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A comprehensive content analysis of 104 Chinese electronic cigarette manufacturing enterprise official websites

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ABSTRACT

Objective The goal was to analyse website content of Chinese electronic (e) cigarette manufacturing enterprises and understand the marketing strategies to provide evidence for decision-makers to regulate manufacturers.

Methods Through QCC.com, one of the largest enterprise information query platforms in China, we identified 104 official manufacturer websites in 2021. A codebook including 6 sections with 31 items was developed and all webpages were coded separately by two trained researchers.

Results Over half of the websites (56.7%) did not have age verification for entry. Thirty-two (30.8%) websites had no restriction for minors to use or purchase e-cigarettes, and 79 (76.0%) had no health warning. Overall, 99 websites (95.2%) displayed their products, and 72 (69.2%) displayed e-flavours. The most frequently used descriptions of products included good taste (68.3%), positive mood (62.5%), leakage resistance (56.7%), enjoyment (47.1%), reduced harm (45.2%), alternatives to cigarettes (43.3%) and long battery life (42.3%). Additionally, 75 websites (72.1%) provided contact information on different channels, including WeChat (59.6%), Weibo (41.3%), Facebook (13.5%), Instagram (12.5%) and brand apps (2.9%). Manufacturers provided investment and franchise information (59.6%) and offline store information (17.3%). In addition, 41.3% websites included content regarding corporate social responsibility.

Conclusions Chinese e-cigarette manufacturers' official websites have become a platform for presenting product and brand information, establishing online and offline marketing loops, and displaying corporate social responsibility with weak age restrictions on access and a lack of health warnings. The Chinese government should implement strict regulatory measures on e-cigarette enterprises.

INTRODUCTION

In 2014, electronic (e) cigarettes generated US\$2.76 billion in global sales, rising to US\$15 billion in 2019.¹ China manufactures approximately 90% of the world's e-cigarettes, and is the largest global producer.² While e-cigarette use prevalence is lower in China than many high-income countries such as the UK and the USA,³ they have become increasingly popular among Chinese adolescents and young adults.^{3–5} In 2021, 86.6% of students were aware of e-cigarettes, and the prevalence of e-cigarette

WHAT IS ALREADY KNOWN ON THIS TOPIC

- ⇒ Before 2018, online sales of electronic (e) cigarettes in China accounted for about 80% of the consumer market.
- ⇒ Since 2018, the Chinese government has issued some policies to regulate e-cigarettes.
- ⇒ There has only been one previous content analysis of e-cigarette manufacturer websites with a total of 18 samples in 2013 that presented a wide variety of flavours and celebrity endorsements without age restrictions; an update is urgently needed.

WHAT THIS STUDY ADDS

- ⇒ Manufacturers' websites introduce attractive appearance and flavours, and reinforce implied health, emotion and lifestyle benefits of e-cigarettes.
- ⇒ Two websites still offer purchase services, which violates current regulations.
- ⇒ Manufacturers use multichannel engagement strategies including social media and contact information to increase online presence, prompt of offline stores and franchisee opportunities to maximise sales, which work as a bridge between the different marketing channels.
- ⇒ Manufacturers support youth e-cigarette prevention programmes to improve the corporate image.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

- ⇒ Advertisement laws should provide clear definitions of what constitutes advertising, promotion and sponsorship, as well as implementation details of regulations.
- ⇒ The Chinese government should establish a mandatory age-gating approach to prohibit minors from accessing e-cigarette manufacturer websites.
- ⇒ Scientifically unproven or inconclusive health claims should be prohibited.

experimentation and current e-cigarette use among students was 16.1% and 3.6%, respectively.⁶

One strategy to reduce e-cigarette use among adolescent and young adults is to decrease their exposure to e-cigarette marketing.⁷ A growing body of studies shows that e-cigarette marketing exposure, even if only brief, has increased positive



