

E-cigarette retailer storefront availability following a nationwide prohibition of e-cigarettes in India: A multi-centric compliance assessment

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ABSTRACT

INTRODUCTION This study aimed to assess the availability of retailer storefronts that continued to sell electronic nicotine/non-nicotine delivery systems (ENDS/ENNDS) in India, and characterise such retailers following the promulgation of 2019 Indian Ordinance and Act (Ordinance/Act) that prohibit ENDS/ENNDS nationwide.

METHODS Discreet observations were conducted of retailer storefronts across different socioeconomic zones in nine major cities of India (Bengaluru, Chandigarh, Dehradun, Delhi, Indore, Kolkata, Ludhiana, Raipur, and Ranchi) from 28 November 2019 to 22 January 2020 to identify the availability of ENDS/ENNDS (i.e. electronic cigarettes, e-cigarette liquid, e-cigarette accessories, heated tobacco products (HTPs), and HTPs accessories). We report the number and proportion (%) of retailers that sold ENDS/ENNDS. Other characteristics of the retailers are also described, including indirect evaluation of the retailer's awareness of the Ordinance/Act.

RESULTS Of the 199 retailer storefronts visited, 37 (18.6%) sold ENDS/ENNDS and, therefore, did not comply with the Ordinance/Act. The highest availability of non-compliant retailers was in Kolkata (n=26; 83.9%). The majority of the non-compliant retailers were tobacco retailers (n=35; 94.6%), sold e-cigarettes (n=22; 59.5%), and e-cigarette accessories (n=24; 64.9%). Although many of the non-compliant retailers displayed their ENDS/ENNDS products (n=33; 89.2%) and did not feature health warnings related to ENDS/ENNDS (n=32; 86.5%) in the stores, nearly 90% (n=33) were aware of the Ordinance/Act.

CONCLUSIONS Despite a nationwide ban, ENDS/ENNDS are still available in major cities in India, and concentrated in a particular city. Indian authorities should focus on law enforcement to ensure that the prohibition is effectively implemented.

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INTRODUCTION

Electronic nicotine/non-nicotine delivery systems (ENDS/ENNDS), of which electronic cigarettes (e-cigarettes) are the most common prototype, have recently become popular around the world as an alternative to tobacco cigarettes, with increasing use by

youths and adults in many countries¹⁻⁴. The prevalence of e-cigarette use among adults is considerably low in Asia, from merely 0.02% in India and 3% in Taiwan to 11.9% in Malaysia⁵⁻⁷. The low figure might be attributed to the limited adoption of e-cigarette use by the general population; e-cigarette use in Asian countries was

found exclusively among current or former cigarette smokers and people with high socioeconomic status^{5,6}. However, e-cigarette use was higher among younger age groups, from 2 to 5 times higher in India and Taiwan, respectively, which highlights the challenges that ENDS/ENNDS pose to tobacco control^{5,7}.

Although e-cigarettes are used by a tiny proportion of Indians, the majority of e-cigarette users in India are also tobacco smokers (dual-users, 59%) and believe that vaping (e-cigarette use) is less harmful than smoking (79%)⁸. They purchase the products mostly from online retailers (57%) and street shops (53%)⁸. A study on online sales of ENDS, including e-cigarettes, electronic shisha, electronic hookah (e-hookah), and electronic cigars, in 2015, revealed that there were 65 different models of ENDS sold in Indian online market, of which 69% were flavoured, and only 26% displayed health warnings⁹. The availability of flavoured ENDS coupled with the limited health warnings featured in the product descriptions might encourage youth to experiment with ENDS/ENNDS, resulting in a new form of nicotine addiction.

