and 'don't know'.

## ANALYSIS

All statistical analyses were performed using SAS version 9.1 (SAS Institute Inc). Analyses were weighted on sex and age within each city to account for the sampling design of the ITC China Survey.  $\chi^2$  Tests were conducted to examine bivariate differences with smoking status. All odds ratios presented for

**Table 1** Sample characteristics (n=5986)

		Never smokers		Former smokers		Current smokers		Overall	
		%	n	%	n	%	n	%	n
Sex	Male	32.4	348	90.8	168	95.1	4494	83.7	5010
	Female	67.6	726	9.2	17	4.9	233	16.3	976
Age	18–24	5.0	54	0.0	0	1.4	66	2.0	120
	25–39	22.4	240	8.7	16	17.6	831	18.2	1087
	40–54	42.3	454	27.6	51	49.4	2335	47.4	2840
	55+	30.4	326	63.8	118	31.6	1495	32.4	1939
Income	Low	18.5	199	18.9	35	19.6	925	19.4	1159
	Moderate	71.1	764	71.9	133	69.6	3291	70.0	4188
	High	2.9	31	2.2	4	3.7	173	3.5	208
	No answer	7.4	80	7.0	13	7.2	338	7.2	431
Education	Low	10.3	111	20.5	38	13.1	620	12.8	769
	Moderate	60.1	645	55.1	102	65.5	3098	64.2	3845
	High	29.6	318	24.3	45	21.3	1009	22.9	1372
Cigarette smoked/day	0–10					34.9	1639		
	11–20					49.0	2304		
	21–30					8.6	404		
	31+					7.5	354		

the logistic regression model were adjusted for gender, age, income and education.

**RESULTS**

**Sample characteristics**

As shown in table 1, more than 90% of current and former smokers surveyed were male. The majority of respondents (65.6%) were 25–54 years old and 83.9% of current smokers smoked fewer than 20 cigarettes per day.

**Health knowledge overall**

Table 2 shows the extent to which respondents agreed that smoking was indeed a cause of each of the eight health effects. Overall, respondents were most likely to agree that smoking causes stained teeth and lung cancer, followed by emphysema and lung cancer from secondhand smoke. Only about 40% of respondents agreed that smoking causes coronary heart disease (CHD), while only one-fifth agreed that smoking causes stroke and impotence. Approximately 7% of respondents agreed that smoking caused all eight of the health effects.

Significant differences were observed in health knowledge between current, former and never smokers. Overall, current smokers agreed with fewer health effects (mean=3.82 out of 8) compared to former smokers (mean=5.5; p<0.001) and never smokers (mean=5.5; p<0.001). For individual health effects, only 68% of current smokers agreed that smoking causes lung

cancer in smokers, compared to more than 90% of former and never smokers. In addition, only 36% of current smokers agreed that smoking causes CHD, compared to more than half of former and never smokers.

Logistic regression models were conducted to examine differences between current, former and never smokers for each health effect, adjusting for sex, age, income and education. Current smokers were significantly less likely than never and former smokers to agree with each of the eight health effects (p<0.001 in all cases). No significant differences were observed between former and never smokers for any of the eight health effects. Linear regression models were also conducted to examine potential differences in the overall health knowledge scale, adjusting for age, sex, income and education. The pattern was the same as for the individual health effects: current smokers had significantly lower health knowledge scores than never smokers (mean difference=-1.5; p<0.001) and former smokers (mean difference=-1.8; p<0.001), with no difference between never and former smokers.

Additional analyses were conducted to examine the association between sociodemographic factors and measures of health knowledge among current smokers. Higher levels of health knowledge were observed among: older smokers (40–54 years vs 25–39 years, OR=1.78 p=0.018); more educated smokers (high vs. low, OR= 2.56 p=0.007); and smokers with lower daily cigarette consumption (21–30 vs 0–10 CPD, OR=0.42 p=0.008; 11–20 vs 0–10 CPD, OR=0.72 p=0.02). No other significant

**Table 2** Agreement of each knowledge of health effect by smoking status (n=5986)

Knowledge of health effect	Never smokers (n=1074)		Former smokers (n=185)		Current smokers (n=4732)		Overall	
	%	n	%	n	%	n	%	n
Smoking causes stained teeth	95.0	1026	96.1	178	85.0	4024	87.2*	5288
Smoking causes lung cancer in smokers	91.8	996	90.2	162	68.1	3,244	73.0*	4402
Smoking causes emphysema	86.9	935	87.2	158	59.4	2858	65.2*	3951
Secondhand smoke causes lung cancer in non-smokers	83.2	889	76.9	135	53.2	2,531	59.2*	3555
Smoking causes premature ageing	76.0	821	74.2	131	47.3	2,268	53.3*	3220
Smoking causes CHD	54.2	581	59.2	101	36.3	1,737	40.2*	2419
Smoking causes stroke	35.4	401	37.5	60	16.0	791	20.1*	1252
Smoking causes impotence	29.2	320	29.3	46	16.6	814	19.2*	1180
Knowledge of all health effects	13.2	151	16.3	26	5.2	261	7.0*	438

\*Differences between never, former and current smokers significant at p<0.01.

**Table 3** Association between covariates/selected health beliefs and intention to quit among current smokers (n=4673)

Health beliefs		%	OR (95% CI)
Smoke is dangerous to non-smokers	Disagree	4.6	1.00
	Neither	4.1	0.41 (0.16 to 1.07)
	Agree	88.5	1.82 (1.24 to 3.21)
Tobacco is addictive	Don't know	2.9	0.37 (0.16,0.83)
	Disagree	9.1	1.00
	Neither	5.2	0.63(0.39 to 1.00)
Every cigarette damages health	Agree	83.4	1.26 (0.90 to 1.76)
	Don't know	2.4	0.91(0.38,2.19)
	Disagree	10.6	1.00
Worried about future damage from smoking	Neither	10.3	1.14 (0.70 to 1.84)
	Agree	75.4	5.11 (3.32 to 7.86)
	Don't know	3.7	1.64 (0.67 to 4.00)
Smoking has damaged health	Not at all	33.7	1.00
	A little	41.7	4.01 (3.02 to 5.33)
	Very much	18.9	10.44 (7.59 to 14.38)
How much benefit if quit smoking	Don't know	5.7	1.75 (0.99 to 3.09)
	Not at all	33.2	1.00
	A little	40	2.71 (2.19 to 3.36)
Knowledge of health effects scale (0–8)	Very much	17.5	5.70 (4.35 to 7.47)
	Don't know	9.4	1.13 (0.69 to 1.85)
	Not at all	19.3	1.00
Mean among those NOT intending to quit	A little	32.1	3.50 (2.36 to 5.20)
	Very much	35.2	9.96 (6.64 to 14.94)
	Don't know	13.4	1.11 (0.70 to 1.77)
Mean among those intending to quit	Mean among those NOT intending to quit	3.53	
	Mean among those intending to quit	4.71	
	OR for 1 unit increase in score		1.27 (1.21 to 1.34)

OR, 'unadjusted' odds ratio of intending to quit smoking (0, not planning to quit/don't know; 1, within the next month/within the next 6 months/sometime in the future, beyond 6 months).

differences were observed among sex, income and health knowledge levels.

