

Perceived acceptability of female smoking in China

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ABSTRACT

Background Female smoking prevalence in China is very low but may rise with increased tobacco marketing towards women and changing norms. However, little is known about current perceptions of women smoking in China.

Objective This study sought to examine smokers' and non-smokers' perceived acceptability of female smoking and how it changed over time in China.

Methods Data come from Waves 1 to 3 (2006–2009) of the International Tobacco Control China Survey, a face-to-face cohort survey of approximately 800 adult smokers and 200 non-smokers in each of seven cities in mainland China.

Results At Wave 3 (2009), about 38% of smokers and 9% of non-smokers agreed that female smoking is acceptable with women being almost twice as likely to do so as men (67% vs 36% and 11% vs 6%, respectively). In addition to women, smokers who were younger and had more positive perceptions of smoking in general were more likely to say that female smoking is acceptable. This perception significantly increased from Wave 1 (2006) to Wave 3 (2009), as did the perception that smoking is a sign of sophistication, but other general perceptions of smoking did not significantly change between 2006 and 2009.

Conclusions Norms against female smoking appear to remain strong in China, but female smoking may be becoming more acceptable. It is important to monitor these perceptions to prevent a rise in female smoking prevalence along with an increase in tobacco-related death and disease among women in China.

BACKGROUND

While the gap between male and female smoking rates has narrowed in many high-income countries,^{1–3} female smoking has remained low in many low-income and middle-income nations, though experts predict that it may rise.⁴ In China, male smoking prevalence is among the highest in the world at 52.9%, while only 2.4% of adult women are current smokers.^{5–6} The low level of smoking among women in China has been attributed largely to cultural and societal values against women smoking, whereas male smoking is considered respectable and crucial for business and bonding.^{7–8} These norms against female smoking have remained fairly strong even with increasing gender equality and adoption of Western values by Chinese women, which suggests that typical models of smoking diffusion that have applied in Western countries may not be relevant to certain East Asian countries.⁷

Nevertheless, female smoking prevalence has increased in some Asian countries such as Korea and Japan,^{9–10} and experts predict that with China's economic growth and cultural change

along with growing independence of women, smoking among Chinese women may also increase.^{4–11–12} In addition, the tobacco industry has been increasingly targeting women in low-income and middle-income countries where there is a large potential market to increase sales; in China alone, there are 650 million women.^{13–14} The marketing strategies that have been employed throughout Asia include introducing female-oriented cigarettes with slim and colourful designs, some of which they claim to be less harmful, and displaying advertisements associating smoking with fashion, sophistication and modern women;^{7–14–17} in some Asian countries, this has led to increased smoking rates among women.¹⁸ Among youth in China, a gender gap still exists; recent (2014) estimates found that 8.7% of girls aged 13–15 years had ever used tobacco, compared with 30.1% of boys.¹⁹ However, data from urban and rural female students in China suggest that around 20% of women aged 14–24 years have tried smoking and smoking experimentation among young women in China is rising, potentially as a result of urbanisation and tobacco marketing towards women.¹⁴

Given the significant amount of death and disease that would occur from an increase in female smoking in China, it is critical to not only monitor rates of female smoking but also to understand perceptions or norms about female smoking. Perceptions about smoking inform societal norms—that is, what people perceive is typical or acceptable in society (descriptive norms) and what people believe is approved or disapproved behaviour (injunctive norms).²⁰ Just as social norms have slowed the diffusion of smoking among women in China and other areas of the world, experts are concerned that a change in norms may contribute to an increase in female smoking prevalence.^{1–21} Social influences, including the behaviour and attitudes of family and peers, as well as cultural influences including social norms and acceptability, are all important factors in the development of tobacco use, especially among youth, and trends in social norms and attitudes about smoking often correlate with changes in smoking behaviour.^{22–24}

Despite the importance of understanding these factors, there are little data available on current perceptions of female smoking in China. Some studies with youth in China have found that many boys and girls believe that female smoking is not appropriate, while other evidence suggests that young girls in China recognise female-oriented cigarettes and perceive those smoking these kinds of cigarettes to be glamorous and successful.^{12–14} In addition, having seen or heard of women's cigarette brands is associated with current smoking among women and predicts smoking



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experimentation among young women in China.^{11 14 25} However, more research from a representative sample of the wider population in China is needed to better understand perceptions about women smoking. The main objective of this study was to evaluate changes in perceptions of female smoking and smoking in general among a large sample of adult smokers and non-smokers in China surveyed over 3 years. The second objective was to identify factors associated with the perception that female smoking is acceptable in China.

