



Original investigation

# Perception and Current Use of E-cigarettes Among Youth in China

Lin Xiao PhD<sup>1</sup>, Mark Parascandola PhD, MPH<sup>2</sup>, Congxiao Wang MS<sup>1</sup>, Yuan Jiang MS<sup>1</sup>

<sup>1</sup>Tobacco Control Office, Chinese Center for Disease Control and Prevention, Beijing, China; <sup>2</sup>Tobacco Control Research Branch, National Cancer Institute, Rockville, MD

Corresponding Author: Lin Xiao, PhD, Tobacco Control Office, Chinese Center for Disease Control and Prevention, No. 27 Nanwei Road, Xicheng District, Beijing, China. Telephone: 86-10-63185232; E-mail: [xiaolin201304@126.com](mailto:xiaolin201304@126.com)

## Abstract

**Introduction:** This study provides nationally representative estimates of electronic cigarette (e-cigarette) use among youth in China and explores the factors associated with awareness and use of e-cigarettes and the relationship between e-cigarette and conventional tobacco use.

**Methods:** This study examined data from the Global Youth Tobacco Survey, which was completed by 155 117 middle school students (51.8% boys and 48.2% girls) in China, and employed a multi-stage stratified cluster sampling design. For data analysis, SAS 9.3 complex survey procedures were used, and logistic regression was used to explore factors associated with e-cigarette use and the relationship between e-cigarette and conventional tobacco use.

**Results:** About 45.0% of middle school students had heard of e-cigarettes, but only 1.2% reported using e-cigarettes in the last 30 days. Among never-smokers, e-cigarette users were more likely to intend to use a tobacco product in the next 12 months than nonusers (adjusted odds ratio [OR] = 6.970, 95% confidence interval [CI] = 4.474% to 10.857%), and more likely to say that they would enjoy smoking a cigarette (adjusted OR = 14.633, 95% CI = 11.328% to 18.902%). E-cigarette use was associated with previous experimentation with cigarette smoking (OR = 3.2), having noticed tobacco advertising in the past 30 days (OR = 2.7), having close friends who smoke (OR = 1.4), and thinking tobacco helps people feel more comfortable in social situations (OR = 3.3) and makes young people look more attractive (OR = 1.3).

**Conclusions:** E-cigarette use among youth in China remains low but awareness is high. E-cigarette use was associated with increased intentions to use tobacco. Enhanced prevention efforts are needed targeting e-cigarette use among youth.

**Implications:** This study is the first nationally representative survey of e-cigarette use among youth in China. It found that among middle school students, prevalence of e-cigarette use is 1.2% and prevalence of e-cigarette awareness is 45.0%. Chinese youths use e-cigarettes as a tobacco product rather than an aid to quitting. Among never-smokers, e-cigarette users were more likely to have intentions to use a tobacco product in the next 12 months, more likely to use a tobacco product offered by their best friends and enjoy smoking a cigarette than nonusers.

## Introduction

Recent studies from the United States and other countries have shown a rapid rise in the use of electronic cigarettes (e-cigarettes)

among youth.<sup>1,2</sup> For example, national survey data show that between 2013 and 2015, e-cigarette use among US high school students increased by about four times.<sup>3,4</sup> This trend raises concern because e-cigarette use among youth tends to be associated

with the use of other tobacco products, including conventional cigarettes.<sup>5,6</sup> Indeed, studies have shown e-cigarette use to be associated with greater intention to smoke and with subsequent initiation of conventional cigarette smoking.<sup>7-10</sup> Youths who use e-cigarettes are more likely to have lower perceptions of harm and addictiveness from both e-cigarettes and conventional cigarettes, particularly flavored e-cigarettes, compared with their nonusing peers.<sup>11</sup> E-cigarette advertising is also associated with increased use of e-cigarettes and other tobacco products among adolescents.<sup>12,13</sup> Although data on the long-term health effects of e-cigarette use are limited, previous studies have found that e-cigarettes can contain harmful and potentially harmful constituents, including nicotine, carbonyl compounds, and volatile organic compounds, known to have adverse health effects.<sup>14-16</sup>