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perceptions of e-cigarettes, intentions to use and e-cigarette uptake among youth.^{8–12} A US study found that the e-cigarette use among current youth was associated with frequent exposure to e-cigarette advertising from the internet (OR=3.1), newspapers/magazines (OR=2.5), stores (OR=2.8) and TV/movies (OR=2.1).¹³ However, e-cigarette enterprises preferred online marketing through websites and social media rather than traditional forms of marketing.¹⁴

The number of internet users in China reached 1.03 billion or 73.0% of the total population by December 2021,¹⁵ making the internet an effective and appealing commerce channel to a growing audience.¹⁶ E-cigarette manufacturer official websites are important platforms to promote products, brands, corporate philosophies and social images. When searching a specific e-cigarette brand through Baidu (the most popular search platform in China), the top result is the corresponding brand's official website. In recent years, manufacturers have made a wide range of efforts to optimise their websites. For example, some manufacturers' websites offer new store locators that can help consumers find nearby stores.¹⁷ It is important to understand the content of these official websites to identify common tactics and provide a reference for regulators.

Although WHO Framework Convention on Tobacco Control (FCTC) guidelines suggests that restrictions on tobacco advertising, promotion and sales should apply to e-cigarettes,¹⁸ there was no strict supervision of e-cigarette marketing in China before 2018. According to the National Advertisement Law Amendment,¹⁹ tobacco advertisements are banned in the mass media, public places, public transportation and outdoors. In 2018, the State Tobacco Monopoly Administration (STMA) and the State Administration for Market Regulation (SAMR) issued a notice banning e-cigarette sales to minors,²⁰ which was the first national-level regulation on e-cigarettes in China. In 2019, STMA and SAMR released another notice further urging e-cigarette manufacturers and retailers to stop selling and advertising e-cigarettes through online channels.²¹ In 2019, eight government agencies jointly issued a notice requiring e-cigarette manufacturers to withdraw e-cigarette advertisements on the internet.²² However, without a specific definition of e-cigarette advertisement and detailed enforcement measures, some manufacturers may behave as if no regulations apply to their products.

Some international studies have focused on e-cigarette retailer websites and discovered absent age restriction, unsupported health information and abundant marketing appeals.^{23–25} A 2013 content analysis of Chinese e-cigarette manufacturers of 18 websites found that they presented a wide variety of flavours and celebrity endorsements without age restrictions. However, that analysis only searched for manufacturer websites on Alibaba, which may not have resulted in a full list of websites.²⁶ In addition, e-cigarette-related enterprises in China have grown rapidly, increasing by 110 000 between 2013 and 2019.²⁷ The current marketing environment, competitive landscape and regulatory measures of the e-cigarette industry in China have undergone huge changes, making the previous findings less applicable today. Our study aims to observe the current content of the official websites of Chinese e-cigarette manufacturers and monitor compliance with marketing regulations. The findings provide evidence to inform legislation to regulate e-cigarette marketing in China and other countries with similar situations.

METHOD

A content analysis was conducted after identifying e-cigarette manufacturer official websites.

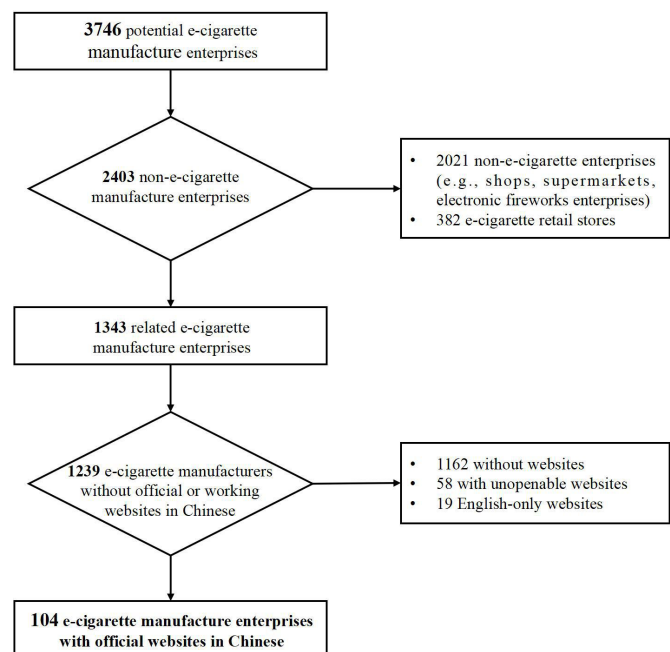


Figure 1 Sample selection process.