METHODS

Sampling design and procedures

Data for this study were from the International Tobacco Control (ITC) China Survey, a face-to-face cohort survey of adult smokers and non-smokers in seven cities in China: Beijing, Shenyang, Shanghai, Changsha, Guangzhou, Yinchuan and Kunming; Kunming was not added until Wave 3 in 2009. Each city employed a stratified multistage cluster sampling design to obtain a representative sample of smokers and non-smokers who are registered residents in each city. One female smoker from every selected household was surveyed whenever possible because of the low smoking prevalence among women. A smoker was defined as someone who had smoked more than 100 cigarettes in his or her lifetime and smoked at least weekly at the time of the survey. Respondents were recontacted to participate in subsequent waves and any respondents lost to follow-up were replenished using the same sampling design as Wave 1. The first survey wave was conducted between April and August 2006 among 800 smokers and 200 non-smokers in each city, for a total sample size of 4732 smokers and 1269 non-smokers. Wave 2 took place from October 2007 to January 2008 with a total of 4843 smokers and 1221 non-smokers; Wave 3 was conducted from May to October 2009 with 5583 smokers and 1417 non-smokers. More detailed descriptions of the methodology and sampling design of the ITC China Surveys can be found in Wu *et al.*^{26 27} and also online at <http://www.itcproject.org>

Measures

Sociodemographic variables

The sociodemographic measures used in this study were city; gender; age group (18–24, 25–39, 40–54, 55+); ethnicity (Han vs other minority groups combined), highest education, categorised into ‘low’ (no schooling or elementary school), ‘moderate’ (junior high school or high school) and ‘high’ (college, university or higher); and monthly household income, categorised into ‘low’ (¥1000 Chinese and under), ‘moderate’ (¥1000–3000), ‘high’ (greater than ¥3000) or ‘no information’ if a respondent did not provide income information.

Acceptability of female smoking

The main outcome variable of interest was the perception that ‘smoking by women is acceptable’, with response options from ‘strongly disagree’ to ‘strongly agree’ on a five-point scale. For certain analyses, responses were dichotomised into ‘female smoking is acceptable’ (‘agree’ + ‘strongly agree’) versus ‘other’ (‘strongly disagree’, ‘disagree’ or ‘neither’). This variable was included in the smoker surveys at each wave, but was only introduced for non-smokers at Wave 3.

Perceptions of smoking acceptability in general

We included four different measures as indicators of the acceptability of smoking in our analyses. These included perceptions of whether society approves of smoking (with response options

of ‘Chinese society disapproves of smoking’, approves or neither), whether close others approve (‘people who are important to you believe that you should not smoke’, with response options from ‘strongly disagree’ to ‘strongly agree’ on a 5-point scale), the belief that smoking is a sign of sophistication (with response options from ‘strongly disagree’ to ‘strongly agree’ on a 5-point scale), and the overall opinion of smoking (with responses from ‘very bad’ to ‘very good’ on a 5-point scale). Preliminary analyses indicated that combining the four measures into a scale yielded low internal consistency (Cronbach’s $\alpha=0.37$), and thus they are best analysed separately.

Data analysis

Proportions of smokers and non-smokers who agreed with each response outcome for the measures of perceptions of smoking and female smoking were estimated using SAS V.9.3, with differences in responses at each wave by gender and city evaluated through Rao-Scott χ^2 . Generalised estimating equation (GEE) logistic regression models with female smoking acceptability as a binary outcome were used to test for changes over time and whether they differed by gender and by city, controlling for education, income, age group, time in sample (number of waves the respondent has participated in) and the four indicators of smoking acceptability in general. The GEE model also allowed us to test which, if any, of these covariates significantly predicted the perception that female smoking is acceptable among smokers. Similar models were conducted for each of the four indicators of smoking acceptability in general to determine if these perceptions also changed over time, controlling for the same covariates. GEE models were implemented under exchangeable working correlations and a robust variance estimator, and were estimated using SUDAAN V.11.0.1 to account for the longitudinal nature of the data and the multistage survey design. Sampling weights were constructed to account for the four levels of sample selection and all results presented are based on weighted analyses.