India started addressing the ENDS/ENNDS issue by having a National Consultation in 2014, wherein a consensus to prohibit ENDS/ENNDS was reached. In 2018, the Ministry of Health and Family Welfare of India issued an Advisory to all states and union territories to include the ban of sale (including online sale), manufacture, distribution, trade, import, export, and advertisement of ENDS/ENNDS in their jurisdictions¹⁰. To follow the Advisory, and as health is also a state issue, 16 out of 29 states in India prohibited ENDS/ENNDS¹⁰. On 18 September 2019, India promulgated a nationwide Ordinance (Prohibition of E-cigarettes Ordinance 2019; hereinafter called the Ordinance) that prohibits the production, manufacture, import, export, transport, sale, distribution, storage and advertisement of all forms of ENDS/ENNDS, consisting e-cigarettes, heated tobacco products (HTPs: e.g. iQOS, Glo, Ploom TECH), e-hookah and similar devices¹¹. On 5 December 2019, both houses of Parliament of India and the President finally passed the Prohibition of E-cigarettes Act 2019 (hereinafter called the Act), replacing and, thus, repealing the Ordinance.

The content of the Act is similar to the Ordinance, including the aspect of the prohibition of the sale

of ENDS/ENNDS, which stated that ‘No person shall, directly or indirectly ... sell ... e-cigarettes, whether as a complete product or any part thereof; and as a complete or partial product’¹². Both laws, the Ordinance and the Act (hereinafter referred to as Ordinance/Act) were legally equivalent and may punish the first-time violation of the e-cigarette sale provision with a maximum of one-year imprisonment or 100000 Rupees (about 1300 US\$) fine, or with both^{11,12}. According to the Ordinance/Act, retailers should not keep their ENDS/ENNDS stocks for sale, distribution, transport, export or advertisement, and report their existing ENDS/ENNDS stocks to the nearest authorised officer^{11,12}. An authorised officer is a police officer or government agency officer, authorised by the Central Government or the State Government and responsible for enforcing the Ordinance/Act^{11,12}.

Some offenses to the nationwide tobacco control legislation in India, the Cigarettes and Other Tobacco Products Act (COTPA 2003), were observed previously in Indian cities where the sale of loose cigarettes and advertising of tobacco products at point-of-sale (PoS) were identified^{13,14}. Law enforcement has been an issue for a country that has authorised stringent measures against ENDS/ENNDS use. Canada, for example, has seen limited compliance with the existing regulation, which prohibited the sale of nicotine-containing e-cigarettes¹⁵. Furthermore, the availability of ENDS/ENNDS products in the black market might threaten the health and safety of the population, as has been evident in the United States (US) where there was an e-cigarette associated lung injury outbreak from late 2019 until early 2020¹⁶. The lung injury was strongly linked to vitamin E acetate and tetrahydrocannabinol-containing e-cigarettes obtained from informal sources like friends, family, or dealers, including the black market¹⁶. Therefore, the black market of ENDS/ENNDS products might undermine the implementation of the Ordinance/Act.

To ensure that the Ordinance/Act effectively protect public health, a close monitoring of the compliance with the law is needed. However, there has been no study that evaluated compliance with a law related to ENDS/ENNDS retailers in a country that prohibits all types of ENDS/ENNDS. Given the fact that ENDS/ENNDS retailers often advertise

their products at the point-of-sale, even among those located nearby educational institutions, an assessment to characterise the environment of ENDS/ENNDS retailer storefronts is warranted^{17,18}. Such evaluation would be of importance to monitor the progress of the policy implementation, to inform the governing and law enforcement bodies in India, and to gain insights about ENDS/ENNDS regulatory policies that might be useful for other countries also.

This study aimed to assess the availability and characterise ENDS/ENNDS sales in retail storefronts in major Indian cities after the issuance of the prohibition of the Ordinance and Act in September and December 2019, respectively. We chose large cities, particularly areas with a high number of tobacco retailers because previous studies have suggested that ENDS/ENNDS products were more likely to be found in tobacco retailers in major cities or urban areas¹⁹⁻²¹.