Sample

QCC (QCC.com) is one of the largest enterprise information query platforms in China. Industrial and commercial information in QCC comes from the National Enterprise Credit Information Publicity System and other national websites.²⁸ As a publicly available database, it can provide information on legal representatives, scope of business license, company addresses, official websites, registration statuses and other commercial registration information. We searched e-cigarette enterprises on QCC.com by setting the screening condition 'Keyword=e-cigarette (Dian Zi Yan in Chinese)', 'Industry category=manufacturing (Zhi Zao Ye in Chinese)', 'Search scope=enterprise name, brand/product, scope of business license (Qi Ye Ming Cheng, Pin Pai/Chan Pin, Jing Ying Fan Wei in Chinese)', 'Registration status=current/existing (Zai Ye/Cun Xu in Chinese)' and found 3746 potential e-cigarette manufacture enterprises in April 2021. We excluded 2403 non-e-cigarette manufacture enterprises (such as household electronic appliances, batteries, electronic fireworks enterprises, etc), 1239 e-cigarette manufacturers without official or working websites in Chinese, which left 104 websites for the final analysis. The sample selection process is summarised in figure 1.

Codebook development

Codebook development was a top-down/bottom-up process. This process included (1) reviewing the previous literature about tobacco and e-cigarette websites,^{29–32} which allowed us to identify the marketing strategies used by tobacco and e-cigarette websites and (2) reviewing 20 Chinese e-cigarette manufacturer official websites, which helped us to identify extra strategies. The codebook was reviewed by the working group, refined and retested to generate consistent definitions. The final codebook consisted of 6 sections with 31 items, including basic information, age restrictions, health warnings, engagement strategies, marketing appeals and corporate social responsibilities (table 1).

Coding procedure

Two researchers (HD and LF) were trained for 2 weeks through an iterative process of coding websites, comparing codes and

Table 1 Codebook for manufacturers' websites

Section	Item	Definition
Basic information	Website type	Corporate website (represented the enterprise as a formal business and presented their corporate image to the public) or brand-specific website (unique to a particular brand)
	Brand name	Use of texts or pictures to display brand name (eg, RELX)
	Number of navigation columns	Number of columns in the homepage to provide quick access to the website content
	Theme of navigation columns	Topics in the navigation columns, reflecting the main categories of the website content (eg, news centre)
	Number of scrolling images	Total number of automatic switching and playing pictures of all the webpages
	Theme of scrolling images	Topics of scrolling image (eg, product display)
	Number of videos	Total number of videos on all the webpages
	Theme of videos	Topics of video (eg, product introduction)
Age restrictions	Age verification for website entry	Restrict website access based on user age (eg, pop up a window to verify age before permitting entry to the website)
	Age-restricted statement for e-cigarette usage	Use of texts or pictures to inform about age restriction for e-cigarette use (eg, minors are prohibited from using e-cigarettes)
	Usage restriction visibility	Position in website to display the usage restriction claim (eg, at the top or bottom of the page with scrolling requirements)
	Age-restricted statement for e-cigarette purchase	Use of texts, pictures or videos to inform about age restriction for e-cigarette purchase (eg, minors are not allowed to purchase e-cigarettes)
	Purchase restriction visibility	Position in website to display the purchase restriction claim (eg, at the top or bottom of all pages with scrolling requirements)
Health warning	Statement of health warning	A description of the harm of tobacco or e-cigarettes use (eg, product contains nicotine, which is addictive) through texts, pictures or videos
Marketing appeals	Product appearance shown	Use of texts, pictures or videos to display product image and/or package
	E-flavour shown	Use of texts, pictures or videos to display product flavour (eg, mint)
	Production process	Introduce production process of the e-cigarette through texts, pictures or videos
	Price shown	Display the price of the product
	Product ingredients shown	Use of texts, pictures or videos to display product ingredients (eg, propylene glycol)
	Awards shown	Use of texts, pictures or videos to display awards for product and enterprise (eg, National Science Progress Award)
	Product quality information	Use of texts, pictures or videos to display product quality information (eg, good taste)
	Health-related benefits	Use of texts, pictures or videos indicating that e-cigarette use is beneficial to health or less harmful (eg, smoking cessation aid)
	Emotion-related benefits	Use of texts, pictures or videos to link e-cigarette use to optimistic or relaxing mood (eg, positive mood)
	Lifestyle-related benefits	Use of texts, pictures or videos to link e-cigarette use to a better lifestyle (eg, independent)
Engagement strategies	Brand claims	Words used to describe advantage of the brand (eg, market leader)
	Online purchase	Click 'Buy Online' to buy e-cigarettes
	Promotional activities	Activities to encourage the customers to buy e-cigarettes (eg, discounts)
	User instruction	Use of texts, pictures or videos to introduce how to use e-cigarettes
	Contact information	Links or accounts information connecting to other social media (eg, WeChat)
	Investment and franchise information	Use of texts, pictures or videos to introduce offline branches and franchise information
Corporate social responsibilities	Statement about corporate social responsibility	State corporate social responsibility (eg, youth e-cigarette prevention programme) through texts, pictures or videos