### Other health beliefs

Current smokers were asked to report additional health beliefs (see table 3). The vast majority of current smokers agreed that smoke is dangerous to non-smokers (88.5%) and tobacco is addictive (83.4%). About three-quarters of current smokers agreed that every cigarette damages health. In contrast, less than one-fifth of smokers agreed that smoking has damaged his/her health, one-third of current smokers (33.7%) reported no worry about the future damage from smoking and approximately 35% of current smokers agreed that that they would experience future health benefits very much if they quit smoking within the next 6 months.

### Predictors of health belief perception among current smokers

Analyses were conducted to examine the extent to which health knowledge and other health beliefs among current smokers predicted intention to quit. Overall, 31.9% of current smokers intended to quit at some point in the future. Most of the selected health beliefs were significantly associated with intentions to quit in bivariate analyses, except the belief that 'tobacco is addictive' (see table 3).

We conducted multivariate analyses to examine the predictive relation of health knowledge and health beliefs on intention to quit in greater detail. Measures of health beliefs and the health

knowledge scale were entered in a logistic regression model predicting intention to quit, adjusting for sex, age, income and education (see table 4). The health knowledge scale, and the health beliefs of 'smoke is dangerous to non-smokers; tobacco is addictive' were not significantly associated with intentions to quit; however, all other health beliefs significantly predicted intentions to quit among current smokers.

### DISCUSSION

The findings of this study shed light onto beliefs about smoking in China—one of the leading public health threats to the country. The results indicate reasonable levels of health knowledge for health effects such as lung cancer, comparable with levels in Western countries.<sup>16</sup> However, the findings reveal major gaps in the knowledge of other health effects. For example, approximately 40% of respondents endorsed smoking as a risk factor for heart disease and only one-fifth acknowledged smoking causes stroke—both leading causes of death in China.<sup>12</sup> In addition, less than two-thirds of respondents agreed that secondhand smoke can cause lung cancer.

In terms of health knowledge towards smoking among different smoking status groups, the findings indicate that Chinese smokers were less likely to agree to health effects than either never smokers or former smokers. For example, over 90% of never and former smokers agreed that smoking causes lung cancer, compared to only two-thirds of smokers. Similarly, about 83% of never smokers and 77% of former smokers agreed that secondhand smoke causes lung cancer compared to only half of smokers. These differences persisted even after adjusting for sociodemographic factors, which suggests that the lower levels of health beliefs among Chinese smokers may reflect either an optimistic bias, lower exposure to health information or both. This finding is similar to patterns observed in Western countries, where smokers systematically underestimate their personal risk from smoking, presumably in attempt to minimise cognitive dissonance from smoking and shield themselves from worry.<sup>17–19</sup>

Compared to historical estimates, the findings suggest that levels of health knowledge about the dangers of smoking may be increasing in China. In particular, data from two decades ago shows that only 51% of smokers know smoking causes lung cancer,<sup>10</sup> although differences in the sample profiles complicate comparisons between studies. In addition, the current study only included respondents living in highly developed, urban areas. One might expect levels of health knowledge to be lower in rural areas of China, where access to health information is typically lower. More generally, levels of health knowledge among Chinese smokers were considerably lower than levels previously reported in Western countries.<sup>16</sup> For example, in Canada and Australia—countries widely acknowledged to be leaders in tobacco control—approximately 90% of smokers agreed that smoking causes heart disease and 80% agreed that smoking causes stroke.<sup>16</sup> In contrast, only 36% and 16% of Chinese smokers in the current study agreed that smoking causes heart disease and stroke, respectively. The knowledge awareness gap also exists in secondhand smoke. In Canada and Australia, over 70% of smokers agreed cigarette smoking causes lung cancer in non-smokers, while only about half of Chinese smokers agree with this statement in current study.

The findings of this study indicate that relatively few Chinese smokers intend to quit smoking. Less than a third of smokers indicated that they intend to quit at any point in the future—levels far below Western countries such as Canada and Australia, where approximately three-quarters of all smokers



**Table 4** Adjusted odds ratios† from logistic regression of selected health beliefs on intention to quit (n=4673)

Covariate		OR (95% CI)
Sex	Male	1.00
	Female	1.07 (0.58 to 1.95)
Age	18–24	1.00
	25–39	1.02(0.45 to 2.32)
	40–54	1.28 (0.50 to 3.27)
	55+	1.23 (0.51 to 2.97)
Income	Low	1.00
	Moderate	1.09 (0.87 to 1.37)
	High	1.36 (0.77 to 2.41)
	No answer	0.91 (0.57 to 1.46)
Education	Low	1.00
	Moderate	0.91 (0.67 to 1.24)
	High	0.92 (0.66 to 1.28)
Cigarettes smoked/day	0–10	1.00
	11–20	0.68 (0.57 to 0.81)
	21–30	0.49 (0.35 to 0.68)
	31+	0.48 (0.33 to 0.70)
Knowledge of health effects scale (OR for 1 unit increase)		1.03 (0.98 to 1.09)
Smoke is dangerous to non-smokers	Disagree	1.00
	Neither	0.62 (0.29 to 1.32)
	Agree	0.97 (0.59 to 1.60)
	Don't know	0.52 (0.21, 1.28)
Tobacco is addictive	Disagree	1.00
	Neither	1.02 (0.57 to 1.84)
	Agree	1.05 (0.67 to 1.65)
	Don't know	1.50 (0.54, 4.20)
Every cigarette damages health**	Disagree	1.00
	Neither	0.98 (0.61 to 1.57)
	Agree	1.65 (1.15 to 2.38)
	Don't know	2.05 (1.07,3.93)
Worried about future damage from smoking***	Not at all	1.00
	A little	2.13 (1.63 to 2.78)
	Very much	3.70 (2.35 to 5.83)
	Don't know	1.90 (1.18, 3.08)
	Not at all	1.00
Smoking has damaged health*	A little	1.18 (0.87 to 1.60)
	Very much	1.48 (1.13 to 1.94)
	Don't know	0.91 (0.56, 1.47)
	Not at all	1.00
How much benefit if quit smoking***	A little	2.00 (1.40 to 2.86)
	Very much	3.85 (2.52 to 5.88)
	Don't know	0.91 (0.57 to 1.45)
	Not at all	1.00

Significant levels are indicated as follows:

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001.