RESULTS

Characteristics of the sample

Table 1 presents the unweighted sample characteristics of the included respondents: smokers from all three waves and non-smokers from Wave 3. The majority of the smokers in the sample were males, aged 40 or older, of Han ethnicity, and with moderate education.

Perceptions of female smoking acceptability and smoking acceptability in general

Table 2 displays weighted estimates of perceptions of the acceptability of smoking in China among smokers at each survey wave and non-smokers at Wave 3. Across the three survey waves combined, only about one-third (34.8%) of men agreed that female smoking is acceptable, compared to almost two-thirds (65%) of women, a significant difference at each survey wave and across all three waves combined ($\chi^2=107.43(2)$, $p<0.001$). Far fewer non-smokers believed that it is acceptable for women to smoke. Across the three waves, the majority of smokers said that Chinese society disapproves of smoking (58.1%), but women (65.6%) were significantly more likely to say so than men (57.8%; $\chi^2=12.48(2)$, $p<0.01$). Non-smokers at Wave 3 had similar perceptions: 71% of women and 64.9% of men said that Chinese society disapproves of smoking ($\chi^2=7.04(2)$, $p<0.05$). Male smokers were significantly more likely than female smokers to agree that people who are important to them do not want them to smoke (80.6% vs 68.5% across waves;

Table 1 Sample characteristics for smokers at each wave and non-smokers at Wave 3

	Wave 1 smokers (n=4732) n (%)	Wave 2 smokers (n=4843) n (%)	Wave 3 smokers (n=5583) n (%)	Wave 3 non-smokers (n=1417) n (%)
Recontact respondents from previous wave	NA	3726 (76.9)	3549 (63.6)	1088 (76.8)
City				
Beijing	785 (16.6)	801 (16.6)	802 (14.4)	217 (15.3)
Shenyang	781 (16.5)	799 (16.5)	788 (14.1)	199 (14.0)
Shanghai	784 (16.6)	803 (16.6)	784 (14.0)	204 (14.4)
Changsha	800 (16.9)	795 (16.4)	772 (13.8)	204 (14.4)
Guangzhou	791 (16.7)	833 (17.2)	829 (14.9)	206 (14.5)
Kunming	NA	NA	800 (14.3)	195 (13.8)
Yinchuan	791 (16.7)	812 (16.8)	808 (14.5)	192 (13.6)
Gender				
Male	4501 (95.1)	4589 (94.8)	5286 (94.7)	547 (38.6)
Female	231 (4.9)	254 (5.2)	297 (5.3)	870 (61.4)
Age (years)				
18–24	56 (1.2)	46 (1.0)	95 (1.7)	64 (4.6)
25–39	792 (16.7)	766 (15.8)	1038 (18.6)	291 (20.6)
40–54	2314 (48.9)	2352 (48.6)	2566 (46.0)	515 (36.3)
55+	1570 (33.2)	1679 (34.7)	1884 (33.7)	547 (38.6)
Ethnicity				
Han	4497 (95.0)	4591 (94.8)	5186 (92.3)	1312 (92.6)
Other	235 (5.0)	250 (5.2)	385 (6.9)	105 (7.4)
Education				
Low	620 (13.1)	588 (12.1)	661 (11.8)	164 (11.6)
Moderate	3098 (65.5)	3200 (66.1)	3543 (63.5)	828 (58.4)
High	1009 (21.5)	1025 (21.2)	1360 (24.4)	410 (28.9)
Income				
Low	925 (19.6)	794 (16.4)	549 (9.9)	115 (8.1)
Moderate	2132 (45.1)	2199 (45.4)	2133 (38.2)	587 (41.4)
High	1332 (28.1)	1524 (31.5)	2575 (46.1)	652 (46.0)
No Information	340 (7.2)	319 (6.6)	316 (5.7)	61 (4.3)

The % are percentages of the total number of respondents in each wave. Some categories (such as income) do not add up to 100% due to a small number of missing/refused responses for that variable.
NA, not applicable.

