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Receiving and giving electronic cigarettes as gifts in China: Findings from International Tobacco Control China Survey

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ABSTRACT

Cigarette gifting is pervasive in China. As the Chinese are increasingly aware of harm from smoking cigarettes, e-cigarettes, often promoted as less harmful alternatives to cigarettes, may be viewed as appropriate gifts. This study is the first using population-based survey data to examine receiving and giving e-cigarettes as gifts in China. We analyzed 9,274 adults from Wave 5 of the International Tobacco Control China Survey, which was completed in July 2015. We found that the prevalence of receiving e-cigarettes as gifts was 1.3% among all respondents and 5.3% among urban smokers; the prevalence of giving e-cigarettes as gifts was 0.5% among all respondents and 1.2% among urban smokers. These prevalence estimates were very low among nonsmokers and rural respondents. Further analysis on urban smokers (N = 3,312) found that those aged 40–54 and 55+, those with high education levels, heavy smokers, and those who perceived e-cigarettes as equally/more harmful than cigarettes were more likely to receive e-cigarette gifts; and those who ever used e-cigarettes were significantly more likely to both receive and give e-cigarette gifts. Urban smokers with positive attitude about cigarette gifting were also more likely to give e-cigarette gifts to others, but those aged 55+ were less likely to gift e-cigarettes. Findings of this study indicate that the Chinese may perceive e-cigarettes as appropriate gifts for smokers, especially heavy smokers. Precautions should be taken to prevent e-cigarettes from becoming a gift choice for nonsmokers. Health campaigns designed to combat the social acceptance of cigarette gifting may also help reduce e-cigarette gifting.

1. Introduction

China has a gifting culture. The flow of gifts has long been an integral part of the Chinese culture and social fabric, helping in acquiring power, status, and resources (Bian, 1994; Yan, 1996), and establishing and maintaining *guanxi* (relationships) (Yang, 1994). Cigarettes are popular gifts (Yan, 1996; Chu et al., 2011; Chan et al., 2003) and "social currency" in China (Rich and Xiao, 2012). Gifting cigarettes is a deeply rooted practice in China and is practiced across all economic classes, a variety of daily interpersonal interactions, and special social occasions (Chu et al., 2011; Rich and Xiao, 2012). A regional survey in east China conducted by the Chinese Center for Disease Control and Prevention (China CDC) reported that over 50% of the respondents polled planned to buy cigarettes as gifts for the Chinese New Year (Shan, 2010). The International Tobacco Control (ITC) China Project Report showed that in 2013–2015, 43% of smokers reported receiving cigarettes as gifts, and 23% of smokers reported giving cigarettes as gifts (ITC Project and Tobacco Control Office China CDC, 2017).

Although China has not yet complied fully with the key demand-reduction policies of the WHO Framework Convention on Tobacco Control (FCTC) since it ratified the treaty (ITC Project and Tobacco Control Office China CDC, 2017), they have implemented some health education campaigns on the harm of smoking. One of these was the mass media campaign, "Giving Cigarettes is Giving Harm" (GCGH), which

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was found to have a positive effect on raising public awareness of the diseases caused by smoking and on reducing the social acceptability of cigarettes as gifts (Huang et al., 2015). As more Chinese become aware of the harm of smoking cigarettes, electronic cigarettes (e-cigarettes) have been increasingly visible in China, being promoted as less harmful alternatives to cigarettes and as an effective smoking cessation aid (Lyu et al., 2021). A study of the websites of e-cigarette manufacturers in China found that health-related benefits were claimed most frequently (89%), followed by the claims of no secondhand smoke (SHS) exposure (78%), and as an aid for smoking cessation (67%) (Yao et al., 2016). These messages may position e-cigarettes as a solution to the harmful effects of cigarette smoking on health.

With the increase in China of those who have heard of, ever used, and currently use e-cigarettes (Chinese Center for Disease Control and Prevention, 2019), whether the cigarette gifting culture deeply rooted in the Chinese society has an impact on e-cigarettes deserves study. China is known as the world's e-cigarette factory, producing approximately 95% of the world's e-cigarettes (Eriksen et al., 2015). Given that more Chinese e-cigarette manufacturers have coveted the domestic market and used a variety of marketing strategies to increase sales since China tightened up smoking controls (Liao, 2015), understanding e-cigarette gifting is urgently needed to inform both the recently burgeoning e-cigarette regulation in China (State Administration for Market Regulation, 2018; State Administration for Market Regulation, 2019) and health education campaigns around e-cigarettes in the future. Yet, e-cigarette gifting study is very scarce. To the best of our knowledge, only one previous study examined e-cigarette gifting in China (Wang et al., 2019). Using a mobile app-based survey in November 2015, Wang and colleagues found that 23.7% of young adults aged 19–29 had ever sent e-cigarettes as gifts to others; 6.6% of them obtained e-cigarettes as gifts. However, their study did not analyze e-cigarette gifting in age groups other than young adults aged 19–29. The present study analyzed data from Wave 5 of the ITC China Survey, a face-to-face population-based survey to examine the prevalence and correlates of receiving e-cigarettes as gifts from others and giving e-cigarettes as gifts to others among adults aged $\geq$ 18.