Unless otherwise stated, ENDS/ENNDS here refers to all products that fall under the category of e-cigarettes in the Indian Ordinance/Act, which comprises electronic devices that heat a substance, with or without nicotine and flavours, to create an aerosol for inhalation, and includes all forms of ENDS, HTPs, e-hookah, and similar devices, by whatever name they are called and whatever shape, size or form they may have, but does not include any product licensed under the Drugs and Cosmetics Act 1940^{11,12}. Thus, the term ENDS/ENNDS will be used throughout the text.

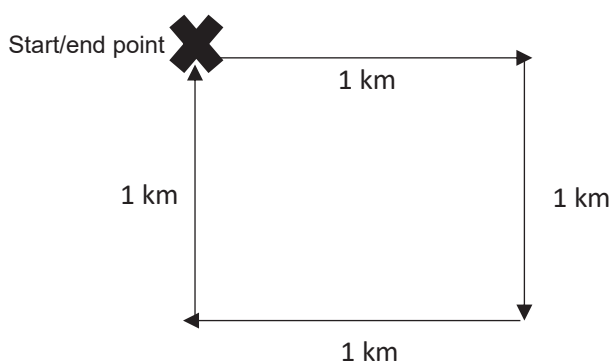
METHODS

A compliance survey of different types of retailer storefronts was conducted from 28 November 2019 to 22 January 2020 to identify the availability of ENDS/ENNDS products across nine major cities in India: Bengaluru (11.4 million population in 2018), Chandigarh (1.1 million), Dehradun (871 thousand), Delhi (28.5 million), Indore (2.8 million), Kolkata (14.6 million), Ludhiana (1.8 million), Raipur (1.5 million), and Ranchi (1.3 million)²². The nine cities were conveniently selected because they are among the most populous and wealthiest cities in India and, thus, the availability of e-cigarette retailers was highly possible. Bengaluru, Delhi, and Kolkata, are among the five top largest and wealthiest cities in the country, which, in total, contributed US\$ 553.7 billion to the Gross Domestic Product of the country in 2017^{22,23}.

The protocol of this study was designed and orchestrated in New Delhi and was adopted from a previous study²⁴. Low, medium and high socioeconomic status (SES) zones in each city were selected based on our knowledge and work experience (judgment sampling) in the nine cities. In each SES zone, an area with a significant retail activity (e.g. shopping malls, market zone) was selected with a convenient sampling, in which at least six tobacco points-of-sale (PoS) along 4 km walking route were identified (Figure 1)²⁴. We selected areas with high tobacco PoS activity as studies in other countries found that tobacco PoS were the main outlets for selling ENDS/ENNDS^{19,20}. The walking route comprised four straight lines, a square-like route (Figure 1), where the data collectors were required to walk in the same direction, from the starting to the finishing point. Along the route in finding the tobacco PoS, additional types of the following retailers were also surveyed: convenience/grocery/general stores, supermarkets/malls, vape shops, electronic shops, cosmetic/beauty stores, gift shops, men's stores, and others such as stores that have been reported to sell ENDS/ENNDS in the past^{17,20,25}. We excluded street vendors. A minimum of 18 tobacco PoS, plus some additional stores, were expected from each city.

The survey was performed by two data collectors in each city. They were the Union South-East Asia partners who were extensively experienced in conducting tobacco PoS assessment in Indian cities. For this study, a training session about the study protocol involving one data collector from each city was carried out in New Delhi. The data collectors visited and assessed the stores by approaching as

Figure 1. Route to identify tobacco point-of-sale and other retailer storefronts



customers (discreet observations).

A compliance checklist was formulated with a reference from a previous vape retailer surveillance tool²⁶. The face validity of the checklist was assessed by three public health researchers. The checklist was, subsequently, converted into a data collection tool that was developed in a freely available mobile phone-based application called Epicollect 5 (<https://five.epicollect.net/>). A pilot testing was conducted for the tool’s feasibility in each city from 28 to 30 November 2019. The valid data obtained from the pilot testing were included in the final analysis.