Marketing of e-cigarettes has expanded rapidly in China in recent years.<sup>17,18</sup> Retail e-cigarette shops appear in rural counties as well as large cities,<sup>18</sup> and e-cigarettes can be easily purchased online.<sup>17</sup> Advertising of e-cigarettes is not regulated in China, and online advertisements are prevalent<sup>19</sup> and frequently include claims about health benefits, promote flavored products, and use celebrity endorsements to entice users.<sup>18,20</sup> In some places, e-cigarette promotions have taken place on school campuses.<sup>21,22</sup>

However, there is limited data on actual use of e-cigarettes in China and attitudes or knowledge about them. This article provides nationally representative estimates of e-cigarette use among youth in mainland of China and explores the factors associated with awareness and use of e-cigarettes and the relationship between e-cigarette use and conventional cigarette tobacco use. The aim of this study is to provide baseline data on e-cigarette use in China to guide subsequent research and tobacco control efforts.

## Methods

### Data Source

The Global Youth Tobacco Survey (GYTS) China Project was conducted by the Tobacco Control Office of the Chinese Center for Disease Control and Prevention from 2013 to 2014 in 31 provinces of mainland China, using a standardized two-stage sample design. The global standard questionnaire used addressed the following topics: tobacco use (smoking and smokeless), e-cigarette use, cessation, secondhand smoke, access and availability of tobacco products, pro- and antitobacco media and advertising, and knowledge and attitudes regarding tobacco. A detailed description of the methods of the GYTS has been reported by Warren et al.<sup>23</sup> All materials and procedures used in the GYTS China survey were approved by the ethics review committee of the Chinese Center for Disease Control and Prevention.

### Participants

The target population for this survey was defined as all middle-school students in mainland China. A total of 155 117 students from 1020 schools in 31 provinces completed the questionnaire, including 80 357 boys and 74 760 girls. The overall response rate was 98.0%. Respondents included 70 461 students in rural areas and 84 656 in urban areas. There were 52 729 respondents in grade 7, 52 084 in grade 8, and 50 304 in grade 9. Because of different policies regarding school age in each province, this survey included 46 641 thirteen-year-old students, 44 795 fourteen-year-old students, and 28 940 fifteen-year-old students. The number of participants for each province ranged from 3094 to 7789. Characteristics of participants are summarized in Table 1.

**Table 1.** Characteristics of Middle School Students

	Weighted			Unweighted
	Proportion		Number	
	%	95% CI		
Overall			47 192 405	155 117
Gender				
Boy	52.9	52.3% to 53.5%	24 968 958	80 357
Girl	47.1	46.5% to 47.7%	22 223 447	74 760
Age				
11–12 y old	14.2	13.6% to 14.8%	6 686 002	24 229
13 y old	28.3	27.7–29.0	13 357 790	46 641
14 y old	29.0	28.6% to 29.4%	13 687 310	44 795
15 y old	20.6	19.9% to 21.2%	9 702 161	28 940
16–17 y old	7.9	7.2% to 8.7%	3 738 971	10 447
Residence				
Urban	27.9	26.0% to 29.8%	13 174 782	70 461
Rural	72.1	70.2% to 74.0%	34 017 623	84 656
Pocket money (RMB)				
0	11.0	10.4% to 11.6%	5 205 216	17 539
≤10 ( Not including 0 )	28.7	27.6% to 29.8%	13 523 822	42 335
11–20	22.9	22.2% to 23.6%	10 758 729	34 441
>20	37.3	35.9% to 38.9%	17 579 521	60 455
Smoking status				
Cigarette experimentation	17.9	16.9% to 18.9%	8115115	24643
Current smoking	5.9	5.4% to 6.5%	2735099	8151
Never smoking	82.1	81.1% to 83.1%	37262315	124962

CI = confidence interval; RMB = renminbi.