$\chi^2=33.98(2)$, $p<0.001$). Across waves, the majority of smokers had a negative opinion of smoking (53.8%), though women were significantly more likely than men to have a bad opinion of smoking (61.8% vs 53.4%; $\chi^2=10.49(2)$, $p<0.01$). The only perception that did not significantly differ by gender was whether smoking is a sign of sophistication; close to two-thirds of both men (62.3%) and women (64.5%) across the three waves disagreed that smoking is a sign of sophistication.

Changes in perceived acceptability of smoking over time

Longitudinal GEE regression analyses examined changes in perceptions over the three waves, controlling for sociodemographics and all other perception variables. The resulting ORs for the wave pairwise comparison are presented in Table 3; interaction terms are described below but not presented in the table. Among all smokers, the perception that female smoking is acceptable significantly increased from Wave 1 to Wave 3 ($p=0.03$), and this pattern of change did not significantly differ between men and women ($p=0.78$). However, the interaction between wave and city was significant ($p=0.01$), with significant increases in the perception that female smoking is acceptable from Wave 1 to Wave 3 in Changsha, Guangzhou and Yinchuan.

The perception that Chinese society approves of smoking and that close others approve of smoking did not significantly change over the three waves ($p=0.479$ and $p=0.152$, respectively). However, there was a wave by city interaction for the

perception that society approves of smoking, which significantly increased in Guangzhou ($p=0.026$) and Yinchuan ($p=0.023$). The odds of having a positive overall opinion of smoking significantly decreased from Wave 1 to Wave 2 ($p=0.006$) but not from Wave 1 to Wave 3 ($p=0.277$), while the belief that smoking is a sign of sophistication significantly increased across waves ($p<0.001$), though there was a significant interaction by city, with Guangzhou being the only city where this belief did not significantly increase ($p=0.135$). There were no gender interactions, indicating that the pattern of change for these perceptions did not differ between men and women.

Correlates of smokers' perception that female smoking is acceptable

Table 4 presents results from the GEE logistic regression models to determine factors that were significantly related to the perception that female smoking is acceptable among smokers across all three waves. Smokers at Wave 3 (2009) were significantly more likely than Wave 1 (2006) smokers to perceive that female smoking is acceptable; women were much more likely than men to say that female smoking is acceptable, as were smokers in the 25–39 year age group compared with older smokers (55+), which was the only significant age group contrast. There were also differences across cities: significantly more smokers in Beijing and Shenyang said that female smoking is acceptable compared to Changsha, Guangzhou and Kunming; this

Table 2 Smokers' and non-smokers' perceptions of the acceptability of female smoking and smoking in general (weighted)