†Odds of having intention to quit (0, not planning to quit/don't know, 1, within the next month/within the next 6 months/sometime in the future, beyond 6 months).

intend to quit smoking.<sup>14</sup> As in other studies, intention to quit was positively associated with health beliefs about smoking.<sup>16 20</sup> In particular, smokers who reported greater worry about the future health effects of smoking and smokers who reported health benefits from quitting were most likely to intend to quit. The direction of this association is likely to be a reciprocal one: greater health beliefs are likely to increase intentions to quit, just as greater intentions are also likely to increase perceived risk and agreement with health effects.

Surveys capable of monitoring perceptions of risk and health knowledge among smokers are not well established globally and they are particular rare among low and middle income countries.<sup>1</sup>What few data exist from low and middle-income countries, suggest that health knowledge is considerably lower than in high-income countries, consistent with the current

findings from China.<sup>21–24</sup> However, more direct comparisons across studies are precluded by different sample profiles and the use different measures to assess health knowledge.

### LIMITATIONS

The limitations of this study are common to population-based surveys, including potential biases from non-response. For example, in this study, respondents were usually interviewed at night which resulted in lower proportion of young people, especially in the age group 18–24, in the sample than in the general population. The findings should also be interpreted within the context of the sampling frame: only smokers in large urban areas were sampled in this study and one would expect different results in rural areas. It should also be noted that the measures of health knowledge used in this study—agreement with a list of health effects—represents a fairly low threshold for measuring health knowledge. For example, one might expect lower levels with the use of unprompted questions.

### IMPLICATIONS

China accounts for approximately one-third of the world's smokers and China is one of the biggest cigarette production countries in the world.<sup>1 25</sup> As a result, health knowledge about smoking in China represents an important indicator for tobacco control in China and global efforts to reduce the health burden from tobacco use. Whereas research from high-income countries shows increasing public concern about the health effects of smoking, the current findings suggest that China lags in this key outcome. However, China has ratified the Framework Convention on Tobacco Control—the world's first treaty devoted to public health—which includes provisions in key areas of tobacco control, including more prominent health warnings, restrictions on tobacco marketing and more prominent public smoking restrictions. Effective implementation of these policy measures will be critically important to increasing perceptions of risk from smoking and helping China to avert the looming public health crisis from tobacco use.

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**Patient consent** Obtained.

**Ethics approval** All materials and procedures used in the ITC China Survey were reviewed and cleared for ethics by the Research Ethics Board at the University of Waterloo and by the Institutional Review Board at China National Center for Disease Control and Prevention.

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### REFERENCES

1. *WHO Report on the global tobacco epidemic, 2008: the MPOWER package*. Geneva: World Health Organization, 2008.
2. **Yang G**, Ma J, Liu N, et al. Smoking and passive smoking in Chinese, 2002. *Zhonghua Liu Xing Bing Xue Za Zhi* 2005;**26**:77–83.
3. **Yang G**, Fan L, Tan J. Smoking in China: findings of the 1996 National Prevalence Survey. *JAMA* 1999;**282**:1247–53.

4. *Preventing chronic diseases: a vital investment: WHO Global Report*. Geneva: World Health Organization, 2005. [http://www.who.int/chp/chronic\\_disease\\_report/full\\_report.pdf](http://www.who.int/chp/chronic_disease_report/full_report.pdf).
5. **Lin H**, Murray M, Cohen T, *et al*. Effects of smoking and solid-fuel use on COPD, lung cancer, and tuberculosis in China: time-based, multiple risk factor, modelling study. *Lancet* 2008;**372**:1473–83.
6. **Li L**, Yong HH, Borland R, *et al*. Reported awareness of tobacco advertising and promotion in China compared to Thailand, Australia and the USA. *Tob Control* 2009;**18**:222–7. Published online First: 29 Mar 2009. doi:10.1136/tc.2008.027037.
7. **Li Q**, Hyland A, O'Connor J, *et al*. Support for smoke free policies among smokers and non-smokers in six cities in China: ITC China Survey. *Tob Control* 2010;**19** (Suppl 1):i40–46.
8. **Curry SJ**, Grothaus L, McBride C. Reasons for quitting: intrinsic and extrinsic motivation for smoking cessation in a population-based sample of smokers. *Addict Behav* 1997;**22**:727–39.
9. **Hyland A**, Li Q, Bauer JE, *et al*. Predictors of cessation in a cohort of current and former smokers followed over 13 years. *Nicotine Tob Res* 2004;**6**(suppl 3):S363–69.
10. **Wang W**, Annette JD. Cigarette smoking and sick leave in an industrial population in Shanghai, China. *Int J of Epidemiol* 1992;**21**:293–7.
11. **Jiang Y**, Ong MK, Tong EK, *et al*. Chinese physicians and their smoking knowledge, attitudes, and practices. *AJPM* 2007;**33**:15–22.
12. **He J**, Gu D, Wu X, *et al*. Major causes of death among men and women in China. *N Engl J Med* 2005;**353**:1124–34.
13. **Yan J**, Xiao S, Ouyang D, *et al*. Smoking behavior, knowledge, attitudes and practice among health care providers in Changsha city, China. *Nicotine Tob Res* 2008;**10**:737–44.
14. **Chan SSC**, Sarna L, Wong DCN. Nurses' tobacco-related knowledge, attitudes, and practice in four major cities in China. *JNS* 2007;**39**:46–53.
15. Wave 1(2006) ITC China technical report. <http://www.itcproject.org/library/countries/itcchina/reports/technical/finalitcch>.
16. **Hammond D**, Fong GT, McNeill A, *et al*. Effectiveness of cigarette warning labels in informing smokers about the risks of smoking: findings from the International Tobacco Control (ITC) Four Country Survey. *Tob Control* 2006;**15**(Suppl III):iii19–25.
17. **Weinstein ND**. Accuracy of smokers' risk perceptions. *Ann Beh Med* 1998;**20**:135–40.
18. **Slovic P**. *Smoking: risk, perception & policy*. Thousand Oaks, CA: Sage, 2001.
19. **Weinstein N**, Slovic P, Waters E, *et al*. Public understanding of the illnesses caused by smoking. *Nicotine Tob Res* 2004;**6**:349–55.
20. **Romer D**, Jamieson P. The role of perceived risk in starting and stopping smoking. In: Slovic, ed. *Smoking: risk, perception, and policy*. Thousand Oaks California: Sage, 2001.
21. **Unsal M**, Hamzacebi H, Dabak S, *et al*. Smoking status and levels of knowledge regarding cigarettes among primary school teachers. *South Med J* 2008;**101**:1227–31.
22. **Singh V**, Gupta R. Prevalence of tobacco use and awareness of risks among school children in Jaipur. *J Assoc Physicians India* 2006;**54**:609–12.
23. **Al-Haddad NM**, Hamadeh RR, Bahram SA. Public knowledge and attitudes towards passive smoking. *Saudi Med J* 2005;**26**:2004–6.
24. **Khan JA**, Hussain SF, Malik A, *et al*. Knowledge, attitudes and the prevalence of smoking among hospital attendants in a developing country. *Trop Doct* 2003;**33**:231–4.
25. **The World Market for Tobacco**. Euromonitor International 2007. [http://www.euromonitor.com/The\\_World\\_Market\\_for\\_Tobacco](http://www.euromonitor.com/The_World_Market_for_Tobacco) (accessed 4 Apr 2008).