2. Methods

2.1. Data source and sample size

Wave 5 of the ITC China Survey, completed in July 2015, is the most recent survey wave. It used a multistage cluster sampling method, with sampling at each stage being random and proportional to population size, to obtain a representative sample of adult smokers and adult non-smokers who are aged 18 and older in five cities and five rural areas (Wu et al., 2015). The five cities (Beijing, Guangzhou, Kunming, Shanghai, and Shenyang) and five rural areas (Changzhi, Huzhou, Tongren, Yichun, and Xining), were "chosen for their breadth and diversity with respect to geographic region, economic development, reliance on a tobacco economy, and tobacco use" (ITC Project and Tobacco Control Office China CDC, 2017). Additional details of the Wave 5 sampling design can be found in the ITC China Survey Wave 5 Technical Report (ITC Project. ITC China Wave 5 Technical Report, 2017). The data we analyzed in this study are de-identified secondary survey data. According to the policy of Institutional Review Boards (IRB) of University of California, San Francisco, IRB review has been exempted.

2.2. Outcome variables

There were two outcome variables in this study: receiving e-cigarettes as gifts and giving e-cigarettes as gifts. Respondents were first asked whether they have ever heard of e-cigarettes. Only the respondents answering "yes" were further asked questions about receiving e-cigarette gifts and giving e-cigarette gifts.

The question about *receiving e-cigarettes as gifts* – "Have you ever received an electronic cigarette from others? (yes, no)" – was constructed as a binary variable with the value of 1 for those who answered "yes" and value of 0 for those who answered "no" or those who answered "no" to the "ever heard of e-cigarettes" question.

The question about *giving e-cigarettes as gifts* – "Have you ever bought an electronic cigarette? (no; yes, for my own use; yes, as gifts for others; yes, for my own use and gifts for others)" – was constructed as a binary variable with the value of 1 for those who answered "yes, as gifts for others" or "yes, for my own use and gifts for others", and value of 0 for those who answered "no" or "yes, for my own use" or those who answered "no" to the "ever heard of e-cigarettes" question.

2.3. Covariates

Covariates included sociodemographic characteristics, cigarette smoking intensity, attitude about cigarettes being good gifts, cigarette gifting experience, harm perception of e-cigarettes, and ever use of e-cigarettes. Sociodemographic characteristics included gender, age, income level, and education.

Cigarette smoking intensity consisted of three categories: light smokers, moderate smokers, and heavy smokers. Light, moderate, and heavy smokers were smokers whose cigarettes-per-day (CPD) was $\leq$ 10, between 11 and 20, and $\geq$ 21 cigarettes, respectively. CPD was assessed among current smokers who now smoke every day with the question: "On average, how many cigarettes do you smoke each day, including both factory-made and hand-rolled cigarettes?". Current smokers who now smoke some days were asked: "On average, how many cigarettes do you smoke each week, including both factory-made and hand-rolled cigarettes?", and their answer was divided by 7 to derive the average CPD.

Attitude about cigarette being good gifts was a 3-category variable, assessed by the statement: "Cigarettes are very good gifts for family or friends" with response options being "strongly disagree", "disagree", "neutral", "agree", and "strongly agree." We combined the first two answers into one category "negative", and the last two answers into one category "positive".

Cigarette gifting experience was a 2-category variable, assessed by two questions: "In the last 6 months, have you RECEIVED cigarettes as a gift from a family member or friend? If yes, how often?", and "In the last 6 months, have you GIVEN cigarettes as a gift to a family member or a friend? If yes, how often?". Respondents who answered "no" or "0 time" to both questions were classified as "no cigarette gifting experience". Otherwise, respondents who answered $\geq$ 1 time to either question were classified as "yes, having cigarette gifting experience".

Harm perception of e-cigarettes was a 3-category variable, assessed by a relative harmfulness question: "In your opinion, how harmful are electronic cigarettes, compared to regular cigarettes?", with response options being: "much less harmful", "less harmful", "as harmful", "more harmful", "much more harmful", and "don't know". This question was asked only for those who indicated on a prerequisite question that they had heard of e-cigarettes. From these responses, respondents were categorized as less harmful ("much less harmful" and "less harmful"), equally/more harmful ("as harmful", "more harmful", and "much more harmful"), and don't know (those who had never heard of e-cigarettes and who had heard of e-cigarettes but responded "don't know" to this relative harmfulness question).

Ever use of e-cigarettes was a 2-category variable, assessed by the question: "Have you ever used an electronic cigarette?", with response options being "yes" and "no". This question was asked only for those who indicated they had heard of e-cigarettes. Those who indicated that they had not heard of e-cigarettes were coded as "no".