Measure	Wave 1 smokers (n=4732)			Wave 2 smokers (n=4843)			Wave 3 smokers (n=5583)			Wave 3 non-smokers (n=1417)		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Female smoking is acceptable												
Agree	33.1 (1591)	31.9 (1449)	60.3 (231)	37.2 (1739)	35.8 (1577)	66.9 (162)	37.5 (2044)	36.2 (1843)	67.1 (201)	9.1 (117)	5.7 (37)	10.8 (80)
Neither	14.8 (690)	14.6 (657)	17.6 (33)	9.9 (496)	10.1 (477)	6.3 (19)	10.2 (592)	10.2 (562)	9.2 (30)	6.7 (99)	8.6 (43)	5.8 (56)
Disagree	52.1 (2451)	53.4 (2395)	22.2 (56)	52.9 (2592)	54.1 (2522)	26.7 (70)	52.3 (2924)	53.6 (2861)	23.7 (63)	84.2 (1200)	85.7 (466)	83.4 (734)
Significance test	$\chi^2=43.47(2)$, p<0.001			$\chi^2=65.6(2)$, p<0.001			$\chi^2=51.76(2)$, p<0.001			$\chi^2=7.04(2)$, p<0.05		
Chinese society's attitude towards smoking												
Society supports smoking	6.2 (273)	6.3 (265)	3.3 (8)	7.2 (307)	7.3 (294)	6.1 (13)	7.3 (410)	7.6 (401)	2.4 (9)	5.9 (73)	7.7 (35)	4.9 (38)
Neither	34.3 (1558)	34.7 (1505)	24.1 (53)	30.7 (1380)	30.7 (1310)	29.8 (70)	39.1 (2142)	39.2 (2049)	35.8 (93)	25.2 (349)	27.3 (160)	24.0 (189)
Society disapproves	59.5 (2668)	58.9 (2517)	72.5 (151)	62.1 (2989)	62.0 (2830)	64.0 (159)	53.5 (2869)	53.2 (2697)	61.8 (172)	68.9 (955)	64.9 (342)	71.0 (613)
Significance test	$\chi^2=12.41(2)$, p<0.01			$\chi^2=0.47(2)$, p=0.79			$\chi^2=10.04(2)$, p<0.01			$\chi^2=4.69(2)$, p=0.10		
People important to you don't want you to smoke												
Disagree	14.5 (648)	13.7 (609)	18.3 (39)	13.0 (595)	12.7 (555)	19.7 (40)	11.6 (647)	11.1 (587)	22.4 (60)	NA	n/a	n/a
Neither	10.0 (485)	9.4 (448)	14.1 (37)	6.1 (312)	5.9 (282)	11.7 (30)	5.2 (312)	5.0 (286)	8.4 (26)	NA	n/a	n/a
Agree	75.6 (3599)	75.9 (3444)	67.6 (155)	80.8 (3933)	81.4 (3749)	68.6 (184)	83.2 (4621)	83.9 (4410)	69.2 (211)	NA	n/a	n/a
Significance Test	$\chi^2=4.64(2)$, p=0.10			$\chi^2=15.14(2)$, p<0.001			$\chi^2=27.48(2)$, p<0.001					
Smoking is a sign of sophistication												
Agree	22.4 (990)	22.3 (937)	22.6 (53)	29.5 (1325)	29.5 (1255)	28.2 (70)	30.3 (1585)	30.5 (1503)	25.5 (82)	6.6 (92)	6.3 (37)	6.7 (55)
Neither	13.0 (645)	12.9 (609)	15.4 (36)	8.4 (425)	8.4 (403)	7.4 (22)	8.9 (557)	9.0 (530)	7.8 (27)	8.2 (108)	12.4 (54)	6.0 (54)
Disagree	64.6 (3097)	64.7 (2955)	62.1 (142)	62.1 (3090)	62.0 (2928)	64.3 (162)	60.8 (3438)	60.5 (3250)	66.6 (188)	85.3 (1217)	81.4 (456)	87.3 (761)
Significance test	$\chi^2=0.65(2)$, p=0.72			$\chi^2=0.50(2)$, p=0.78			$\chi^2=2.95(2)$, p=0.23			$\chi^2=8.84(2)$, p<0.05		
Overall opinion of smoking												
Good	9.2 (436)	9.2 (417)	8.6 (19)	7.9 (387)	8.0 (368)	6.9 (19)	7.7 (430)	7.7 (401)	9.7 (29)	3.7 (57)	3.5 (17)	3.8 (40)
Neither	37.8 (1807)	38.2 (1740)	28.8 (67)	39.8 (1923)	40.1 (1840)	33.3 (83)	36.5 (2112)	36.9 (2024)	27.4 (88)	8.1 (122)	12.2 (63)	5.9 (59)
Bad	53.0 (2489)	52.6 (2344)	62.6 (145)	52.2 (2530)	51.9 (2378)	59.8 (152)	55.7 (3038)	55.4 (2858)	62.9 (180)	88.2 (1238)	84.4 (467)	90.2 (771)
Significance Test	$\chi^2=7.98(2)$, p<0.05			$\chi^2=3.17(2)$, p=0.20			$\chi^2=7.85(2)$, p<0.05			$\chi^2=10.30(2)$, p<0.01		

Percentages in each category may not add up to 100 due to rounding. Responses of "don't know" to any of the above questions ranged from 0.7% to 4.7% (average 2.3%) and were coded as "missing". Percentages for "agree" include "strongly agree" and "disagree" includes "strongly disagree". The variable "people important to you don't want you to smoke" was not asked of non-smokers. The significance test is the Rao-Scott χ^2 test of differences between males and females for each response variable.