e, electronic.

discussing discrepant codes until sufficient reliability was obtained. The two researchers coded every page of each website in April 2021 separately, and internal reliability was calculated (Cohen's kappa=0.859). After the coding was finalised, the two researchers discussed inconsistencies and reached agreement. If there was still inconsistency, a third researcher (PZ) was involved in discussion.

Statistical analysis

SPSS V.20.0 was used for all statistical analyses. We performed a descriptive analysis by calculating the frequencies of websites reflecting the distribution of each item in the codebook.

RESULTS

Basic information

Among the 104 official websites we examined, 101 were brand websites and three were enterprise websites. Each website had navigation columns, and 82 (78.8%) sites had 4 to 7 navigation columns, reflecting the multiple information and elaborate design. The common navigation columns were 'Product centre'

(91.3%), 'About us' (89.4%), 'Company News room' (56.7%), 'Contact us' (53.8%) and 'Investment and franchise information' (41.3%). Approximately 40% of the sites (n=42) showed videos; themes included brand value (23.1%), product introduction (21.1%), customer feedback (8.7%) and how to use e-cigarettes (5.8%). Sixty-six (63.5%) sites displayed scrolling images, and over 40% of sites displayed three to five scrolling images. The top three common themes of scrolling image were product display (61.5%), brand value (21.2%) and franchise information (4.8%).

Age restrictions

Over half of the websites (56.7%) had no age verification for entry (table 2). Although 43.3% of the websites had age verification for entry, they only used a pop-up or dialogue window that required users to click a button to self-verify that they were over 18 or 21 years of age. None required date of birth or Chinese Residency ID number.

Thirty-six (34.6%) websites had no age-restriction advice for e-cigarette use. Half of the websites (50.0%) displayed usage

Table 2 Age restrictions and health warning statements of manufacturers' websites

Age restrictions and health warning statements	Frequency (n, %)
Access verification	
No access verification	59 (56.7)
Click-through 18+	40 (38.5)
Click-through 21+	5 (4.8)
Age restrictions for e-cigarette use and purchase	
No restriction	32 (30.8)
Only age-restricted usage statements	32 (30.8)
Only age-restricted purchase statements	4 (3.8)
Both age-restricted usage and purchase statements	36 (34.6)
Usage restriction visibility	
No restriction	36 (34.6)
At the top or bottom of all pages with scrolling requirements	52 (50.0)
A certain webpage with scrolling requirements	6 (5.8)
At the top or bottom of all pages without scrolling requirements	10 (9.6)
Purchase restriction visibility	
No restriction	64 (61.5)
At the top or bottom of all pages with scrolling requirements	34 (32.7)
A certain webpage with scrolling requirements	0 (0.0)
At the top or bottom of all pages without scrolling requirements	6 (5.8)
Health warning	
No warning	79 (76.0)
The product contains nicotine, which is addictive	17 (16.3)
Smoking is bad for your health	5 (4.8)
E-cigarettes have a bad impact on teenagers' brains and respiratory development	4 (3.8)
E-cigarettes are less harmful but may still be harmful to health	3 (2.9)