## Sampling Method

Following the GYTS Sample Design Manual, a multistage stratified cluster probability sampling method was used in the GYTS China project. First, 8–16 primary sampling units were assigned to each province according to population size, which located half in rural areas and half in urban areas. Overall, 336 primary sampling units were identified. Second, three schools were selected within each primary sampling unit using a random probability proportionate to size sampling technique. Because the school size was too small in some rural areas, the final selection included 1020 schools. One class was selected randomly in each grade from each school, and all of the students in this class were interviewed.

## Measures

### Demographic Variables

Gender, school grade (7, 8, or 9), age (11–12, 13, 14, 15, and 16–17 years), and pocket money were recorded in the survey. Pocket money was measured by the question “During a week, on average, how much money do you have that you can spend on yourself, however you want?” Response categories were: no money, less than 10 yuan, 11–20 yuan, and more than 20 yuan.

### E-cigarette Awareness

E-cigarette awareness was measured using the question “Before today, had you ever heard of electronic cigarettes or e-cigarettes?” Responses were coded as 1 = yes versus 2 = no.

### E-cigarette Use

“During past 30 days, on how many days did you use electronic cigarettes?” was used to measure e-cigarette use. Responses were classified as 0, 1–2, 3–5, 6–9, 10–19, 20–29, and 30 days. If the response was 1 day or more, the respondent was identified as an e-cigarette user.

### Smoking Status

In this article, smoking status includes smoking experimentation, current smoking and never smoking. “Have you ever tried or experimented with cigarette smoking, even one or two puffs?” was used to measure smoking experimentation. If the response was “yes”, the respondent was classified as positive for smoking experimentation. Current smoking was measured using the question: “During the past 30 days, on how many days did you smoke cigarettes?” Responses were classified as 0, 1–2, 3–5, 6–9, 10–19, 20–29, and 30 days. If the response was 1 day or more, the respondent was identified as a current smoker. Never-smoker refers to those who are not current smokers and never tried or experimented with smoking.

### Quit Behavior

Among current smokers, dependence was measured by the question: “Do you ever smoke tobacco or feel like smoking tobacco first thing in the morning? (1 = no; 2 = some time; 3 = always).” Desire to quit was assessed by the question: “Do you want to stop smoking now? (1 = yes; 2 = no),” and quit attempts were assessed by the question: “During the past 12 months, did you ever try to stop smoking? (1 = yes; 2 = no).”

### Susceptibility to Tobacco Use

In this study, three questions were used to measure susceptibility to tobacco use among never-smokers: “At any time during the next 12 months do you think you will use any form of tobacco? (1 = yes;

2 = no),” “If one of your best friends offered you a tobacco product, would you use it? (1 = yes; 2 = no),” and “Do you agree or disagree with the following: ‘I think I might enjoy smoking a cigarette’? (1 = yes; 2 = no).”

### Noticed Tobacco Advertisement and Antitobacco Media Message

Respondents were asked if they saw tobacco advertisements in a variety of venues and media (including points of sale, TV, newspapers and magazines, billboards, Internet, sports events, fairs, concerts, or community events) during the past 30 days. Responses were coded as 1 = yes, 2 = no. to each of the items listed earlier. If the participant answered “yes” to one or more items on the list, they were coded as exposed to tobacco advertising. Similarly, the question “During the past 30 days, did you see or hear any anti-tobacco media messages on television, radio, internet, billboards, posters, newspapers, magazines, or movies?” (1 = yes; 2 = no) was used to measure exposure to antitobacco media messages.

### Peer and Parental Tobacco Use

Two questions were used to explore the influence from parents and peers on respondents’ tobacco use: “Do any of your closest friends smoke tobacco?” (1 = yes; 2 = no) and “Do your parents smoke tobacco?” (1 = yes; 2 = no).

### Perceived Smoking Outcomes

Perceived smoking outcomes were measured by three questions: “Do you think smoking tobacco makes young people look more or less attractive? (1 = more; 2 = no difference; 3 = less),” “Do you think smoking tobacco helps people feel more comfortable or less comfortable at celebrations, parties, or in other social gatherings? (1 = more comfortable; 2 = no difference; 3 = more uncomfortable),” and “Do you think smoke from other people is harmful to you? (1 = yes; 2 = no).”