NA, not applicable.

Table 3 Changes in smokers' perceptions of smoking acceptability over time (2006–2009)

Perception	Wave 2 vs Wave 1 OR (95% CI)	Wave 3 vs Wave 2 OR (95% CI)	Wave 3 vs Wave 1 OR (95% CI)
Female smoking is acceptable (agreeing vs other)	1.12 (0.90 to 1.40)	1.16 (0.99 to 1.37)	1.30 (1.05 to 1.63)*
Society approves of smoking (agreeing vs other)	1.08 (0.78 to 1.49)	1.05 (0.76 to 1.46)	1.14 (0.79 to 1.66)
Smoking is a sign of sophistication (agreeing vs other)	1.50 (1.20 to 1.87)*	1.31 (1.03 to 1.66)*	1.96 (1.59 to 2.42)*
Close others do not disapprove of my smoking (agreeing vs other)	0.94 (0.74 to 1.19)	0.89 (0.72 to 1.09)	0.83 (0.64 to 1.08)
Overall opinion of smoking (good/very good vs other)	0.67 (0.50 to 0.89)*	1.17 (0.88 to 1.56)	0.78 (0.55 to 1.10)

*Indicates a significant OR at the $p=0.05$ level. ORs represent the odds of smokers responding with a positive perception of smoking compared with a more negative or neutral perception at one wave compared to another, controlling for time in the sample, gender, income, education, age, city and the other perception variables.

perception was also significantly higher in Yinchuan than Changsha, Guangzhou and Kunming, and lower in Guangzhou compared to all other cities except Kunming and Changsha. Smokers who had a positive opinion of smoking and perceived that smoking is a sign of sophistication and that society and close others approve of smoking were more likely to say that female smoking is acceptable compared to those with more negative perceptions of smoking.

DISCUSSION

The findings from this study indicate that the majority of non-smoking adults and two-thirds of male smokers in urban areas of China disagreed that female smoking is acceptable, but only a third of women smokers shared this view. However, the perception that female smoking is acceptable increased over time among both men and women smokers. With respect to perceptions about smoking in general, the majority of smokers and non-smokers believed that Chinese society disapproves of smoking, significant others do not want them to smoke, smoking is not a sign of sophistication and smoking is 'bad' or 'very bad'. Unlike perceptions about female smoking, there was no clear evidence of gender differences in these general perceptions, and no change over time, except for the belief that smoking is a sign of sophistication which significantly increased over the study period.

Within each of the seven cities surveyed, the same pattern emerged whereby much higher proportions of female smokers agreed that female smoking is acceptable compared with males, though there were some city differences. In particular, smokers' perceptions that female smoking is acceptable were lowest in Guangzhou and highest in Beijing and Shenyang. In addition, this perception significantly increased from Wave 1 to Wave 3 in only three cities—Changsha, Guangzhou and Yinchuan. There are likely to be many factors involved in these differences across cities, including differences in perceptions of women in general, levels of economic and cultural development, attitudes and norms about smoking, strength and enforcement of tobacco control policies, and influence of tobacco marketing. It is also likely that female smoking is perceived to be more acceptable in cities where female smoking prevalence is higher; the 1996 National Prevalence Survey found the highest rates of female smoking in the North and Northeast areas of China and the lowest rates in the South.²⁸ This corresponds with our findings, as Beijing and Shenyang—with the highest perceived acceptability of female smoking—are located in the North and Northeast, and Guangzhou—with the lowest acceptance—is in the South. However, it is difficult to determine the direction of the relationship, if any, between prevalence and normative beliefs.