e, electronic.

restrictions at the top or bottom of all pages which users have to scroll down or up to view. Only 10% of websites displayed usage restrictions on each page that required no extra effort to view the statements. There were 64 (61.5%) websites without any age-restriction statement for e-cigarette purchase; 34 (32.7%) had statements that required extensive scrolling up or down to view.

Health warnings

Of the 104 websites, over three-quarters (76.0%) had no health warning statements. Among the websites with health warnings, a nicotine addiction warning was most common (16.3%), followed by 'smoking is bad to your health' (4.8%), and 'e-cigarettes have a bad impact on teenagers' brains and respiratory development' (3.8%). Three sites (2.9%) declared that 'e-cigarettes are less harmful but may still be harmful to health'. Health warnings appeared in several disparate locations, such as the head or footer of the web page. Warnings in footers usually appeared in smaller font compared with other website text and were generally much less prominent than product claims.

Marketing appeals

Every website presented at least one characteristic of the product or brand such as product appearance, flavour, ingredients and brand claim. Ninety-nine (95.2%) used pictures or videos to display their products' appearance (table 3). Nearly 70% of e-cigarette websites displayed e-flavours. Nearly 40% of the websites showed awards. The most commonly used claims for

Table 3 Marketing appeals of manufacturers' websites

Marketing appeals	Frequency (n, %)
Product appearance shown	99 (95.2)
E-flavour shown	72 (69.2)
Production process	58 (55.8)
Price shown	15 (14.4)
Product ingredients shown	8 (7.7)
Awards shown	41 (39.4)
Product qualities	
Good taste	71 (68.3)
Leakage resistance	59 (56.7)
Long battery life	44 (42.3)
Smart	20 (19.2)
Health-related benefits	
Reduced harm, healthier	47 (45.2)
Alternatives to cigarettes	45 (43.3)
Smoking cessation aid	6 (5.8)
Emotion-related benefits	
Positive mood	65 (62.5)
Enjoyment	49 (47.1)
Refreshing	7 (6.7)
Relieved pressure	5 (4.8)
Lifestyle-related benefits	
Friendship/Love	19 (18.3)
Life quality	19 (18.3)
Social status	18 (17.3)
Trendsetter	17 (16.3)
Independent/Individual	16 (15.4)
Sex appeal	13 (12.5)
Achievement/Success	12 (11.5)
Sociability	5 (4.8)
Fun	4 (3.8)
Brand claims	
Market leader	37 (35.6)
Innovation	31 (29.8)
Long history	17 (16.3)
Competitive	9 (8.7)
Technologically advanced	6 (5.8)

e, electronic.

product quality were good taste (68.3%), leakage resistance (56.7%) and long battery life (42.3%).

The most commonly used claims for health-related benefit were reduced harm (45.2%) and alternatives to cigarettes (43.3%). For example, a leading Chinese e-cigarette enterprise, RELX technology, cited a post from the Public Health England blog titled as 'Eight things to know about e-cigarettes'.³³ The post concluded that e-cigarettes were 'far less harmful' than conventional smoking and had no identified health risks of passive vaping to bystanders. The most commonly used claims for emotional benefits included positive mood (62.5%) and enjoyment (47.1%). Frequently used statements of lifestyle-related benefits were enhancing friendship/love (18.3%), improving life quality (18.3%) and higher social status (17.3%).