2.4. Statistical analysis

We first applied the inflation weights, which provide an estimate based on the composition of the population, to estimate the population

prevalence of each outcome variable (receiving e-cigarette gifts and giving e-cigarette gifts). We further estimated the prevalence by urban/rural adults and smokers/nonsmokers. Given the small sample size of rural adults and nonsmokers and the minimal estimated prevalence among these groups, the subsequent analysis by covariates focused on urban smokers and used the rescaled weights. The rescaled weights were constructed by recalibrating the inflation weights to the sample sizes of each city, thereby preventing the results of analyses of the urban sample from being dominated by responses from large cities, such as Beijing and Shanghai. Bivariate analyses were conducted to determine if there was any difference in the prevalence of the outcome variable across all subgroups of each covariate in the sample of urban smokers. Then, multivariable logistic regression analyses were used to determine significant factors associated with receiving e-cigarette gifts and giving e-cigarette gifts. All analyses were carried out using SPSS version 26, accounting for the sampling weights and sampling design. A two-tailed p-value < 0.05 was considered statistically significant.

2.5. Study sample

The Wave 5 ITC China Survey sample consisted of 9,880 adults aged $\geq$ 18 years. After excluding participants with missing data on outcome variables and covariates, the study sample consisted of 9,274 respondents: 4,739 urban adults and 4,535 rural adults; and 6,901 smokers and 2,373 nonsmokers. The final study sample for the bivariate analyses and multivariable regression analyses contained 3,312 urban smokers.

3. Results

Table 1 shows that among all 9,274 adults, 52.5% were males, 45.0% were aged 55+, 43.8% were in the high-income group, 57.4% had medium education, 87.3% lived in urban areas, 18.5% were current smokers, 73.7% had negative attitude about cigarettes being good gifts, 18.5% reported ever receiving or giving cigarettes as gifts, 18.4 perceived e-cigarettes perceived e-cigarettes less harmful than cigarettes, and 2.0% reported ever use of e-cigarettes.

Table 2 shows that the population prevalence of receiving e-cigarette gifts was 1.3%, and the population prevalence of giving e-cigarette gifts was 0.5%. Among the urban adults (N = 4,739), 1.4% reported ever receiving e-cigarettes as gifts and 0.6% reported ever giving e-cigarettes as gifts. Among the rural adults (N = 4,535), 0.5% reported ever receiving e-cigarettes as gifts and 0.1% reported ever giving e-cigarettes as gifts. Among the smokers (N = 6,901), 4.5% reported ever receiving e-cigarettes as gifts and 1.0% reported ever giving e-cigarettes as gifts. Among the nonsmokers (N = 2,373), 0.6% reported ever receiving e-cigarettes as gifts and 0.4% reported ever giving e-cigarettes as gifts. Among the urban smokers (N = 3,312), 5.3% reported ever receiving e-cigarettes as gifts and 1.2% reported ever giving e-cigarettes as gifts.

Among the final study sample of 3,312 urban smokers, 95.3% were males; 40.9% were aged 40–54; 44.5% in the middle-income group; and 65.9% with medium education. Moderate smokers accounted for 45.3% of the sample. 65.1% had negative attitudes about cigarettes as gifts, 47.4% reported ever receiving or giving cigarettes as gifts, 27.5% perceived e-cigarettes less harmful than cigarettes, and 10.4% reported ever use of e-cigarettes (Table 3).

3.1. Correlates of receiving e-cigarettes as gifts among urban smokers

Table 4 shows the weighted percentage of receiving e-cigarettes as gifts among urban smokers by covariates. The bivariate analyses show that the weighted percentage of receiving e-cigarette gifts differed significantly by all covariates except gender, age, and attitude about cigarettes being good gifts.

After controlling for other confounding factors, results of the multivariable logistic regression model indicated that those aged 40–54 (AOR = 2.65, 95% confidence interval (CI) = 1.49, 4.73) and 55+ (AOR = 3.19, 95% CI = 1.75, 5.84) were more likely to receive e-cigarette gifts compared to those aged 18–39. The odds of reporting receiving e-cigarette gifts were also significantly higher among those with high education compared to those with low education, among heavy smokers compared to light smokers, among those who perceived e-cigarettes were equally/more harmful than cigarettes compared to those who don't know the relative harmfulness of e-cigarettes versus cigarettes, and among ever e-cigarette users compared to never e-cigarette users (AOR = 31.42; 95% CI = 19.57, 50.46).

Table 1
Description of all adults from Wave 5 of the ITC China Survey (N = 9,274).

Characteristics		N	Weighted column %[#]
Total		9274	100.0%
Gender	Male	7668	52.5%
	Female	1606	47.5%
Age	18–39	2040	16.9%
	40–54	3918	38.0%
	55+	3316	45.0%
Income level	Low	1459	7.2%
	Middle	3883	41.0%
	High	2594	43.8%
	Not stated	1338	7.9%
Education	Low	2064	14.9%
	Medium	5651	57.4%
	High	1559	27.7%
Urban/rural area type	Urban area	4739	87.3%
	Rural area	4535	12.7%
Cigarette smoking status	Current smoker	6901	18.5%
	Nonsmoker	2373	81.5%
Attitude about cigarettes being good gifts	Negative	6829	73.7%
	Neutral	1330	13.9%
	Positive	1115	12.3%
Cigarette gifting experience	No	6440	81.5%
	Yes	2834	18.5%
Harm perception of e-cigarettes	Don't know	6772	75.2%
	Less harmful than cigarettes	1955	18.4%
	Equally/more harmful than cigarettes	547	6.4%
Ever use of e-cigarettes	No	8722	98.0%
	Yes	552	2.0%

[#] Calculation was based on the ITC China Survey inflation weights.