The data collectors used the application during the survey to input information about retailer’s demographic profile, presence of schools nearby (within 100 yards, or 91.44 m, from the store’s location), GPS coordinates of stores’ addresses, advertisement of ENDS/ENNDS and tobacco products outside and inside the store, and sale of ENDS/ENNDS and tobacco products in the store. If the retailer sold any ENDS/ENNDS products, our data collectors enquired, as customers, whether a health warning for ENDS/ENNDS products was displayed in the store, whether the vendor was aware

of the Ordinance/Act, and whether they had reported their ENDS/ENNDS stocks to the authority. Purchase attempts were made to enquire about the availability of the following ENDS/ENNDS products: e-cigarettes, e-cigarette liquid (e-liquid), part of e-cigarettes (including accessories), HTPs, and part of HTPs (including accessories and refill sticks). Photos of the retailer’s environment, building, promotions, and products were also collected. The list of questions in the assessment tool is provided in the Supplementary file Section 1.

A descriptive analysis was performed to identify number and proportion (%) of retailers that sold ENDS/ENNDS products; thus, they were not compliant with the Ordinance/Act. Other characteristics of the retailers were also described. The institutional review board waived review and informed consent because no individual participant information was collected.

RESULTS

Out of 208 stores found across the nine major cities in India, a total of 199 stores (95.7%) were successfully surveyed (Supplementary file, Section 2). Table 1

Table 1. Characteristics of electronic nicotine/non-nicotine delivery systems (ENDS/ENNDS) retailer storefronts in nine major cities in India according to type of store, socioeconomic level of the store’s area, and types of ENDS/ENNDS sold in the store, 2019–2020

City	Total number of stores surveyed (tobacco shops)	Total number of stores selling ENDS/ENNDS (%) ^a	Types of stores		Socioeconomic level ^b			Types of ENDS/ENNDS ^b				
			Tobacco shops (%) ^b	Other stores (%) ^b	Low (%)	Medium (%)	High (%)	e-cigs (%)	e-liq (%)	PEC (%)	HTPs (%)	PHTPs (%)
			Bengaluru	21 (17)	1 (4.8)	1 (100)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100)	0 (0.0)	0 (0.0)
Chandigarh	12 (9)	1 (8.3)	1 (100)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100)
Dehradun	18 (5)	2 (11.1)	1 (50.0)	1 (50.0)	1 (50.0)	0 (0.0)	1 (50.0)	2 (100)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Delhi	29 (19)	3 (10.3)	2 (66.7)	1 (33.3)	1 (33.3)	0 (0.0)	2 (66.7)	3 (100)	3 (100)	0 (0.0)	0 (0.0)	0 (0.0)
Indore	20 (18)	0 (0.0)	0 (0.0)	0 (0.0)	NA	NA	NA	NA	NA	NA	NA	NA
Kolkata	31 (31)	26 (83.9)	26 (100)	0 (0.0)	7 (26.9)	13 (50.0)	6 (23.1)	16 (61.5)	15 (57.7)	24 (92.3)	8 (30.8)	8 (30.8)
Ludhiana	17 (15)	0 (0.0)	0 (0.0)	0 (0.0)	NA	NA	NA	NA	NA	NA	NA	NA
Raipur	26 (19)	1 (3.8)	1 (100)	0 (0.0)	0 (0.0)	1 (100)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100)	0 (0.0)
Ranchi	25 (20)	3 (12.0)	3 (100)	0 (0.0)	0 (0.0)	2 (66.7)	1 (33.3)	1 (33.3)	0 (0.0)	0 (0.0)	2 (66.7)	2 (66.7)
Total	199 (153)	37 (18.6)	35 (94.6)	2 (5.4)	9 (24.3)	16 (43.2)	12(32.4)	22 (59.5)	18 (48.7)	24 (64.9)	12 (32.4)	11 (29.7)