Thirty-seven websites (35.6%) stated that the brand was a market leader, 31 (29.8%) sites described the innovation of the products and 17 (16.3%) presented the history of the brand. Nine sites (8.7%) stated that their brands were competitive, and six (5.8%) stated that their products were made with leading technology.

Table 4 Engagement strategies of manufacturers' websites

Engagement strategies	Frequency (n, %)
Online purchase	2 (1.9)
User instructions	32 (30.8)
Promotional activities	0 (0.0)
Contact	
Chinese social media	64 (61.5)
WeChat	62 (59.6)
Weibo	43 (41.3)
TikTok	3 (2.9)
International social media	23 (22.1)
Facebook	14 (13.5)
Instagram	13 (12.5)
YouTube	7 (6.7)
Twitter	6 (5.8)
LinkedIn	4 (3.8)
Brand apps	3 (2.9)
Email	4 (3.8)
Live chat service	11 (10.6)
Offline store information	18 (17.3)
Investment and franchise information	62 (59.6)

Engagement strategies

Many websites offered different engagement approaches (table 4). Two websites (1.9%) allowed online purchases regardless of the sale prohibition, and 11 websites (10.6%) supplied a live chat service. Thirty-two websites (30.8%) offered user instructions such as how to use e-cigarettes. Specific information about promotional activities such as sweepstakes and giveaway were not found. Seventy-five websites (72.1%) provided links with other contact channels, including WeChat (59.6%), Weibo (41.3%), Facebook (13.5%), Instagram (12.5%), YouTube (6.7%), Twitter (5.8%), LinkedIn (3.8%) and TikTok (2.9%). Three sites advertised brand-sponsored app which customers could download to track the latest brand information and communicate with other customers. Nearly 60% of sites released investment and franchise information aimed at recruiting franchisees and distributors to open offline stores. Eighteen sites (17.3%) provided offline store location, telephone and other information.

Corporate social responsibilities

Forty-three websites (41.3%) mentioned corporate social responsibility, and 11 (10.5%) had a specialised navigation column about it (table 5). Examples of corporate social responsibility were youth e-cigarette prevention programmes (32.7%), supporting tobacco control legislation (21.2%) and informing health risks (17.3%). Five websites announced sponsorship

Table 5 Corporate social responsibilities of manufacturers' websites

Corporate social responsibilities	Frequency (n, %)
Developing youth e-cigarette prevention programmes	34 (32.7)
Supporting tobacco control legislation	22 (21.2)
Informing consumers of the health risks of using e-cigarettes	18 (17.3)
Sponsoring public welfare activities	5 (4.8)
Investing in e-cigarette harm reduction technology	4 (3.8)
Reducing environmental impact	4 (3.8)

e, electronic.

programmes on the websites, including animal protection, COVID-19 epidemic control and poverty relief.

DISCUSSION

To our knowledge, this is the first nationwide content analysis of Chinese e-cigarette manufacturer official websites to provide a comprehensive overview of how they promote products or brands, manage corporate images and retain customers. This study found that many websites violated the current regulations including online purchase services and advertisements such as product display. Furthermore, the age restriction measures on access were ineffective, and health warnings were weak. Generally, these websites were designed with a wealth of product and brand information, multiple forms of online and offline contact channels and corporate social responsibility details. These findings provide solid evidence for the Chinese government to strengthen its regulation and enforcement to restrict the online marketing activities of e-cigarette manufacturers.

Age verifications

Previous studies have shown that age verification requirements for entering tobacco websites may help prevent youth from being exposed to tobacco marketing and reduce youth tobacco use.^{34 35} Our study found that nearly 40% of websites had age verification for website entry. This represents progress in minor protection considering that no websites had age restrictions on access in 2013.²⁶ However, users only need to click the button on the pop-up window stating that they are at least 18 or 21 years old to visit the website, which cannot guarantee the effectiveness. Stricter measures, such as requiring Chinese Residency ID number, should be used to prevent access by minors.