Table 2
Prevalence of receiving and giving e-cigarettes as gifts among all adults and subgroups stratified by urban/rural area and smoking status, Wave 5 of the ITC China Survey (N = 9,274).

	Sample size	Receiving e-cigarettes as gifts		Giving e-cigarettes as gifts	
		N	Prevalence[#]	N	Prevalence[#]
All	9,274	224	1.3%	51	0.5%
Urban/rural area type					
Urban areas	4,739	170	1.4%	42	0.6%
Rural areas	4,535	54	0.5%	9	0.1%
Cigarette smoking status					
Current smokers	6,901	202	4.5%	42	1.0%
Nonsmokers	2,373	22	0.6%	9	0.4%
Urban/rural × smoking status					
Urban current smokers	3,312	150	5.3%	34	1.2%
Urban nonsmokers	1,427	20	0.6%	8	0.5%
Rural current smokers	3,589	52	1.3%	8	0.3%
Rural nonsmokers	946	2	0.2%	1	0.0%

[#] Calculation was based on the ITC China Survey inflation weights.

Table 3
Description of the final study sample of urban smokers by covariates, from Wave 5 of the ITC China Survey (N = 3,312).

Covariates		N	Weighted column %[#]
Total		3312	100.0%
Gender	Male	3129	95.3%
	Female	183	4.7%
Age	18–39	607	18.8%
	40–54	1374	40.9%
	55+	1331	40.3%
Income level	Low	171	5.7%
	Middle	1500	44.5%
	High	1384	41.6%
	Not stated	257	8.1%
Education	Low	254	8.2%
	Medium	2170	65.9%
	High	888	25.9%
Cigarette smoking intensity	Light smoker	1426	43.4%
	Moderate smoker	1520	45.3%
	Heavy smoker	366	11.2%
Attitude about cigarettes being good gifts	Negative	2174	65.1%
	Neutral	587	17.9%
	Positive	551	17.0%
Cigarette gifting experience	No	1761	52.6%
	Yes	1551	47.4%
Harm perception of e-cigarettes	Don't know	2045	61.7%
	Less harmful than cigarettes	935	27.5%
	Equally/more harmful than cigarettes	332	10.8%
Ever use of e-cigarettes	No	2971	89.6%
	Yes	341	10.4%

[#] Calculation was based on the ITC China Survey rescaled weights.

3.2. Correlates of giving e-cigarettes as gifts among urban smokers

Table 5 shows the weighted percentage of giving e-cigarettes as gifts among urban smokers by covariates. The bivariate analyses show that the weighted percentage of giving e-cigarette gifts was significantly different by age, attitudes about cigarettes being good gifts, harm perception of e-cigarettes, and ever use of e-cigarettes.

After controlling for other confounding factors, giving e-cigarettes as gifts to others was much less likely to be reported by urban smokers aged 55+ than young adults aged 18–39 (AOR = 0.07; 95% CI = 0.01, 0.38). The odds of reporting giving e-cigarette gifts were significantly higher among those with positive attitude about cigarettes being good gifts compared to those with negative attitude and among ever e-cigarette users compared to never e-cigarette users.

4. Discussion

This is the first study using a population-based survey to examine receiving and giving e-cigarettes as gifts in China. Our estimated population prevalence of ever receiving e-cigarette gifts (1.3%) and ever giving e-cigarette gifts (0.5%) among adults is much lower than the prevalence estimates of ever receiving cigarette gifts and ever giving cigarette gifts among Chinese adults that were documented in the literature (Rich et al., 2014; Shan, 2010; Liao et al., 2021; Xu et al., 2016; Zhang and Hu, 2016). This may be explained by the fact that e-cigarette use in China was very low relative to high smoking rates in China. According to the 2015 China Adult Tobacco Survey (CATS), smoking prevalence was 27.7% (Parascandola and Xiao, 2019). In contrast, our study estimated that among adults, ever e-cigarette use prevalence was 2.0%. Similarly, the 2015 CATS showed that among Chinese aged 15+, the prevalence of ever use of e-cigarettes was 3.1% and the prevalence of current use of e-cigarettes was 0.5% (Feng et al., 2018). A study used the China Chronic Disease and Nutrition Surveillance (CCDNS) survey data and estimated that the prevalence of past 30-

Table 4
Factors associated with receiving e-cigarettes as gifts among urban smokers from Wave 5 of the ITC China Survey (N = 3,312).