### Statistical Analysis

To take the complex survey sample design into account, all computations were performed using the SAS 9.3 complex survey data analysis procedure. A chi-square test was used for comparing the differences between groups. Logistic regression was used to explore the factors associated with e-cigarette use and the relationship between e-cigarette and tobacco use. A *p* value less than .05 was considered statistically significant.

## Results

### Characteristics of Participants

A total of 155 117 participants were representative of a total population of 24 968 958 boys and 22 223 447 girls of middle school age in China. [Table 1](#) shows selected demographic characteristics of the weighted respondent data. The proportion of students in urban areas made up 27.9% of this total, and that of students in rural areas made up 72.1%; students in grade 7 accounted for 33.1%; grade 8, 33.3%; and grade 9, 33.6%; 37.3% of participants reported having more than 20 yuan per week in pocket money, and 22.9% reported 11–20 yuan. In addition, 17.9% of respondents reported that they had tried or experimented with cigarette smoking, 5.9% of the respondents smoked cigarette in the past 30 days (classified as current smokers), and 82.1% of the respondents were never-smokers. Details are reported in [Table 1](#).

### Awareness and Perceptions of E-cigarette Use

In this survey, 45.0% of students reported that they had heard of e-cigarettes. Among boys, the proportion was substantially higher (52.3%) than girls (36.8%). Awareness of e-cigarettes was higher among students in urban areas (46.2%) compared with those in rural areas (44.5%). Awareness differed among age groups, increasing from around 36.4% among 11- to 12-year-old students to more than 49.5% among students aged 16 and above. Awareness was also higher among respondents who reported more than 20 yuan per week as pocket money (52.2%) compared with those who reported less (38.1% for those who reported 10 yuan per week or less). Having experimented with cigarette smoking, noticed tobacco advertising in the last 30 days, noticed antitobacco media in the past 30 days, and having parents or close friends who smoke were all associated with awareness of e-cigarettes as well.

Among current smokers, awareness of e-cigarettes was higher among those who always or sometimes smoke tobacco or feel like smoking tobacco first thing in the morning (81.1%) compared with those who do not (71.0%). In addition, those who had tried to stop smoking in the past 12 months were more likely to be aware of e-cigarettes than those who had not made a quit attempt, though desire to quit smoking now was not significantly associated with any difference in awareness.

Results were consistent in the multivariate analysis. The strongest associations with e-cigarette awareness were seen for having close friends who smoke (odds ratio [OR] = 1.66), having experimented with cigarette smoking (OR = 1.72), noticing tobacco advertising (OR = 1.55), and male gender (OR = 1.49). For details, see Table 2.

### Current E-cigarette Use

Only 1.2% of students reported that they had used an e-cigarette in the past 30 days. Use among boys (1.8%) was higher than girls (0.5%). There was no significant difference between urban and rural residence or between age groups. Among current smokers, 8.5% had used an e-cigarette in the last 30 days, which was much higher than the rate among non-current smokers (0.6%). Among those who had used an e-cigarette in the past 30 days, about half (49.3%) reported they used it on 1 or 2 days. Only 13.4% of e-cigarette users used it every day.

E-cigarette use also differed by measures of dependence, ranging from 26.5% among those who always smoke tobacco or feel like smoking tobacco first thing in the morning, to 15.3% among those who only sometimes feel like smoking first thing, to 6.6% among those who never feel that way. Among cigarette smokers who wanted to quit, prevalence of e-cigarette use was 9.0%, compared with 11.5% among those who did not want to quit. Among those who made a quit attempt in the past 12 months, 7.0% were e-cigarette users, compared with 7.1% for those who did not make a quit attempt.