HTPs: heated tobacco products. PHTPs: part of heated tobacco products. e-cigs: electronic cigarettes, e-liq: electronic-cigarette liquid. PEC: part of e-cigarettes. NA: not applicable. ^a The denominator of the proportion is the total number of stores surveyed in the corresponding city. ^b The denominator of the proportion is the total number of stores selling ENDS/ENNDS in the corresponding city.

summarises characteristics of stores that were not compliant with the Ordinance/Act according to the type of store, socioeconomic level of the store's area, and type of ENDS/ENNDS sold in the store. Out of 199 stores visited, 18.6% (37 stores) were selling ENDS/ENNDS products: e-cigarettes (22 stores), e-liquid (18 stores), parts of e-cigarettes (24 stores), HTPs (11 stores), and parts of HTPs (12 stores). The majority of the non-compliant retailers were tobacco PoS (94.6%; 35 stores) with the rest (2 stores) being electronic and general/grocery stores.

All cities, except Bengaluru, Chandigarh, Dehradun, and Ludhiana, met a minimum number of tobacco PoS required (18 stores per city). Most of the non-compliant stores identified were located in Kolkata (70.3%; 26 stores), followed by Delhi

(3 stores), Ranchi (3 stores), Dehradun (2 stores), Chandigarh (1 store), Bengaluru (1 store), and Raipur (1 store). The stores were predominantly found in areas with a medium SES level (43.2% of non-compliant retailers), and only a quarter of the non-compliant stores were located in an area with low SES level.

Almost 90% (33 stores) of the non-compliant stores displayed their ENDS/ENNDS products in the shop counters, making it visible to customers (Figure 2), and 16.2% were within 100 yards from schools (Table 2). While only 13.5% of the non-compliant stores featured health warnings related to ENDS/ENNDS in the stores, the majority (33 stores; 89.2%) of the vendors were aware of the Ordinance/Act. Despite the frequently acknowledged Ordinance/

Figure 2. ENDS/ENNDS products (in red square) placed at the store shelves were visible to customers: a) along with other electronic items and perfumery products in an electronic store in Delhi (picture taken on 28/11/2019), and b) along with conventional cigarette packs in a tobacco retailer in Kolkata (picture taken on 10/1/2020)



Table 2. Characteristics of electronic nicotine/non-nicotine delivery systems (ENDS/ENNDS) retailer storefronts in nine major cities in India according to visibility to customers, proximity to schools, presence of health warnings, vendor’s attribute, and presence of advertisement and other tobacco or surrogate products, 2019–2020

City	Total number of stores surveyed	Total number of stores selling ENDS/ENNDS	Number of stores selling ENDS/ENNDS						
			With products visible to customers	With schools nearby ^c	With health warnings	With vendors aware of the Ordinance	With products reported by vendors to authorities	Products* advertised in the store	Other products* sold in the store
			(%) ^a	(%) ^b	(%) ^b	(%) ^b	(%) ^b	(%) ^b	(%) ^b
Bengaluru	21	1 (4.8)	1 (100)	0 (0.0)	0 (0.0)	1 (100)	0 (0.0)	None	CC
Chandigarh	12	1 (8.3)	1 (100)	0 (0.0)	0 (0.0)	1 (100)	0 (0.0)	None	SLT, bidis, cigs
Dehradun	18	2 (11.1)	1 (50.0)	0 (0.0)	0 (0.0)	1 (50.0)	0 (0.0)	cigs, e-cigs, SLT, bidis	SLT, cigs, bidis
Delhi	29	3 (10.3)	1 (33.3)	1 (33.3)	1 (33.3)	3 (100)	1 (33.3)	None	SLT, cigs
Indore	20	0 (0.0)	NA	NA	NA	NA	NA	NA	NA
Kolkata	31	26 (83.9)	25 (96.1)	5 (19.2)	4 (15.4)	24 (92.3)	0 (0.0)	cigs, PEC, SLT	SLT, bidis, cigs, SP
Ludhiana	17	0 (0.0)	NA	NA	NA	NA	NA	NA	NA
Raipur	26	1 (3.8)	1 (100)	0 (0.0)	0 (0.0)	1 (100)	0 (0.0)	PEC+, SLT, bidis, cigs, SP	SLT, bidis, cigs, SP
Ranchi	25	3 (12.0)	3 (100)	0 (0.0)	0 (0.0)	2 (66.7)	0 (0.0)	e-cigs, HTPs, e-liq, PHTPs, SLT, cigs, CC, SP	SLT, cigs, CC
Total	199	37 (18.6)	33 (89.2)	6 (16.2)	5 (13.5)	33 (89.2)	1 (2.7)	17 (45.9)	31 (83.8)