# 中国吸烟者和非吸烟者的健康知识 与风险认识：ITC中国调查第一轮调查 结果

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## 摘要

**背景：**吸烟相关健康风险的认识程度与吸烟行为之间存在十分强烈的联系，然而，目前在中国尚没有针对吸烟相关健康知识的人群研究。

**目的：**本研究利用ITC中国第一轮调查的人群样本，考察现在吸烟者、过去吸烟者和从不吸烟者之间在关于吸烟的健康知识方面的差异，以及健康知识水平对于吸烟者戒烟意愿的影响。

**方法：**采用面对面访谈的形式对中国六个城市的5986名成年吸烟者和非吸烟者进行调查。询问调查对象是否相信吸烟会导致吸烟者发生心脏病、中风、阳痿、肺癌、肺气肿、牙齿发黄、加速衰老，导致非吸烟者发生肺癌。此外，询问现在吸烟者吸烟对其当前和未来健康有何影响，是否打算戒烟，以及是否认为戒烟会对自己的健康带来益处。

**结果：**与发达国家相比，中国人对于吸烟的健康风险总体认识水平较低。中国的现在吸烟者对于吸烟危害的认识比非吸烟者和过去吸烟者差。更关注吸烟健康后果的现在吸烟者更可能有戒烟打算。

**结论：**以上结果表明，有必要提高中国人对于吸烟健康风险的认识，特别是在现在吸烟者当中，从而提高戒烟率。

## 背景

目前全世界大约有13亿人吸烟，每年全球死于吸烟的人数超过500万。<sup>1</sup> 与高收入国家吸烟率正在下降形成鲜明对比的是，低收入和中等收入国家的烟草使用仍然不断上升。<sup>1</sup> 其结果就是全球烟草消费量依然在上升，据预测，到2030年烟草归因死亡人数将超过每年800万。

全世界大约三分之一—3亿5千万吸烟者都在中国。近期的数据显示，中国15岁以上人口当中有超过三分之一都是吸烟者，同时其中存在巨大的性别差异：约66%的中国男性吸烟，而仅有3%的中国女性吸烟。<sup>2</sup> 与此同时，在整个中国人口当中有超过70%，也就是6亿多人经常暴露于二手烟。<sup>3</sup> 鉴于吸烟是慢性阻塞性肺病和肺癌的主要危险因素之一，而这两种疾病又名列中国死因榜前列，因此在中国烟草使用所带来的卫生负担是惊人的：据估计，2000年烟草使用导致了大约100万例早亡，同时预测显

示，如果当前的吸烟趋势得不到遏制，到2020年这一死亡数字还要翻一番。<sup>4,5</sup> 总的来讲，现在年龄在30岁以下的中国吸烟者当中将有大约1亿死于吸烟。<sup>1</sup> 因此，全球烟草控制事业的成败很大程度上要看中国能否减少吸烟。

与其他很多国家相比，中国的烟草控制政策还比较落后。直到2008年10月，中国的烟草包装盒上都只是在侧边上用含糊的文字印着一句“吸烟有害健康”。尽管在电视、广播和报纸等大众媒体上已经禁止了烟草广告，但是烟草企业已然成功地通过赞助和促销手段维持了显著的市场呈现度。<sup>6</sup> 时至今日中国也还没有一个全国性的法律，限制在室内工作场所和其它室内公共场所吸烟，吸烟在医疗机构和教育机构场所当中依然十分常见。<sup>7</sup> 简而言之，中国现有的烟草控制法规及其实施水平都还处于初级阶段。

烟草控制工作的一个重点是提高对吸烟健康危害的认识，这一点在中低收入国家尤其重要——这些国家当中大多数都没有开展关于吸烟危害的公众教育。尽管提高风险认识作为单独的一项措施并不足以减少吸烟，但是增加健康知识减少起始吸烟、增强戒烟行为和长期保持戒烟之间存在显著的联系。<sup>8,9</sup> 此外，提高健康知识还可以为其它控烟措施提供支持，譬如提高烟税和更加全面地在工作场所禁烟。

和其他很多中低收入国家一样，中国关于吸烟健康知识水平的研究也很匮乏。<sup>1</sup> 根据一项二十年前在上海工人中开展的研究显示，仅有53%的吸烟者和76%的非吸烟者知道吸烟对健康是有害的，仅有51%的吸烟者相信吸烟可以导致肺癌。<sup>10</sup> 一项较新的针对中国医生的研究发现，大多数医生都知道吸烟可以导致肺癌和其它慢性阻塞性肺病，但仅有三分之二（67%）的医生知道吸烟可以导致心脏病。<sup>11</sup> 鉴于吸烟是心脏病的主要危险因素之一，而心脏病又是中国主要早亡死因之一，<sup>12</sup> 这些研究结果就显得特别让人担忧了。另外一些针对医务工作者的研究也发现了类似的知识空白。<sup>13,14</sup> 但是，据我们所知，目前还没有针对中国吸烟相关健康知识的人群研究。

本研究的目的是为了探索中国从不吸烟者、过去吸烟者和现在吸烟者对于吸烟健康风险的认识。本研究还对人口统计学特征与健康知识水平和现在吸烟者的戒烟意愿之间的关系进行了讨论



本论文按照BMJ杂志解锁办法可在网上免费下载，详见：<http://tobaccocontrol.bmj.com/site/about/unlocked.xhtml>

## 方法

ITC中国调查是一项针对中国六个城市，每城市800名成年吸烟者和200名成年非吸烟者开展的前瞻性人群调查，包括北京、上海、广州、沈阳、长沙和银川。参加ITC中国调查的六个城市是根据各城市的地理代表性和经济发展水平选择出来的。在每个城市，ITC中国调查都使用的是多阶段整群抽样设计。其中每个城市分别随机选择10个街道，入选概率与街道人口比例成正比。在每个街道内再选择两个居委会，入选概率与各居委会人口比例成正比。对每个入选居委会首先编制居住单位（家庭）地址全表，然后采用不放回简单随机抽样的方法从名单中抽出300户家庭。