In addition to the survey wave, gender and city, other significant correlates of smokers' perception that female smoking is acceptable included age group and beliefs about the

acceptability of smoking in general. Smokers in the 25–39 year age group were significantly more likely to say that female smoking is acceptable compared to those aged 55 or older, which may suggest that female smoking is becoming more acceptable among younger age groups. While the youngest age group in our survey (aged 18–24 years) did not significantly differ in their perceptions from other age groups, this was most likely due to the very small sample size for this age group. Smokers who viewed smoking and smoking norms more positively (they had a positive overall opinion of smoking, believed that smoking is a sign of sophistication, that society supports smoking, and disagreed that people who are important to them do not want them to smoke) were also more likely to think that female smoking is acceptable.

The finding that all smokers' perceptions that female smoking is acceptable significantly increased over a relatively short time frame (3 years) is a matter of some concern. Perceptions that society approves of smoking and that close others approve of one's smoking did not significantly change from 2006 to 2009, which may suggest that the observed increase in perceived acceptability of female smoking in China was not simply a result of increasing acceptability of smoking in general, but may instead reflect changing norms about female smoking. The belief that smoking is a sign of sophistication significantly increased at each survey wave, which may suggest that tobacco ads targeted at women using images of sophisticated, glamorous and modern women are having their intended impact.¹¹

While female smokers were more likely than male smokers to say that female smoking is acceptable, they did not have more positive perceptions of smoking in general. Female smokers and non-smokers both had a significantly worse overall opinion of smoking and were more likely to say that society disapproves of smoking compared with male smokers. This suggests that female smokers do not simply think that *smoking* is acceptable but that *female* smoking is specifically acceptable. This could be the result of growing independence and equal rights for women, the influence of tobacco marketing towards women and changing norms about women smoking, along with individual-level factors. However, as the majority of male smokers, and non-smokers of both genders, believed that female smoking is *not* acceptable, it appears that societal norms against female smoking were still strong at least at the time of this study.

Our study conclusions are somewhat limited by the lack of a comparable measure of the acceptability of male smoking or smoking in general, but we did our best to account for this by controlling for four other measures of perceptions of smoking in general in the model. Future ITC China waves will include a measure of male smoking acceptability and will also allow us to track changes in perceptions of female smoking over a longer time period. Since the ITC China Survey does not include a youth sample, and the younger adult group (those aged 18–24 years) was

Table 4 Generalised estimating equation results showing correlates of the perception that female smoking is acceptable

Variables	Female smoking is acceptable (%)*	Adjusted OR (95% CI)	p Value
Total observations used in analysis (n)=14 540			
<i>Sociodemographic variables</i>			
Gender			<0.001
Male	33.8	1.00 (reference)	
Female	63.8	4.37 (3.03 to 6.31)†	
Age (years)			0.040
18–24	32.0	0.97 (0.64 to 1.48)	
25–39	36.8	1.28 (1.07 to 1.53)†	
40–54	36.4	1.11 (0.97 to 1.28)	
55+	32.4	1.00 (reference)	
City			<0.001
Beijing	39.3	1.09 (0.86 to 1.39)	
Shenyang	41.0	1.10 (0.91 to 1.32)	
Shanghai	36.3	0.91 (0.65 to 1.28)	
Changsha	33.0	0.65 (0.50 to 0.85)†	
Guangzhou	25.6	0.53 (0.37 to 0.76)†	
Kunming	33.4	0.68 (0.52 to 0.89)†	
Yinchuan	35.4	1.00 (reference)	
Education			0.426
Low	35.7	0.91 (0.73 to 1.12)	
Moderate	35.0	0.91 (0.79 to 1.05)	
High	34.5	1.00 (reference)	
Income			0.023
Low	37.4	1.00 (reference)	
Moderate	34.2	0.95 (0.81 to 1.11)	
High	33.2	0.90 (0.76 to 1.08)	
No information	37.8	1.14 (0.90 to 1.45)	
<i>General perception variables</i>			
Overall opinion of smoking			<0.001
Good/very good	46.6	1.28 (1.06 to 1.54)†	
Neither	39.6	1.00 (reference)	
Bad/very bad	30.1	0.68 (0.63 to 0.75)†	
Smoking is a sign of sophistication			<0.001
Agree/strongly agree	47.7	2.57 (2.13 to 3.11)†	
Neither	27.7	1.00 (reference)	
Disagree/strongly disagree	30.5	1.28 (1.08 to 1.52)†	
Society's view of smoking			<0.001
Society supports smoking	41.7	1.02 (0.84 to 1.23)	
Neither	39.7	1.00 (reference)	
Society disapproves of smoking	31.5	0.71 (0.65 to 0.78)†	
Close others' view of your smoking			<0.001
Disagree that others don't want me to smoke	41.4	1.11 (0.89 to 1.37)	
Neither	37.5	1.00 (reference)	
Agree that others don't want me to smoke	33.8	0.86 (0.71 to 1.03)	

All ORs are adjusted for all other covariates in the model.