In the multivariate analysis, the variables most strongly associated with e-cigarette use were having experimented with cigarette smoking (OR = 3.2), thinking that tobacco helps people feel more comfortable in social situations (OR = 3.3), and having noticed tobacco advertising in the past 30 days (OR = 2.7). Respondents were also more likely to use e-cigarettes if they have close friends who smoke (OR = 1.4) or if they intend to use a tobacco product in the next 12 months (OR = 1.5) or would use it if offered by a close friend (OR = 1.7). Boys were more likely to use e-cigarettes than girls (OR = 1.9). Those who think smoking makes young people look more attractive were more likely to use e-cigarettes than those who

think smoking makes them less attractive (OR = 1.3). For details, see Table 3.

### Susceptibility to Tobacco Use Among Never-Smokers

Among never-smokers, 4.8% of e-cigarette users intended to use a tobacco product in the next 12 months, and 0.7% of non-e-cigarette users had such intentions (adjusted OR = 6.970, 95% confidence interval [CI] = 4.474% to 10.857%). If a best friend offered a tobacco product, 4.2% of e-cigarette users reported that they would use it, whereas the proportion among non-e-cigarette users was 0.9% (adjusted OR = 5.136, 95% CI = 3.229% to 8.17%). In addition, 27.1% of e-cigarette users thought they might enjoy smoking a cigarette compared with only 2.5% of non-e-cigarette users (adjusted OR = 14.633, 95% CI = 11.328% to 18.902%).

### Discussion

Although only 1.2% of middle school students reported they used e-cigarette in past 30 days, almost half (45.0%) of students have heard of e-cigarettes. Factors associated with e-cigarette awareness and/or use include having experimented with cigarette smoking, having parents or close friends who smoke, exposure to tobacco advertising and antitobacco messages, positive attitude to smoking, and having more pocket money. These factors are similar to those associated with conventional cigarette smoking in China.<sup>24-26</sup> Although China has strict policies to prevent youth access to tobacco products, there is no regulation of e-cigarette sales or promotion to youth.

Prevalence of e-cigarette use among youth varies widely across countries and may be influenced by a range of factors, including price, availability of products, and regulatory environment.<sup>27,28</sup> For example, although e-cigarette use has risen dramatically among US youth over the past several years,<sup>1</sup> this has not been the case in the United Kingdom<sup>29</sup> and Korea,<sup>30</sup> where e-cigarette sales and marketing are more tightly regulated. Prevalence of past 30-day e-cigarette use among youth in China is relatively low (1.2%) compared with the United States (5.3% among middle school students in 2015).<sup>31</sup> However, given the lack of regulations on e-cigarette sales and marketing in China and widespread tobacco advertising in retail tobacco shops, there is reason for concern that e-cigarette use may increase among Chinese adolescents, as seen in other countries.<sup>29,32,33</sup>

According to this study, students who are aware of or using e-cigarettes have more positive views about tobacco use in general. They are more likely to say they will use a tobacco product in the next 12 months, and they are more likely to say that tobacco helps people feel comfortable in social situations. Those who have used an e-cigarette are also more likely to say they would use a tobacco product if offered by a friend and to say that smoking makes young people look more attractive. Among never-smokers, those who used e-cigarettes were more likely to use a tobacco product in the next 12 months (OR = 7.0), to use a tobacco product offered by their best friends (OR = 5.1), and to say that they might enjoy smoking a cigarette (OR = 14.6). These findings suggest that awareness and use of e-cigarettes are associated with susceptibility to tobacco use. Interestingly, in this study exposure to tobacco product advertising and exposure to antitobacco messages were both associated with e-cigarette awareness. This suggests that students who are aware of or using e-cigarettes may be more attentive to or have greater exposure to tobacco-related messages of all kinds, both positive and negative.