*CC: cigars/cigarillos. SLT: smokeless tobacco. e-cigs: electronic cigarettes. e-liq: electronic-cigarette liquid. cigs: cigarettes. PEC: part of e-cigarettes. PEC+: part of e-cigarettes, including accessories. SP: surrogate products. HTPs: heated tobacco products. PHTPs: part of heated tobacco products, including accessories, refill sticks. ^a The denominator of the proportion is the total number of stores surveyed in the corresponding city. ^b The denominator of the proportion is the total number of stores selling ENDS/ENNDS in the corresponding city. ^c Within 100 yards radius from the store

Act by the vendors, only one vendor had reported his products to the authorities, as required by the Ordinance/Act. Apart from the ENDS/ENNDS products, the non-compliant stores also advertised (17 stores; 45.9%) and sold (31 stores; 83.8%) a wide range of tobacco products in the stores, such as cigarettes, cigars, smokeless tobacco, bidis, and surrogate products (i.e. chips).

DISCUSSION

This study found ENDS/ENNDS sales by 37 retailer storefronts (18.6% of retailers visited) across nine major cities in India, which implies violation of Indian Prohibition of E-cigarettes Ordinance/Act 2019. The widespread of e-cigarette black marketing was also identified in Canada where nicotine-containing e-cigarettes, which were prohibited for

sale in the country, were still available in many retail outlets in four cities in 2014¹⁵. Indeed, in the case of conventional cigarettes, India has seen limited compliance with its tobacco control regulation (COTPA 2003) with illicit cigarettes sales in India at 2.73% of 11063 packs of cigarettes collected from 1727 retailers²⁷, and the sale of loose cigarettes by about more than three-fourths of the PoS observed in Shimla city¹³.

Although many expected that there would be an increase in ENDS/ENNDS in the black market²⁸ if the products are prohibited, it might not be the case for countries where there is no significant ENDS/ENNDS market. Brazil, for instance, was one of the countries in the world that started prohibiting ENDS/ENNDS when ENDS/ENNDS were not yet popular in the country²⁹. The ENDS/ENNDS

prohibition in Brazil was motivated to prevent the population consuming a product whose safety and benefits were not yet confirmed, and, thus, the benefits of the prohibition are considered to outweigh the profits of sales of these products in the country²⁹. Furthermore, with an abundance and variety of ENDS/ENNDS products, including e-liquid, available in the market, countries might encounter difficulties in formulating an effective regulation to assess the products under scrutiny³⁰. As exemplified by Finland, the country's policy on prohibition of characterising flavours in e-cigarette liquids and e-cigarette marketing was strongly challenged by e-cigarette businesses due to limited resources for tobacco control to expand in scope and the reluctance of the e-cigarettes industry to comply with the regulations³⁰. Therefore, a total prohibition of ENDS/ENNDS products is deemed justified, given the potential loopholes present in complicated ENDS/ENNDS regulations.

This study showed that e-cigarettes and their parts or accessories were the most sold ENDS/ENNDS products by retailer storefronts in the Indian market. Although there has been no study that empirically reported the consumption of ENDS/ENNDS products in India based on the type of products; the global reports showed that e-cigarettes are one of the most popular types of ENDS/ENNDS products in the market^{1,3}.