Covariates		Adults who received e-cigarettes as gifts			Multivariable regression model[#]		
		N	Weighted percentage[#]	Chi-square test[#]	Adjusted OR	(95% CI)	p value
Gender	Male	143	4.8%	0.06; p =.802	Referent		
	Female	7	5.3%		1.61	(0.67, 3.91)	0.289
Age	18–39	26	4.1%	1.77; p =.412	Referent		
	40–54	67	5.4%		2.65	(1.49, 4.73)**	0.001
	55+	57	4.6%		3.19	(1.75, 5.84)***	<0.001
Income level	Low	5	3.7%	7.97*; p =.047	Referent		
	Middle	65	4.6%		0.72	(0.29, 1.80)	0.482
	High	65	4.5%		0.75	(0.30, 1.87)	0.530
	Not stated	15	8.3%		1.94	(0.69, 5.42)	0.206
Education	Low	7	3.0%	9.04*; p =.011	Referent		
	Medium	89	4.3%		1.38	(0.60, 3.15)	0.449
	High	54	6.6%		2.47	(1.01, 6.06)*	0.048
Cigarette smoking intensity	Light smoker	44	3.4%	33.44***; p <.001	Referent		
	Moderate smoker	70	4.8%		1.27	(0.82, 1.97)	0.284
	Heavy smoker	36	10.7%		2.69	(1.54, 4.70)***	<0.001
Attitude about cigarettes being good gifts	Negative	92	4.4%	3.63; p =.163	Referent		
	Neutral	30	5.0%		1.05	(0.63, 1.77)	0.848
	Positive	28	6.3%		1.11	(0.67, 1.85)	0.681
Cigarette gifting experience	No	56	3.5%	14.31***; p <.001	Referent		
	Yes	94	6.3%		1.30	(0.86, 1.97)	0.215
Harm perception of e-cigarettes	Don't know	26	1.4%	132.35***; p	Referent		
	Less harmful than cigarettes	88	10.0%	<.001	1.66	(0.95, 2.91)	0.078
	Equally/more harmful than cigarettes	36	11.0%		3.68	(2.00, 6.75)***	<0.001
Ever use of e-cigarettes	No	37	1.4%	738.30***; p	Referent		
	Yes	113	34.8%	<.001	31.42	(19.57, 50.46) ***	<0.001

Note: *p <.05; **p <.01; ***p <.001.
[#] Calculation was based on the ITC China Survey rescaled weights.

Table 5
Factors associated with giving e-cigarettes as gifts among urban smokers from Wave 5 of the ITC China Survey (N = 3,312).

Covariates		Adults who gave e- cigarettes as gifts			Multivariable regression model[#]		
		N	Weighted percentage[#]	Chi-square test[#]	Adjusted OR	(95% CI)	p value
Gender	Male	34	1.3%	1.93; p =.165	Referent		
	Female	0	0.0%		-		
Age	18–39	12	2.3%	21.82***; p <.001	Referent		
	40–54	20	1.8%		1.05	(0.49, 2.25)	0.909
	55+	2	0.2%		0.07	(0.01, 0.38)**	0.002
Income level	Low	1	0.5%	1.78, p =.620	Referent		
	Middle	13	1.2%		2.72	(0.28, 26.73)	0.392
	High	15	1.2%		2.72	(0.27, 27.06)	0.393
	Not stated	5	1.9%		4.36	(0.38, 49.65)	0.235
Education	Low	0	0.0%	5.74; p =.057	–		
	Medium	23	1.1%		Referent		
	High	11	1.8%		0.94	(0.45, 1.97)	0.865
Cigarette smoking intensity	Light smoker	17	1.3%	1.66; p =.437	Referent		
	Moderate smoker	12	0.9%		0.51	(0.25, 1.06)	0.071
	Heavy smoker	5	1.6%		0.65	(0.24, 1.78)	0.399
Attitude about cigarettes being good gifts	Negative	19	0.9%	7.53*; p =.023	Referent		
	Neutral	5	1.0%		1.03	(0.40, 2.67)	0.949
	Positive	10	2.3%		2.94	(1.35, 6.39)**	0.007
Cigarette gifting experience	No	14	0.9%	3.73; p =.054	Referent		
	Yes	20	1.6%		1.32	(0.63, 2.73)	0.464
Harm perception of e-cigarettes	Don't know	9	0.6%	15.25***; p <.001	Referent		
	Less harmful than cigarettes	20	2.3%		1.30	(0.54, 3.09)	0.559
	Equally/more harmful than cigarettes	5	1.4%		1.07	(0.35, 3.28)	0.905
Ever use of e-cigarettes	No	16	0.7%	62.60***; p <.001	Referent		
	Yes	18	5.6%		6.78	(3.05, 15.08)***	<0.001

Note: *p <.05; **p <.01; ***p <.001.
[#] Calculation was based on the ITC China Survey rescaled weights.

day e-cigarette use among Chinese adults aged 18+ was 1.3% in 2015–16 and 1.6% in 2018–19 (Zhao et al., 2020).