*The percentages for the perception that female smoking is acceptable presented in this table are not adjusted for other predictors in the model. They represent the percentage of respondents within that category who agreed or strongly agreed that female smoking is acceptable.

†Denotes statistically significant OR (at the p=0.05 level) compared to the reference category. Wave was included in this analysis and was significant (p=0.032); results were presented in Table 3. Time in sample was also controlled for and was not significant (p=0.286).

under-represented, it would also be valuable for other researchers to evaluate perceptions of female smoking among youth, as this may be the age group where norms are changing or are more likely to change. The data presented here are a few years old and might underestimate current perceptions of the acceptability of female smoking, particularly if the trend found here continues. While there is a possibility that some responses may have been influenced by socially desirable responding, this is unlikely as it is unclear what the perceived desirable response would be if present or how it could influence men, women and non-smokers

differently in order to produce the results. Finally, since the survey included mainly urban Chinese, this study's findings may not generalise to those living in rural areas.

This is the first study to evaluate perceptions of the acceptability of female smoking among a large representative sample of smokers and non-smokers in China. The findings demonstrated that female smokers were much more likely than males to say that female smoking is acceptable; the majority of male smokers, and non-smokers of both genders, did not perceive that it is acceptable for women to smoke, and even one-third of

female smokers did not think it is acceptable, suggesting that norms against female smoking in China have remained strong. However, the findings that younger age groups were more likely than older groups to say that female smoking is acceptable, and that this perception significantly increased over the study period (2006–2009), suggest that the norms may be changing. Since there is a huge population of female non-smokers in China who may be targeted by the tobacco industry, it is important to monitor norms and perceptions about female smoking in China in order to inform efforts to prevent female smoking prevalence from rising and thus protect women from the burden of diseases caused by tobacco.¹¹

What this paper adds

- ▶ Female smoking prevalence in China has remained very low (2%) and has generally been seen as less socially acceptable than male smoking, which is much more prevalent.
- ▶ There is concern that female smoking will rise in China as norms change and tobacco companies increasingly market towards women, but little data are available on current perceptions of female smoking in China.
- ▶ This study suggests that norms against women smoking remain strong: the majority (two-thirds) of adult men and one-third of adult women do not think that it is acceptable for women to smoke. However, the perception that female smoking is acceptable significantly increased over the 3-year study period.
- ▶ It is therefore important to monitor perceptions of female smoking to prevent a rise in prevalence and the burden of death and disease that would come with it.

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Competing interests None declared.

Ethics approval Ethics approval was obtained from the Office of Research at the University of Waterloo (Waterloo, Canada) and the Institutional Review Boards at Roswell Park Cancer Institute (Buffalo, USA), the Cancer Council Victoria (Victoria, Australia) and the Chinese Center for Disease Control and Prevention (Beijing, China). All respondents gave informed consent before taking part in the surveys.

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Data sharing statement Data from the International Tobacco Control Policy Evaluation (ITC) Project are available to approved researchers 2 years after the date of issuance of cleaned data sets by the ITC Data Management Centre. Researchers

interested in using ITC data are required to apply for approval by submitting an International Tobacco Control Data Repository (ITCDR) request application and subsequently to sign an ITCDR Data Usage Agreement. To avoid any real, potential, or perceived conflict of interest between researchers using ITC data and tobacco-related entities, no ITCDR data will be provided directly or indirectly to any researcher, institution, or consultant that is in current receipt of any grant monies or in-kind contribution from any tobacco manufacturer, distributor, or other tobacco-related entity. The criteria for data usage approval and the contents of the Data Usage Agreement are described online (<http://www.itcproject.org>).

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