在点算过程中收集这300户家庭所有成年人的年龄、性别和吸烟状况信息。点算后的300户家庭随机排序，然后根据这一随机顺序对其中的成年吸烟者和非吸烟者进行调查，直到40名成年吸烟者和10名成年非吸烟者的调查名额完成为止。由于女性当中烟草流行率低，只要条件许可，就在每一户入选家庭中调查一名男性吸烟者和一名女性吸烟者，以增加女性的样本量。每户家庭最多访问一名非吸烟者。如果一户家庭当中同一采样类别下不止一名满足条件可选择的对象，则采取下次生日法选择访谈对象。一户家庭最多拜访四次，所有调查都采取面对面调查方式开展。

本文中的研究结果来自于ITC中国调查第一轮。第一轮调查的时间是2006年4月至8月，合作率是指完成调查的人数与包括完成调查和拒绝调查在内的总人数之比，合作率在80.0%（北京）到95.0%（长沙）之间不等。应答率是完成调查数和初始样本当中选择的调查对象总数之比，应答率从39.4%（银川）到66.0%（广州）之间不等。更多信息可参考《ITC中国调查第一轮技术报告》。<sup>15</sup>

各城市CDC人员负责对点算人员和调查人员进行组织和培训，由在中国CDC的ITC中国工作小组负责提供支持和监督。ITC中国调查采取了多项质量控制程序，包括对每个城市的800名吸烟者调查对象录制MP3录音，并随机抽取一部

分录音进行核对。ITC中国调查中的所有材料和程序均经过滑铁卢大学和研究伦理委员会以及中国疾病预防控制中心伦理审查委员会的伦理审批。对于ITC中国调查的其它细节在其它文章当中有详细的介绍。<sup>15</sup>

### 测量指标

#### 人口统计学变量

调查对年龄、性别、教育水平和收入水平等信息进行了记录。年龄分四组：18-24岁、25-39岁、40-54岁，55岁及以上。教育水平分为：低（未受教育或小学文化）、中（初中或高中文化）、高（大学文化程度或以上）。家庭月收入水平分为：1000元及以下、1001-5000元、5001元及以上。

#### 吸烟状况分类

曾经吸过100支以上卷烟且在调查时仍在吸烟的调查对象被定义为现在吸烟者。曾经吸过100支以上卷烟但在调查时不吸烟的吸烟者被定义为过去吸烟者。曾吸烟总数低于100支的调查对象被划分为从不吸烟者。

对现在吸烟者调查其戒烟意愿，所用问题是：“你打算戒烟吗？（下个月之内/接下来的6个月中/6个月以后的某一天/没打算戒烟？”按结果分两组：1=“下个月之内/接下来6个月中/6个月以后的某一天”，0=“没打算戒烟”。

#### 关于吸烟的健康知识

询问调查对象是否认为吸烟会导致心脏病、中风、阳痿、肺癌、肺气肿、牙齿发黄和加速衰老，导致非吸烟者发生肺癌。答案编码：0=“否/不知道”，1=“是”。将“是”的答案求和，得出一个健康知识评分，覆盖8种疾病/健康效果（范围：0-8）。

#### 其它健康观点

对现在吸烟者，通过询问调查对象是否同意下列陈述，以评估其它健康观点：（1）“你吸的每支烟都会损害健康”；

表1. 调查样本特征 (n= 5,986)

		从不吸烟者		过去吸烟者		现在吸烟者		合计	
		%	n	%	n	%	n	%	n
性别	男性	32.4	348	90.8	168	95.1	4,494	83.7	5,010
	女性	67.6	726	9.2	17	4.9	233	16.3	976
年龄	18-24	5.0	54	0.0	0	1.4	66	2.0	120
	25-39	22.4	240	8.7	16	17.6	831	18.2	1,087
	40-54	42.3	454	27.6	51	49.4	2,335	47.4	2,840
	55+	30.4	326	63.8	118	31.6	1,495	32.4	1,939
家庭月收入	低	18.5	199	18.9	35	19.6	925	19.4	1,159
	中	71.1	764	71.9	133	69.6	3,291	70.0	4,188
	高	2.9	31	2.2	4	3.7	173	3.5	208
	无应答	7.4	80	7.0	13	7.2	338	7.2	431
教育	低	10.3	111	20.5	38	13.1	620	12.8	769
	中	60.1	645	55.1	102	65.5	3,098	64.2	3,845
	高	29.6	318	24.3	45	21.3	1,009	22.9	1,372
平均每日吸烟支数	0-10					34.9	1,639		
	11-20					49.0	2,304		
	21-30					8.6	404		
	31+					7.5	354		



(2)“烟草是成瘾的物质”; (3)“烟草的烟雾对不吸烟者有害”。调查对象使用Likert量表评分, 总分为5分, 其中: 1=“非常反对”, 5=“非常同意”。此外, 对现在吸烟者还询问了下面的问题: (1)“如果你在接下来的6个月中彻底戒烟, 你认为在健康及其他方面会有多大收益?” (2)“吸烟已经在多大程度上损害了你的健康?” (3)“你是否担心吸烟会损害你今后的健康?” 答案分为“一点也不”、“有点”、“很大”和“不知道”。

## 分析

所有统计分析都使用SAS 9.1 (SAS Institute Inc.) 进行。分析中考虑到调查的抽样设计, 对各城市的性别和年龄进行加权处理。使用  $\chi^2$  检验考察吸烟状况间的二元差异。Logistic 回归模型使用性别、年龄、收入和教育程度进行调整。

## 结果

### 样本特征

如表1所示, 90%以上的现在吸烟者和过去吸烟者都是男性。大多数调查对象年龄在25-54岁之间 (65.6%), 83.9%的现在吸烟者每天吸烟少于20支。

### 总体健康知识

表2中显示调查对象在多大程度上同意吸烟确实会导致8种健康后果。总的来说, 调查对象最倾向于同意吸烟会导致牙齿发黄和肺癌, 其次是肺气肿和二手烟导致肺癌。仅有大约40%的调查对象同意吸烟会导致冠心病, 仅有五分之一同意吸烟会导致中风和阳痿。约7%的调查对象同意吸烟会导致所有八种健康影响。

现在吸烟者、过去吸烟者和从不吸烟者之间在健康知识方面存在显著差异。总体上讲, 与过去吸烟者 (均值=5.5,  $p<0.001$ ) 和从不吸烟者 (均值=5.5,  $p<0.001$ ) 相比, 现在吸烟者认同的健康影响比较少 (均值=3.82, 满分=8)。就单个的健康后果而言, 仅有68%的现在吸烟者同意吸烟可以导致肺癌, 而这一比例在过去吸烟者和从不吸烟者当中都超过90%。此外, 现在吸烟者中仅36%同意吸烟会导致冠心病, 这个比例在过去吸烟者和从不吸烟者当中也都过半。