Our results showed that not only smokers, but nonsmokers were involved in the practices of receiving and giving e-cigarettes as gifts. This is similar to the phenomenon of cigarette gifting in China where both smokers and nonsmokers receive cigarettes as gifts (Hu et al., 2012). Though compared to smokers, nonsmokers' prevalence of receiving e-cigarette gifts was lower (0.6% vs. 4.5%) and so was nonsmokers' prevalence of giving e-cigarettes as gifts (0.4% vs. 1.0%), it merits attention. A previous study showed that 30.0% of never smokers and 15.3% of former smokers used e-cigarettes out of curiosity (Wang et al., 2019). The e-cigarettes received as gifts provide easy access for nonsmokers to try e-cigarettes. A considerable amount of research has found that e-cigarette use in nonsmokers is associated with later smoking (Khouja et al., 2021; Banks et al., 2020). Therefore, tobacco control interventions such as educational campaigns should be taken to prevent e-cigarettes from becoming a gift choice for nonsmokers.

The prevalence of receiving e-cigarette gifts and giving e-cigarette gifts was much higher among urban smokers than urban nonsmokers and rural adults. In addition, we found that among urban smokers, heavy smokers were significantly more likely to report receiving e-cigarettes as gifts than light smokers. This may be related to the public's wide exposure to information that e-cigarettes are less harmful alternatives to cigarettes and can help smokers with smoking cessation (Lyu et al., 2021; Yao et al., 2016). A study also found that 41.2% of young adults in China believed e-cigarettes can help to quit smoking (Wang et al., 2019). Therefore, it is reasonable to infer that when people gift tobacco products to family members or friends who are heavy smokers, e-cigarettes may be perceived as appropriate gifts, especially in the context of rising awareness of smoking harm on health in China. In addition, we found that ever use of e-cigarettes is associated with both receiving and giving e-cigarettes as gifts. In the Chinese gifting culture, both the giver orientation and recipient orientation influence the selection of gifts (Qian et al., 2007). Therefore, it is understandable that the experience of ever using e-cigarettes may make ever users more likely to be e-cigarette gift receivers and givers than those without the experience.

We also found several sociodemographic characteristics associated with receiving and giving e-cigarettes as gifts. First, the unadjusted prevalence of both receiving and giving e-cigarettes as gifts was higher among urban adults than rural adults. This is understandable in that e-cigarettes are relatively novel products compared to conventional cigarettes and marketing of e-cigarettes has been primarily focused on cities. A study estimated that the awareness of e-cigarettes among Chinese aged 15+ who lived in rural areas was much lower than those living in urban areas (37.0% vs. 56.3% in 2018) (Xiao et al., 2021). Second, among urban smokers, those aged 55+ were significantly less likely to give e-cigarettes as gifts to others. Previous studies have found that young adults are the group with the highest rates of e-cigarette awareness and use, and the use rate and awareness decrease with age (Zhao et al., 2020; Xiao et al., 2021). It indicates that young adults may be more likely to have e-cigarette gifting behavior than older adults given their higher rates of e-cigarette use and awareness. Despite the lower odds of giving e-cigarette gifts to others among urban smokers aged 55+, they along with those aged 40–54 had higher odds of receiving e-cigarette gifts than those aged 18–24. This may be related to another

finding of this study that urban smokers aged 40+ accounted for 81.2% of the urban smokers, a group who are more likely to receive e-cigarette gifts given the increasing awareness of smoking harm and media portrayal of e-cigarettes as less harmful alternatives to cigarettes and smoking cessation assistance (Lyu et al., 2021). Third, urban smokers with higher education were more likely to receive e-cigarettes as gifts. This is consistent with previous research on cigarette gifting in China that found higher educated smokers were more likely to receive cigarette gifts (Zhang and Hu, 2016). It may be because gifting in the Chinese culture is a way to show respect to superiors and influence resource allocation by those in authority (Bian, 1994; Yan, 1996), who are often people with high education.

This study found that, after controlling for confounding factors, the odds of giving e-cigarettes as gifts to others were 3.07 times greater among urban smokers who had a positive attitude toward cigarettes being good gifts compared to urban smokers who had a negative attitude. This finding underscores the importance of launching educational campaigns targeting the deeply rooted practice of cigarette gifting in order to reduce its social acceptance. Effective campaigns have not only been proven to decrease public' agreement with gifting cigarettes (Huang et al., 2015), but also have a potentially additional effect on e-cigarette gifting prevention. Another interesting finding of this study was that urban smokers who perceived e-cigarettes as equally/more harmful than cigarettes were more likely to report receiving e-cigarettes as gifts than those who had no idea about the relative harmfulness of e-cigarettes versus cigarettes. This may be because the great majority of e-cigarette receivers in our analyses had medium or high education, which enabled them to get access to diverse information about possible e-cigarette harm. It may also be because receiving e-cigarette gifts, a relatively novel product motivated the gift receivers to learn more about it, including the health impact from e-cigarettes compared to cigarettes. However, our study cannot address this possibility. It warrants future research.