Health warnings

Health warnings may prevent tobacco initiation and encourage cessation.³⁶ After viewing health warnings, viewers' perceived e-cigarette harm increases^{37 38} and their intention to use e-cigarettes decreases.³⁷ Our study found that over three-quarters of websites did not have any health warning statements, which is consistent with previous studies.^{39 40} Among those with a health warning, detailed information such as the risk of specific diseases was rarely observed. Instead, some warnings indicated that e-cigarettes were less harmful and emphasised the dangers of tobacco rather than e-cigarettes. Such vague and misleading information may have decreased risk perceptions and made e-cigarettes seem appealing.⁴¹

Due to a lack of detail in regulations, e-cigarette manufacturers can determine the wording, type, size, colour, location and prominence of health warnings. Our study found that the websites usually use small font and vague words in health warnings which made warning effects significantly diminished.²⁵ Therefore, all e-cigarette manufacturer websites should display clear and scientific health warnings rather than vague and misleading information.⁴² Regulators should specify the wording, type, size, colour and location of health warnings to ensure they are specific and prominent.

Marketing appeals

Portrayals of e-cigarettes are heavily influenced by e-cigarette enterprises.¹² Previous content analysis of online media and social media platforms suggested that e-cigarettes were primarily discussed in a neutral or positive context.^{43 44} Exposure to marketing may influence the development of positive attitudes and the initiation of e-cigarette use among the youth.¹²

Our findings were consistent with previous studies indicating that e-cigarette was described as enjoyable, less harmful and socially acceptable.⁴⁵ Such features have greatly improved the appeals of the brands and products, attracting both adolescents⁴⁶ and adults⁴⁷ to experiment and use e-cigarettes, increasing their possibility of tobacco initiation or even dual use.

Our results revealed that some websites promoted e-cigarettes as a 'safer' alternative to cigarettes or a smoking cessation tool. These claims may exaggerate potential benefits while downplaying or ignoring information about the possible harmful effects of e-cigarettes. Evidence on the potential role of e-cigarettes in cessation is still inconclusive.¹ To date, WHO has not recommended the application of e-cigarettes in smoking cessation.¹ Scientifically unproven or inconclusive health claims should be banned by regulatory agents.

Generally, the prevalence of health-related benefit claims was lower than the prevalence in a similar study in 2013, which found that 89% of websites had health-related benefit statements and 67% had smoking cessation claims.²⁶ Fewer health-related benefit claims in the website were attributed to the fact that marketing has evolved over time. Initially e-cigarettes were promoted more for smoking cessation purposes and an alternative to cigarettes, whereas now, the emphasis appears to be on a younger target market as a consumer choice in multiple flavours and the versatility of the product.⁴⁸

Prior content analysis of Twitter also suggested that the motivation to vape was shifting away from cessation towards improving social image.⁴⁹ Lifestyle benefits, especially which describe e-cigarette use as socially enhancing, may strongly reduce harm perception among young adults so as to increase the susceptibility of e-cigarette use.⁵⁰ Other factors such as coolness,⁵¹ enjoyment,⁴⁷ fashion,⁵² fun⁵³ and social image⁴⁹ are common lifestyle-related reasons for e-cigarette experimentation and use. Therefore, e-cigarette marketing needs to be strictly regulated, prohibiting emotional and lifestyle-related benefit claims, and other messages that appeal to young people and young adults.

Engagement strategies

Our study found that most of sites did not offer online shopping service (except two) due to the regulation issued in 2019 which banned the online sale of e-cigarettes.²¹ This is a significant change, given online sales of e-cigarettes accounted for about 80% of the consumer market before 2018.⁵⁴

Similar to tobacco corporate websites³⁰ and e-cigarette vendors' websites,²⁵ Chinese e-cigarette manufacturer official websites offer many contact channels, including live chat service, social media accounts and address of offline stores, which open up a broad market of potential e-cigarette users. After the online sale ban, although the majority of e-cigarette enterprises in China have switched their sales model from online to offline, they still strive to develop the connection between online marketing and offline sales. Therefore, government agencies should strengthen supervision to prevent e-cigarette manufacturer official websites from becoming a link between different platforms. All channels used by e-cigarette manufacturers should be closely monitored given the potential for product promotion and unsupported health claims.⁴⁵