表3. 现在吸烟者中各协变量及部分健康认知与戒烟打算之间的联系 (n=4,673)

健康认知		%	OR (95%CI)
烟草的烟雾对不吸烟者有害	不同意	4.6%	1.00
	无所谓	4.1%	0.41 (0.16, 1.07)
	同意	88.5%	1.82 (1.24, 3.21)
烟草是成瘾的物质	不知道/无法回答	2.9%	0.37 (0.16, 0.83)
	不同意	9.1%	1.00
	无所谓	5.2%	0.63(0.39, 1.00)
	同意	83.4%	1.26 (0.90, 1.76)
你吸入的每支烟都会损害健康	不知道/无法回答	2.4%	0.91(0.38, 2.19)
	不同意	10.6%	1.00
	无所谓	10.3%	1.14 (0.70, 1.84)
	同意	75.4%	5.11 (3.32, 7.86)
担心吸烟会损害今后的健康	不知道/无法回答	3.7%	1.64 (0.67, 4.00)
	一点也不	33.7%	1.00
	有点担心	41.7%	4.01 (3.02, 5.33)
	很担心	18.9%	10.44 (7.59, 14.38)
吸烟已经在多大程度上损害了你的健康	不知道/无法回答	5.7%	1.75 (0.99, 3.09)
	一点也不	33.2%	1.00
	有点	40%	2.71 (2.19, 3.36)
	很大	17.5%	5.70 (4.35, 7.47)
如果在接下来的6个月中彻底戒烟, 在健康及其它方面会有多大收益	不知道/无法回答	9.4%	1.13 (0.69, 1.85)
	一点也不	19.3%	1.00
	有点	32.1%	3.50 (2.36, 5.20)
	很大	35.2%	9.96 (6.64, 14.94)
吸烟的健康危害知识的量表 (0-8)	不知道/无法回答	13.4%	1.11 (0.70, 1.77)
	不打算戒烟的吸烟者均数	3.53	
	打算戒烟的吸烟者均数	4.71	
量表评分增加1分对应的比值比		1.27 (1.21, 1.34)	

OR=“未调整”的打算戒烟比值比 (0: 不打算戒烟或不知道, 1: 打算在下一个月之内/接下来的6个月中/6个月以后的某一天戒烟)

表2. 不同吸烟状态的调查对象对吸烟健康危害知识的知晓度 (n=5,986)

吸烟健康危害知识	从不吸烟者 (n=1,074)		过去吸烟者 (n=185)		现在吸烟者 (n=4,732)		合计	
	%	n	%	n	%	n	%	n
吸烟导致牙齿发黄	95.0	1026	96.1	178	85.0	4,024	87.2*	5,288
吸烟导致吸烟者患肺癌	91.8	996	90.2	162	68.1	3,244	73.0*	4,402
吸烟导致肺气肿	86.9	935	87.2	158	59.4	2,858	65.2*	3,951
被动吸烟导致非吸烟者患肺癌	83.2	889	76.9	135	53.2	2,531	59.2*	3,555
吸烟导致加速衰老	76.0	821	74.2	131	47.3	2,268	53.3*	3,220
吸烟导致冠心病	54.2	581	59.2	101	36.3	1,737	40.2*	2,419
吸烟导致中风	35.4	401	37.5	60	16.0	791	20.1*	1,252
吸烟导致阳痿	29.2	320	29.3	46	16.6	814	19.2*	1,180
所有吸烟健康危害知识	13.2	151	16.3	26	5.2	261	7.0*	438

\*从不吸烟者、过去吸烟者及现在吸烟者之间差异有显著性,  $p<.001$ 。

我们建立了Logistic回归模型对现在吸烟者、过去吸烟者和从不吸烟者之间就每种健康影响的差异进行比较分析，并对性别、年龄、收入和受教育水平进行相应调整。现在吸烟者同意八种健康后果中每一种的可能性都显著低于过去吸烟者和从不吸烟者（8种健康后果均为 $p < 0.001$ ）。在各项健康影响上都没有观察到过去吸烟者和从不吸烟者之间存在显著差异。此外，我们还建立了线性回归模型考察总体健康知识量表得分中潜在的差异，并就年龄、性别、收入和受教育水平进行相应调整。结果同单个健康影响的模式一致：现在吸烟者的健康知识得分显著低于从不吸烟者（平均差=-1.5,  $p < 0.001$ ）和过去吸烟者（平均差=-1.8,  $p < 0.001$ ），而从不吸烟者和过去吸烟者之间无显著性差异。

另外我们还进行了相应的分析，计算现在吸烟者的社会人口因素和健康知识指标之间的联系。观察发现下列现在吸烟者群体的健康知识水平较高：年龄较大的吸烟者（40-54岁与25-39岁比较， $OR=1.78$ ,  $p=0.018$ ），受教育程度较高的吸烟者（高等教育程度与低教育程度相比， $OR=2.56$ ,  $p=0.007$ ），每日吸烟较少的吸烟者（每日吸21-30支烟的与0-10支的相比， $OR=0.42$ ,  $p=0.008$ ；每日吸11-20支烟的与0-10支的相比， $OR=0.72$ ,  $p=0.02$ ）。性别、收入和健康知识水平之间未发现有显著差异。

### 其它健康观点

在现在吸烟者中还调查了其它健康观点（见表3）。绝大多数现在吸烟者都同意烟草的烟雾对不吸烟者有害（88.5%）以及烟草是成瘾的物质（83.4%）。大约四分之三的现在吸烟者同意吸入的每支烟都会损害健康。而不到五分之一现在吸烟者认为吸烟已经对自己的健康造成了损害，大约三分之一的现在吸烟者（33.7%）表示自己不担心吸烟会对自己今后的健康造成损害，大约35%的现在吸烟者认同自己如果在半年内戒烟可以获得很大的健康收益。

### 现在吸烟者中的健康观点认知预测指标

我们分析了在现在吸烟者中，其健康知识和其它健康观点认知水平可以在多大程度上预测其戒烟意愿。总体上，31.9%的现在吸烟者都打算在未来的某个时间戒烟。二元回归结果显示，我们选用的大多数健康知识/观点都与戒烟意愿之间存在显著性关联，除了“烟草会成瘾”这一个观点例外（见表3）。