This study has two limitations. First, the survey data analyzed in this study were completed in July 2015; therefore, the prevalence estimates may not accurately reflect e-cigarette receiving and giving as gifts in China today. However, Wave 5 of the ITC China Survey is the most recent national survey providing e-cigarette gifting data in China. In addition, adult current e-cigarette use in China only increased 0.3% (Zhao et al., 2020). Further the rigorous probability sampling design of the Wave 5 ITC China Survey provides not only one of the first insights into the culturally specific e-cigarette gifting behavior in China but also baseline data for future studies to examine e-cigarette gifting pattern over time. Second, the sample size of respondents with e-cigarette gifting experience was small. Though this accurately reflects the small proportion of e-cigarette users in China (Wang et al., 2019; Zhao et al., 2020), the small sample size may limit the statistical power to identify significant correlates of receiving and giving e-cigarette as gifts and our results may not prove to be robust. However, it should be noted that we did obtain a number of important findings that were statistically significant, which is more impressive since statistical significance was achieved despite the small sample size.

5. Conclusions

Our findings indicate that e-cigarette gifting has not yet become a prevalent practice in China. However, there is evidence that it is occurring on a relatively small scale. Precautions should be taken to prevent e-cigarettes from becoming a gift choice for nonsmokers. E-cigarettes may be perceived as appropriate gifts for smokers, especially heavy smokers. The positive association between attitude about cigarettes being good gifts and giving e-cigarettes as gifts may also imply that health campaigns designed to combat the social acceptance of cigarette gifting could have a similar effect on reducing e-cigarette gifting.

6. Ethics statement

The survey protocols and all materials for the Wave 5 of the ITC China Survey, including the survey questionnaires, were cleared for ethics by the Office of Research Ethics, University of Waterloo, Canada (ORE#15305 and ORE#17014/30105); Cancer Council Victoria, International Review Board, Australia (IRB IER0803; Chinese Center for Disease Control and Prevention International Review Board, China (IRB201325).

7. Data availability statement

In each country participating in the international Tobacco Control Policy Evaluation (ITC) Project, the data are jointly owned by the lead researcher(s) in that country and the ITC Project at the University of Waterloo. Data from the 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. The criteria for data usage approval and the contents of the Data Usage Agreement are described online (https://www.itcproject.org). The authors of this paper obtained the data following this application process. They did not have any special access privileges. Others would be able to access these data in the same manner as the authors.

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Declaration of Competing Interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Geoffrey T Fong has been an expert witness or a consultant on behalf of governments in litigation involving the tobacco industry and has served as a paid expert consultant to the Ministry of Health of Singapore in reviewing the evidence on plain/standardised packaging. All other authors have no conflicts of interests to declare.

References

Banks, E., Beckwith, K., Joshy, G., 2020. Summary report on use of e-cigarettes and relation to tobacco smoking uptake and cessation, relevant to the Australian context. Australian National University National Centre for Epidemiology and Population Health (NCEPH). [cited 2022 Feb 28]; Available from: http://hdl.handle.net/1885/211618.

Bian, Y., 1994. Guanxi and the Allocation of Urban Jobs in China. China Q. 140, 971–999.

Chan, A.K.K., Denton, L., Tsang, A.S.L., 2003. The art of gift giving in China. Business Horizons 46 (4), 47–52.

Chinese Center for Disease Control and Prevention, 2019. 2018 Zhongguo chengren yancao diaocha jieguo [2018 China adult tobacco survey results]. 2019 [cited 2020 May 20]; Available from: http://m.chinacdc.cn/jkzt/yckz/ycdwh/201906/t20190601_202997.html.

Chu, A., Jiang, N., Glantz, S.A., 2011. Transnational tobacco industry promotion of the cigarette gifting custom in China. Tob. Control 20.

Eriksen, M., Mackay, J., Schluger, N., Gomeshtapeh, F.I., Drope, J., 2015. The Tobacco Atlas, fifth ed. American Cancer Society, Atlanta.

Feng, G., Nan, Y., Jiang, Y., 2018. Prevalence of e-cigarette in China: preliminary findings from two surveys. Tobacco Induced Diseases 16.