Corporate social responsibilities

According to WHO FCTC Article 13 guidelines, the parties should ban contributions from tobacco companies to any other entity for 'socially responsible causes', as this is a form of sponsorship. Publicity for 'socially responsible' business practices

should also be banned as it constitutes advertising and promotion.⁵⁵ Similar to tobacco websites,³⁰ e-cigarette official websites portrayed themselves as responsible companies through developing youth e-cigarette prevention programmes, supporting tobacco control legislation and sponsoring public welfare activities.

Previous studies have shown that tobacco industry-funded youth prevention programmes are ineffective and even counterproductive.⁵⁶ Our research found that one-third of e-cigarette manufacturers participated in youth-targeted e-cigarette prevention. WHO has called on FCTC parties to prohibit tobacco companies from being involved in smoking prevention programmes.⁵⁵ Efforts also need to be made to ban e-cigarette companies' engagement in prevention programmes.

Policy implications

Current laws in places since 2019 in China already prohibit e-cigarette advertising through online channels.²¹ In November 2021, the China State Council issued a regulation that e-cigarettes and other new tobacco products should be regulated under Regulations of the Tobacco Monopoly Law.⁵⁷ In 2022, the STMA issued Measures for the Administration of Electronic Cigarettes and reiterated that e-cigarette advertisements should be regulated as tobacco advertisements.⁵⁸ E-cigarettes, which were previously in a legally vague area, are officially included under supervision, similar to other tobacco products. Any advertisement of e-cigarettes in the mass media or public places undoubtedly violates the existing laws. However, there is no specific definition of advertisements, limiting further enforcement. In addition, such laws do not cover promotion and sponsorship. Implementation guidelines for WHO FCTC Article 13 specify that tobacco advertising, promotion and sponsorship act with a promotional aim and have or are likely to have a promotional effect.⁵⁵ Hence, a comprehensive ban on tobacco advertising, promotion and sponsorship is needed to protect adolescents and young adults in China. On that basis, the government should establish an effective and mandatory age-gating approach to prohibit minors from accessing e-cigarette official websites. Health warnings and age restrictions for e-cigarette use and purchase should be specific and clear, and their position and visibility should be regulated in detail. Intercommunication between official websites and other contact channels also needs to be prohibited.

Limitations and strengths

A limitation of this study is that we only focused on existing e-cigarette enterprises in the first half year of 2021. Due to regulatory changes and internal competition in the Chinese e-cigarette industry, the number of enterprises has undergone continuous change. Additionally, the content on e-cigarette manufacturer official websites may change due to newly released regulations. Ongoing research is needed to present a timely picture of e-cigarette official websites in China. Despite this limitation, our study performed an in-depth and detailed content analysis of all official e-cigarette websites, which provides a solid reference for public health departments and regulatory agencies to determine further regulation of e-cigarette marketing.

CONCLUSION

Chinese e-cigarette manufacturer official websites are designed with a wide variety of products and brand claims, multiple online and offline contact information and corporate social responsibility details. Products information and image are presented specifically through videos and pictures while unsupported

health-related, emotion-related and lifestyle-related benefits are frequently mentioned. In contrast, age restrictions on access and health warnings are very weak. Hence, the Chinese government should enforce comprehensive and strict supervision of e-cigarette manufacturers to decrease marketing exposure, particularly among adolescent and young adults.

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Contributors HD and LF contributed equally to this paper. HD was involved in the study conception and design and the acquisition, analysis, interpretation of data and manuscript draft. LF was involved in the acquisition, analysis of data. PZ, LZ, XY, FW and XH contributed to the critical revision of the manuscript. PZ is responsible for the overall content as the guarantor who has full responsibility for the work and/or the conduct of the study, had access to the data, and controlled the decision to publish. All authors approved the final version.

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