此外，我们还进行了多元回归分析进一步考察健康知识和健康观点与戒烟意愿之间的预测关系。健康观点和健康知识量表得分结果被代入戒烟意愿预测Logistic回归模型，并就性别、年龄、收入和教育水平进行了调整（见表4）。健康知识量表和“烟草的烟雾对不吸烟者有害”以及“烟草是成瘾的物质”与戒烟意愿之间不存在显著的联系，而其它所有健康观点都可以有效地预测现在吸烟者的戒烟意愿。

## 讨论

吸烟是中国面临的的最严重的公共卫生威胁之一，本研究的结果揭示了中国目前关于吸烟的健康知识认知水平。结果发现，中国在“吸烟导致肺癌”的健康知识认知方面与很多西方国家的水平相似。<sup>16</sup> 但是，本研究结果也指出，中国在吸烟引起的其它健康影响方面的知识仍然比较薄弱譬如，只有大约40%的调查对象认同吸烟是心脏病的危险因素，仅五分之一认同吸烟可以导致中风——这两种疾病都是中国最严

表4: 研究健康认知与戒烟打算关系的Logistic回归模型得出的调整比值比 (n=4,673)

协变量		OR (95% CI)
性别	男性	1.00
	女性	1.07 (0.58 - 1.95)
年龄	18-24	1.00
	25-39	1.02(0.45 - 2.32)
	40-54	1.28 (0.50 - 3.27)
	55+	1.23 (0.51 - 2.97)
家庭月收入	低	1.00
	中	1.09 (0.87 - 1.37)
	高	1.36 (0.77 - 2.41)
	无应答	0.91 (0.57 - 1.46)
教育	低	1.00
	中	0.91 (0.67 - 1.24)
	高	0.92 (0.66 - 1.28)
平均每日吸烟支数	0-10	1.00
	11-20	0.68 (0.57 - 0.81)
	21-30	0.49 (0.35 - 0.68)
	31+	0.48 (0.33 - 0.70)
吸烟有害健康知识的量表 (量表评分增加1分对应的比值比)		1.03 (0.98 - 1.09)
烟草的烟雾对不吸烟者有害	不同意	1.00
	无所谓	0.62 (0.29 - 1.32)
	同意	0.97 (0.59 - 1.60)
	不知道/无法回答	0.52 (0.21, 1.28)
烟草是成瘾的物质	不同意	1.00
	无所谓	1.02 (0.57 - 1.84)
	同意	1.05 (0.67 - 1.65)
	不知道/无法回答	1.50 (0.54, 4.20)
你吸入的每支烟都会损害健康**	不同意	1.00
	无所谓	0.98 (0.61 - 1.57)
	同意	1.65 (1.15 - 2.38)
	不知道/无法回答	2.05 (1.07, 3.93)
担心吸烟会损害今后的健康***	一点也不	1.00
	有点担心	2.13 (1.63 - 2.78)
	很担心	3.70 (2.35 - 5.83)
	不知道/无法回答	1.90 (1.18, 3.08)
吸烟已经在多大程度上损害了你的健康*	一点也不	1.00
	有点	1.18 (0.87 - 1.60)
	很大	1.48 (1.13 - 1.94)
	不知道/无法回答	0.91 (0.56, 1.47)
如果在接下来的6个月中彻底戒烟，在健康及其它方面会有多大收益***	一点也不	1.00
	有点	2.00 (1.40 - 2.86)
	很大	3.85 (2.52 - 5.88)
	不知道/无法回答	0.91 (0.57, 1.45)

显著性水平:

\* $p < 0.05$  \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

†打算戒烟的比值: (0: 不打算戒烟或不知道, 1: 打算在下个月之内/接下来的6个月中/6个月以后的某一天戒烟)

重的死因之一。<sup>12</sup> 此外, 只有不到三分之二的调查对象同意二手烟可以导致肺癌。

就不同吸烟状态人群之间的健康知识情况而言, 中国现在吸烟者与过去吸烟者和从不吸烟者相比, 较少认同吸烟的各种健康影响。例如, 超过90%的从不吸烟者和过去吸烟者都同意吸烟可以导致肺癌, 而这一比例在现在吸烟者中仅占三分之二。同样, 约83%从不吸烟者和77%的过去吸烟者同意二手烟可以导致肺癌, 而仅有一半的现在吸烟者同意这一观点。这些差异在对社会人口因素进行了调整之后仍然存在, 这就表示中国吸烟者当中的健康观点水平低有可能是由于存在乐观偏倚, 也有可能是因为接触健康信息较少, 或者两者因素都有。这一结果同西方很多国家观察到的模式很类似, 这些国家的吸烟者普遍地低估自己的吸烟风险, 这可能是因为试图降低自己对吸烟的负面认识, 从而保护自己不会担忧。<sup>17-19</sup>

与既往数据进行比较, 本次研究的结果显示中国对于吸烟危害的健康知识水平正在提高。尽管研究的样本情况之间存在差异, 使二者的比较变得很复杂, 但是20年前的数据显示仅有51%的吸烟者知道吸烟可以导致肺癌,<sup>10</sup> 这种差异还是很明显的。除此之外, 本次研究的调查对象仅限于居住在经济发达的城市地区的个体。而由于农村接触到健康知识的机会更少, 我们可以预测农村地区的健康知识水平可能会更低一些。从总体上来讲, 中国吸烟者的健康知识水平明显低于很多西方国家此前报道的数据,<sup>16</sup> 譬如澳大利亚和加拿大两个国家普遍被认为在控烟领域居于领先水平, 两国吸烟者当中大约90%都同意吸烟可以导致心脏病, 80%认同吸烟会导致中风。<sup>16</sup> 相较之下, 本次研究发现中国吸烟者当中仅分别有36%和16%的人同意这两个观点。这种认知水平上的差距同样存在于二手烟方面。加拿大和澳大利亚有超过70%的吸烟者都认同吸烟会导致非吸烟者患肺癌, 而本次研究结果发现仅有约一半的中国吸烟者同意这一观点。

本研究结果显示, 相对来说中国吸烟者打算戒烟的较少仅有不到三分之一的吸烟者表示自己打算在未来的某个时间戒烟——这一水平远远低于诸如加拿大和澳大利亚等西方国家的水平, 在这些国家大约四分之三的吸烟者都计划要戒烟。<sup>14</sup> 正如其它研究结论认为, 戒烟意愿与对吸烟的健康观点的认知水平之间存在正相关,<sup>16 20</sup> 特别是很担心吸烟对自己以后的健康会产生影响的吸烟者和从戒烟取得了健康收益的吸烟者最可能打算戒烟。这种联系可能是双向的——健康观点水平越高则戒烟的意向越强烈, 反之, 戒烟意愿越强也可能提高对吸烟健康风险和影响的认同。