Hu, M., Rich, Z.C., Luo, D., Xiao, S., 2012. Cigarette Sharing and Gifting in Rural China: A Focus Group Study. Nicotine Tob. Res. 14 (3), 361–367.
Huang, L.-L., Thrasher, J.F., Jiang, Y., Li, Q., Fong, G.T., Chang, Y., Walsemann, K.M., Friedman, D.B., 2015. Impact of the 'Giving Cigarettes is Giving Harm' campaign on knowledge and attitudes of Chinese smokers. Tob Control. 24 (Supplement 4), iv28–iv34.
ITC Project and Tobacco Control Office China CDC. ITC China Project Report: Findings from the Wave 1 to 5 Surveys (2006-2015). University of Waterloo, Waterloo, Ontario, Canada, and Tobacco Control Office, Chinese Center for Disease Control and Prevention, Beijing, China; 2017 [cited 2021 September 11]; Available from: https://itcproject.org/findings/reports/itc-china-project-report-waves-1-to-5-2006-2015-october-2017/.
ITC Project. ITC China Wave 5 Technical Report (2013-2015). 2017 [cited 2021 Oct. 31]; Available from: https://itcproject.s3.amazonaws.com/uploads/documents/ITC_China_Wave_5_Tech_Report_April_5_2017_F.pdf.
Khouja, J.N., Suddell, S.F., Peters, S.E., Taylor, A.E., Munafò, M.R., 2021. Is e-cigarette use in non-smoking young adults associated with later smoking? A systematic review and meta-analysis. Tob. Control 30 (1), 8–15.
Liao, Y., Tang, J., McNeill, A., Kelly, B.C., Cohen, J.E., 2021. Impact of cigarette package warnings on attitudes towards sharing and gifting cigarettes in China: a nationwide study of smokers and non-smokers. Tob. Control. tobaccocontrol-2020-056160.
Liao, A., 2015. Chinese E-cigarette Makers Shift to Domestic Markets. Tobacco Asia; [cited 2021 August, 20]; Available from: https://www.tobaccoasia.com/features/chinese-e-cigarette-makers-shift-to-domestic-markets/.
Lyu, J.C., Wang, D., Mao, Z., Ling, P.M., 2021. Evolution of media frames about e-cigarettes from 2004 to 2019: a content analysis of newspapers in China. Health Educ. Res.
Lyu, J.C., Wang, D., Huang, P., Ling, P., 2021. News Media Coverage of E-Cigarettes: An Analysis of Themes in Chinese Newspapers. Int. J. Commun. 15, 2827–2848.
Parascandola, M., Xiao, L., 2019. Tobacco and the lung cancer epidemic in China. Transl. Lung Cancer Res. 8 (S1), S21–S30.
Qian, W., Abdur Razzaque, M., Ah, K.K., 2007. Chinese cultural values and gift-giving behavior. J. Consumer Market. 24, 214–228.
Rich, Z.C., Hu, M.i., Xiao, S., 2014. Gifting and sharing cigarettes in a rural Chinese village: a cross-sectional study. Tob. Control 23 (6), 496–500.
Rich, Z.C., Xiao, S., 2012. Tobacco as a social currency: cigarette gifting and sharing in China. Nicotine Tob Res. 14 (3), 258–263.
Shan, J., 2010. Cigarette top New Year gift list: Poll. China Daily. [cited 2021 Nov 19]; Available from: https://www.chinadaily.com.cn/china/2010-02/05/content_9431234.htm.
State Administration for Market Regulation, 2018. Notice on Prohibiting the Sale of Electronic Cigarettes to Minors. [cited 2020 April 10]; Available from: http://www.gov.cn/fuwu/2018-08/31/content_5317952.htm.
State Administration for Market Regulation, 2019. Notice on Further Protecting Minors from Electronic Cigarettes. [cited 2020 April 10]; Available from: http://gkml.samr.gov.cn/nsjg/xyjgs/201911/t20191101_308077.html.
Wang, W., He, Z., Feng, N., Cai, Y., 2019. Electronic cigarette use in China: Awareness, prevalence and regulation. Tob. Induced Diseases 17.
Wang, X., Zhang, X., Xu, X., Gao, Y., 2019. Perceptions and use of electronic cigarettes among young adults in China. Tobacco induced diseases 17.
Wu, C., Thompson, M.E., Fong, G.T., Jiang, Y., Yang, Y., Feng, G., Quah, A.C.K., 2015. Methods of the International Tobacco Control (ITC) China Survey: Waves 1, 2 and 3. Tob. Control 24 (Supplement 4), iv1–iv5.
Xiao, L., Yin, X., Di, X., Nan, Y., Lyu, T., Wu, Y., et al., 2021. Awareness and prevalence of e-cigarette use among Chinese adults: policy implications. Tob. Control. tobaccocontrol-2020-056114.
Xu, Y., Xu, S.Y., Wu, Q.Q., Guo, Y.J., 2016. Association between secondhand smoke exposure at home and cigarette gifting and sharing in Zhejiang, China: a repeat cross-sectional study. BMJ Open 6, e010058.
Yan, Y., 1996. The Flow of Gifts: Reciprocity and Social Networks in a Chinese Village. Stanford University Press, Redwood City, CA.
Yang, M., 1994. Gifts, favors, and banquets: The art of social relationships in China. Cornell University Press, Ithaca, NY.
Yao, T., Jiang, N., Grana, R., Ling, P.M., Glantz, S.A., 2016. A content analysis of electronic cigarette manufacturer websites in China. Tob. Control 25 (2), 188–194.
Zhang, X.L.S., Hu, T.W., 2016. The epidemic of cigarette gifting: A social barrier of tobacco control in China. In: TW H, editor. Economics of bobacco control in China: From policy research to practice. Hackensack, NJ: World Scientific. pp. 129-46.
Zhao, Z., Zhang, M., Wu, J., Xu, X., Yin, P., Huang, Z., Zhang, X., Zhou, Y., Zhang, X., Li, C., Wang, L., Gao, G.F., Wang, L., Li, X., Zhou, M., 2020. E-cigarette use among adults in China: findings from repeated cross-sectional surveys in 2015–16 and 2018–19. Lancet Public Health. 5 (12), e639–e649.