**Table 2.** Awareness of E-cigarette Among Middle School Students

	%	95% CI	OR	95% CI
Overall	45.0	43.5% to 46.5%		
Gender				
Boys	52.3	50.8% to 53.9%	1.493	1.443 to 1.545%
Girls	36.8	35.3% to 38.3%	reference	—
Age				
11–12 y old	36.4	35.1% to 37.6%	reference	—
13 y old	42.1	40.8% to 43.3%	1.154	1.103 to 1.208%
14 y old	47.5	46.0% to 49.1%	1.291	1.217% to 1.369%
15 y old	49.7	47.2% to 52.2%	1.293	1.170% to 1.428%
16–17 y old	49.5	44.9% to 54.1%	1.220	1.041% to 1.429%
Residence				
Urban	46.2	44.7% to 47.7%	1.147	1.042% to 1.262%
Rural	44.5	42.6% to 46.5%	reference	—
Pocket money (RMB)				
0	39.6	37.1% to 42.1%	reference	—
≤10 ( Not including 0 )	38.1	36.3% to 39.9%	0.994	0.929% to 1.065%
11–20	44.5	42.9% to 46.0%	1.190	1.093% to 1.296%
>20	52.2	50.6% to 53.8%	1.436	1.302% to 1.583%
Ever experimented with cigarette smoking				
Yes	65.8	64.2% to 67.3%	1.723	1.626% to 1.824%
No	40.2	38.7% to 41.7%	reference	—
Exposed to tobacco advertisement in last 30 d				
Yes	53.6	52.2% to 55.1%	1.550	1.504% to 1.598%
No	37.0	35.5% to 38.5%	reference	—
Exposed to antitobacco media messages in past 30 d				
Yes	47.3	45.9% to 48.7%	1.223	1.184% to 1.263%
No	40.8	39.1% to 42.5%	reference	—
Parents smoke				
Yes (mother or father or both)	48.8	47.3% to 50.4%	1.250	1.206% to 1.296%
No	40.0	38.5% to 41.5%	reference	—
Closest friends smoke				
Yes (some or all)	59.1	57.6% to 60.6%	1.660	1.579% to 1.745%
No	36.4	35.0% to 37.9%	reference	—
Think smoke from other people is harmful to you				
Yes	46.3	44.8% to 47.7%	1.216	1.177% to 1.257%
No	41.4	39.7% to 43.0%	reference	—
Ever smoke tobacco or feel like smoking tobacco is the first thing in the morning (smokers)				
Never	71.0	68.8% to 73.2%	—	—
Sometimes	81.1	77.6% to 84.6%	—	—
Always	81.4	74.4% to 88.3%	—	—
Want to stop smoking now (smokers)				
Yes	74.9	72.8% to 77.1%	—	—
No	72.7	69.5% to 75.9%	—	—
Ever try to stop smoking in past 12 mo (smokers)				
Yes	73.4	71.3% to 75.4%	—	—
No	67.3	64.6% to 69.9%	—	—

CI = confidence interval; OR = odds ratio; RMB = renminbi.

Although some studies have suggested that people use e-cigarettes to help them quit smoking,<sup>34,35</sup> no significant relationship was seen in this study between use of e-cigarettes and wanting to stop smoking or having tried stopping in the past 12 months. Thus, the data do not show any indication that e-cigarettes are being used as smoking cessation devices among Chinese youth.

It is important to acknowledge some limitations of this study. Because the GYTS is a cross-sectional survey, it was not possible to assess changes in e-cigarette or conventional cigarette use over time or to directly measure the impact of e-cigarette use on initiation of tobacco smoking. However, prospective studies in other countries have found that youths who use e-cigarettes are more likely to go

on to initiate conventional cigarette use.<sup>36</sup> In addition, because this study involved secondary data analysis, we were limited to questions that appeared in the GYTS China survey. Notably, data on e-cigarette use history over time and information on exposure to e-cigarette advertising were not available. However, this dataset represents the first and only nationally representative survey of e-cigarette use among youth in China.