目前全球吸烟者风险认识和健康知识的监测系统还没有很好的建立起来, 在中低收入国家这种监测就就更加少了。<sup>1</sup> 中低收入国家现存的有限数据显示这些国家的健康知识水平远低于高收入国家, 这与本次中国研究的结果是一致的。<sup>21-24</sup> 但是, 由于不同的研究样本条件不同, 用于评估健康知识的指标也不一样, 因此未能进行更加直接的比较。

## 局限性

本研究存在的局限性在基于人群的调查研究中普遍存在, 即无应答带来的潜在偏倚。例如, 在本次研究中, 对调查对象的访谈通常是在晚上进行, 这就使得样本当中的年轻人比例, 特别是18-24岁年龄段人群的比例比一般人群低。

此外, 对结果的解释也必须考虑抽样框的背景: 本次研究仅采集了大城市的吸烟者样本, 因此如果在农村地区抽

样研究结果可能就会有所不同。另外要注意的一点是, 本次研究使用的健康知识指标——对一系列健康影响的认同情况, 这就测定健康知识的水平而言其门槛是很低的, 例如, 如果使用的是无提示性问题, 那么健康知识的认知水平有可能更低。

## 意义

全世界大约三分之一的吸烟者都在中国, 而中国又是全球最大的烟草生产国之一。<sup>1 25</sup> 因此, 中国的吸烟健康知识水平对于中国烟草控制事业和全球减少烟草使用带来的卫生负担的事业, 都是很重要的指标。高收入国家的研究结果表明公众对于吸烟健康危害的忧虑正在不断升温, 而此次研究结果显示中国在这一重要方面仍比较落后。不过, 中国已经签署了《烟草控制框架公约》-世界上第一部致力于公共卫生的公约, 其中包括了针对烟草控制核心领域的很多规定, 譬如提高健康警示标识显著性, 限制烟草市场营销和提高对公共场所吸烟的限制等。这些政策措施的有效实施对于提高吸烟风险的认识, 帮助中国逆转烟草使用这一公共卫生危机具有极其重要的意义。

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## 参考文献

1. WHO Report on the global tobacco epidemic, 2008: the MPOWER package. Geneva: World Health Organization, 2008.
2. Yang G, Ma J, Liu N, et al. Smoking and passive smoking in Chinese, 2002. *Zhonghua Liu Xing Bing Xue Za Zhi* 2005;**26**:77-83.
3. Yang G, Fan L, Tan J. Smoking in China: findings of the 1996 National Prevalence Survey. *JAMA* 1999;**282**:1247-53.
4. Preventing chronic diseases: a vital investment: WHO Global Report. Geneva: World Health Organization, 2005. [http://www.who.int/chp/chronic\\_disease\\_report/full\\_report.pdf](http://www.who.int/chp/chronic_disease_report/full_report.pdf).
5. Lin H, Murray M, Cohen T, et al. Effects of smoking and solid-fuel use on COPD, lung cancer, and tuberculosis in China: time-based, multiple risk factor, modelling study. *Lancet* 2008;**372**:1473-83.
6. Li L, Yong HH, Borland R, et al. Reported awareness of tobacco advertising and promotion in China compared to Thailand, Australia and the USA. *Tob Control* 2009;**18**:222-7. Published online First: 29 Mar 2009. doi:10.1136/tc.2008.027037.



7. **Li Q**, Hyland A, O'Connor J, *et al*. Support for smoke free policies among smokers and non-smokers in six cities in China: ITC China Survey. *Tob Control* 2010;**19** (Suppl 1):i40–46.
8. **Curry SJ**, Grothaus L, McBride C. Reasons for quitting: intrinsic and extrinsic motivation for smoking cessation in a population-based sample of smokers. *Addict behav* 1997;**22**:727–39.
9. **Hyland A**, Li Q, Bauer JE, *et al*. Predictors of cessation in a cohort of current and former smokers followed over 13 years. *Nicotine Tob Res* 2004;**6**(suppl 3):S363–69.
10. **Wang W**, Annette JD. Cigarette smoking and sick leave in an industrial population in Shanghai, *China Int J of Epidemiol* 1992;**21**:293–7.
11. **Jiang Y**, Ong MK, Tong EK, *et al*. Chinese physicians and their smoking knowledge, attitudes, and practices. *AJPM* 2007;**33**:15–22.
12. **He J**, Gu D, Wu X, *et al*. Major causes of death among men and women in China. *N Engl J Med* 2005;**353**:1124–34.
13. **Yan J**, Xiao S, Ouyang D, *et al*. Smoking behavior, knowledge, attitudes and practice among health care providers in Changsha city, China. *Nicotine Tob Res* 2008;**10**:737–44.
14. **Chan SSC**, Sarna L, Wong DCN. Nurses' tobacco-related knowledge, attitudes, and practice in four major cities in China. *JNS* 2007;**39**:46–53.
15. Wave 1(2006) ITC China technical report. <http://www.itcproject.org/library/countries/itcchina/reports/technical/finalitcch>.
16. **Hammond D**, Fong GT, McNeill A, *et al*. Effectiveness of cigarette warning labels in informing smokers about the risks of smoking: findings from the International Tobacco Control (ITC) Four Country Survey. *Tob Control* 2006;**15**(Suppl III):iii19–25.
17. **Weinstein ND**. Accuracy of smokers' risk perceptions. *Ann Beh Med* 1998;**20**:135–40.
18. **Slovic P**. *Smoking: risk, perception & policy*. Thousand Oaks, CA: Sage, 2001.
19. **Weinstein N**, Slovic P, Waters E, *et al*. Public understanding of the illnesses caused by smoking. *Nicotine Tob Res* 2004;**6**:349–55.
20. **Romer D**, Jamieson P. The role of perceived risk in starting and stopping smoking. In: Slovic, ed. *Smoking: risk, perception, and policy*. Thousand Oaks California: Sage, 2001.
21. **Unsal M**, Hamzacebi H, Dabak S, *et al*. Smoking status and levels of knowledge regarding cigarettes among primary school teachers. *South Med J* 2008;**101**:1227–31.
22. **Singh V**, Gupta R. Prevalence of tobacco use and awareness of risks among school children in Jaipur. *J Assoc Physicians India* 2006;**54**:609–12.
23. **Al-Haddad NM**, Hamadeh RR, Bahram SA. Public knowledge and attitudes towards passive smoking. *Saudi Med J* 2005;**26**:2004–6.
24. **Khan JA**, Hussain SF, Malik A, *et al*. Knowledge, attitudes and the prevalence of smoking among hospital attendants in a developing country. *Trop Doct* 2003;**33**:231–4.
25. **The World Market for Tobacco**. Euromonitor International 2007. [http://www.euromonitor.com/The\\_World\\_Market\\_for\\_Tobacco](http://www.euromonitor.com/The_World_Market_for_Tobacco) (accessed 4 Apr 2008).