The discrepancy in the number of ENDS/ENNDS retailers found across cities in India might reflect the variation of implementation level of the Ordinance/Act. This has been evident in previous COTPA 2003 evaluation studies where some cities in India were found to perform better than the others. For example, while tobacco PoS in Alwar District of Rajasthan had a high level of compliance with PoS regulations by displaying proper signage and not featuring tobacco advertisement³¹, Mumbai and Chandigarh seemed to lag behind with low compliance for health warnings on advertisements, signage about the ban on sales to minors, availability of tobacco PoS nearby schools, and display of tobacco products visible to minors^{14,32}. Additionally, the unmet minimum number (18 stores) of tobacco PoS in Bengaluru, Chandigarh, Dehradun, and Ludhiana might suggest that the number of stores that exclusively sold tobacco products in these three cities has decreased since the implementation of the

COTPA 2003; hence tobacco PoS were rare to find in the selected SES zones. Kolkata, in contrast, has recorded the highest cigarette consumption in India³³, which might partly contribute to the extremely higher number of tobacco PoS (31 stores) found in our study. Yet, more studies are needed to explore why the non-compliant retailers were more ubiquitous in a particular city, such as Kolkata (83.9%), in the case of our study.

Almost all of the non-compliant retailers found in this study were tobacco PoS. This might be influenced by the fact that our surveys were mostly conducted in areas with at least six tobacco PoS. Nevertheless, in a country where there is no legislation in place to regulate the sale and advertisement of ENDS/ENNDS, tobacco retailers are also the main outlets for selling ENDS/ENNDS, as is the case in the US^{19,20}. This might be due to the continuous expansion of tobacco companies into the ENDS/ENNDS market by the acquisition of major e-cigarette manufacturers³⁴ and an increased existing relationship with traditional tobacco retailers³⁵.

Our study showed that only a few non-compliant vendors were in poor SES neighbourhoods, indicating the target market of the ENDS/ENNDS products was likely to be the high- and middle-class society. Indeed, awareness about ENDS/ENNDS and the use of the products were predominantly found in adults with employment and with a high educational level⁷. A survey, in the US in 2012, found that e-cigarette retailers were more likely to be available in high-income neighbourhoods²⁰. E-cigarette retailers were also found to be more concentrated in urban areas and in locations where people with a higher probability of vaping and smoking were located²¹. In urban areas in the US, a higher presence of vape shops was associated with a larger proportion of certain ethnicities (e.g. Hispanic and Asians) and adults aged 18–44 years²¹.

Our findings show that customers from different age groups were likely to be exposed to ENDS/ENNDS products as these were largely displayed in the shop counters. Exposure of minors to the products might raise concern since about 16% of the non-compliant retailers in the present study were located nearby schools. In fact, awareness and the use of ENDS/ENNDS in India were more prevalent in young than old age groups⁷.

In line with this study, tobacco PoS displayed e-cigarettes and featured e-cigarette promotional materials (e.g. posters, leaflets) were also prevalent in Scotland where in-store cigarette advertising and display were banned in 2014¹⁷. This is also the case in the US (2012–2013 survey), where the presence of interior advertising of e-cigarettes was observed in half of tobacco-selling retailers near college campuses¹⁸. The high youth exposure to e-cigarette products and advertisements in-store may encourage the use of e-cigarettes in the future^{36–38}. It suggests that the point-of-sale environment is an important influence on youth ENDS/ENNDS use.

Not only for ENDS/ENNDS products, but a widespread lack of adherence to COTPA 2003 regarding tobacco advertisement and sale near educational institutions has also been observed in Mumbai³⁹. The study found that tobacco PoS density at different proximities from schools was associated with students' tobacco use, implying that tobacco vendors and advertisements near educational institutions may be significant risk factors for tobacco use among youths³⁹.