China is the largest consumer of tobacco in the world, with 3.16 million current smokers and an annual death toll of more than 1 million people attributed to tobacco use. Owing to great efforts, prevalence of tobacco use remains relatively low among middle school students (6.9%)<sup>24</sup> and only 32.2% of daily smokers start smoking

**Table 3.** Current Use of E-cigarette Among Middle School Students

	%	95% CI	OR	95% CI
Overall	1.2	1.1% to 1.3%		
Gender				
Boys	1.8	1.7% to 2.0%	1.881	1.559% to 2.269%
Girls	0.5	0.4% to 0.5%	reference	—
Age				
11–12 y old	0.7	0.6% to 0.8%	reference	—
13 y old	0.9	0.8% to 1.0%	0.970	0.772% to 1.219%
14 y old	1.2	1.0% to 1.3%	1.007	0.794% to 1.275%
15 y old	1.5	1.3% to 1.8%	1.172	0.924% to 1.487%
16–17 y old	2.1	1.6% to 2.6%	1.236	0.921% to 1.658%
Residence				
Urban	1.0	0.8% to 1.1%	0.925	0.785% to 1.089%
Rural	1.3	1.1% to 1.4%	reference	—
Pocket money (RMB)				
0	1.1	0.9% to 1.3%	reference	—
≤10 ( Not including 0 )	0.9	0.8% to 1.1%	0.946	0.713% to 1.254%
11–20	1.0	0.9% to 1.2%	0.915	0.695% to 1.204%
>20	1.5	1.3% to 1.6%	0.949	0.757% to 1.190%
Ever experimented with cigarette smoking				
Yes	4.0	3.6% to 4.3%	3.217	2.707% to 3.823%
No	0.5	0.4% to 0.5%	reference	—
Exposed to tobacco advertisement in last 30 d				
Yes	2.0	1.8% to 2.2%	2.747	2.326% to 3.244%
No	0.4	0.4% to 0.5%	reference	—
Close friends smoke				
Yes (some or all)	2.3	2.1% to 2.5%	1.439	1.199% to 1.727%
No	0.5	0.4% to 0.6%	reference	—
Think smoking makes young people look more or less attractive				
More	2.9	2.5% to 3.3%	1.291	1.065% to 1.566%
No difference	1.4	1.2% to 1.5%	0.938	0.785% to 1.121%
Less	0.7	0.7% to 0.8%	reference	—
Will use a tobacco product, if best friends offered				
Yes	8.4	7.0% to 9.7%	1.694	1.321% to 2.172%
No	1.0	0.9% to 1.1%	reference	—
Next 12 mo, do you think you will use any form of tobacco				
Yes	8.2	6.6% to 9.8%	1.469	1.121% to 1.926%
No	1.1	1.0% to 1.1%	reference	—
Think smoke from other people is harmful to you				
Yes	1.0	0.9% to 1.0%	0.651	0.566% to 0.748%
No	1.8	1.6% to 2.1%	reference	—
Think tobacco helps people feel more comfortable in social situations				
More comfortable	6.2	5.5% to 6.9%	3.327	2.729% to 4.058%
No difference	2.4	2.1% to 2.8%	2.031	1.693% to 2.436%
More uncomfortable	0.6	0.6% to 0.7%	reference	—
Ever smoke tobacco or feel like smoking tobacco is the first thing in the morning (smokers)				
Never	6.6	5.8% to 7.4%	—	—
Sometimes	15.3	12.3% to 18.4%	—	—
Always	26.5	20.2% to 32.8%	—	—
Want to stop smoking now (smokers)				
Yes	9.0	7.9% to 10.2%	—	—
No	11.5	9.4% to 13.6%	—	—
Ever try to stop smoking in past 12 mo (smokers)				
Yes	7.0	6.2% to 7.7%	—	—
No	7.1	5.8% to 8.3%	—	—

CI = confidence interval; OR = odds ratio; RMB = renminbi.

before age 18 in 2010<sup>37</sup>. However, an increase in use of e-cigarettes among youth in China could challenge this picture. Given the strong relationship observed between awareness and use of e-cigarettes and susceptibility to tobacco use, there is reason for concern that increased promotion and use of e-cigarettes could impact smoking prevalence

among Chinese youth. Thus, continued monitoring of e-cigarette and conventional cigarette use among youth in China is needed. In addition, tobacco control efforts in China should consider e-cigarette use among youth and could include actions such as stronger regulation of sales and marketing and media campaigns targeting youth.

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## Declaration of Interests

None declared.

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