From the present study, we noticed that there was a high awareness by the vendors about the Ordinance/Act, which might suggest a good publication of the laws. Still, we were unable to understand why they were committed to the black market and did not report the ENDS/ENNDS products to the authorities, a matter beyond the scope of this study. In the US, many owners of e-cigarette retailer stores in some states expressed that restrictive regulation for e-cigarettes may threaten their business, as e-cigarettes were more profitable than conventional cigarettes, although they supported age restrictions and quality control for e-liquid⁴⁰.

Our findings highlight that law enforcement is as important and challenging as the law enactment itself. Measures that can be taken to increase compliance with the laws include empowering the law enforcement to implement the law (e.g. more investment to provide resources and capabilities) and increasing public awareness about the law so it would facilitate enforcement at numerous venues⁴¹. There is the probability of a decreasing awareness of the enacted regulation if there are no continued education campaigns among retailers, as evident

in the US one year after the proposal of the 2016 Deeming Rule, which regulated the manufacturing, marketing, and sales of e-cigarettes⁴². Thus, a regular publication of the Act among, particularly, Indian tobacco vendors, is warranted. Indian authorities might also adopt their previous experience in improving tobacco retailers' compliance with tobacco control legislation (COTPA 2003). The strategies included vendor education about the laws, clear instruction and training for the vendors, penalty infringement notices, and retail outlet inspections³².

Strengths and limitations

Caution is warranted in interpreting the results of this study. Generalisations should not be made as we did not randomly select the areas we surveyed, the results reflect only the 4 km walking route surveyed, and there were included cities with the unmet minimum number of tobacco PoS, which indicates small sample size for those cities. Given that the majority of the ENDS/ENNDS retailers were found in Kolkata, the findings related to characteristics of the retailers were most likely only representative of that city. However, our main aim was not to assess the prevalence of ENDS/ENNDS retailers in each city but to identify the availability of such retailers in major Indian cities and to describe their characteristics, which might help to understand compliance with the Ordinance/Act. Thus, we used a convenience sampling method, and still included some cities with the unmet minimum number of tobacco PoS. An additional limitation is the fact that we used a discreet approach to the vendors, which might have created suspicion and resulted in biased responses.

To the best of our knowledge, this is the first study that evaluates the availability of ENDS/ENNDS products in many types of retailers in a country that has just recently prohibited these products. This study may inform ENDS/ENNDS policy and practice taken up by the Government of India and governments of other countries, especially low- and middle-income countries. Further research may follow up on the progress of the implementation of the Act, explore the underlying factors that contribute to offenses of the Ordinance/Act, and the development of effective strategies to strengthen the law enforcement and reduce discrepancies among cities.

CONCLUSIONS

This study demonstrates that two months after the issuance of the Indian Prohibition of E-cigarettes Ordinance/Act 2019, violation of the law was identified, as the sales of ENDS/ENNDS products were still observed in retailer storefronts, especially tobacco PoS in nine major Indian cities. Most of the vendors of the non-compliant stores were aware of the Ordinance/Act. Indian authorities both at a national and sub-national level should focus on the strict enforcement of the law by closely monitoring the ENDS/ENNDS sale and distribution and actively taking action on any violations of the law. A comprehensive plan should be made by various government departments responsible in the area of trade and sale. Given the bold step taken by India in addressing the emergence of ENDS/ENNDS issues, the country has much room for improvement in order to make its ENDS/ENNDS total prohibition sufficiently effective to protect public health.

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CONFLICTS OF INTEREST

The authors have completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest and none was reported.

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AUTHORS' CONTRIBUTIONS

RJS had the original idea for the study. BA, SK, and RS contributed to the finalization of the survey tool. All authors coordinated with the data collectors for the data collection in the field. BA carried out the analysis with the supervision of SK and RJS. BA wrote the first draft of the manuscript in collaboration with all other authors. BA, SK, and RJS made substantial contributions to conception, design, and interpretation of data. All the authors contributed to manuscript preparation and approved its final version prior to submission.

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