

## Compliance of Specific Provisions of Tobacco Control Law around Educational Institutions in Delhi, India

### Abstract

**Background:** Tobacco use is leading preventable cause of premature deaths. Sales of tobacco products within 100 yards of educational institutions (EIs) in India are restricted under Section 6 of Cigarettes and Other Tobacco Products Act (COTPA), 2003. This study accessed compliance of Section 6 of COTPA around EIs in Delhi. **Methods:** A cross-sectional study was conducted in randomly selected 100 EIs from 6600 schools/colleges in Delhi. Activities related to Section 6 of COTPA around EIs, such as the sale of tobacco products within a radius of 100 yards, sale of tobacco products to and by minors, and existence of display boards prohibiting sale of tobacco products were observed using Global Positioning System (GPS)-enabled tablet computers preloaded with maps and Open Data Kit software. Data analysis was done using Epi Info version 7. **Results:** Among the 100 EIs surveyed (53 government, 47 private), tobacco products were sold at 43 outlets within a radius of 100 yards of 27 EIs. No outlet had a display board prohibiting sale of tobacco products to minors. One outlet sold tobacco products to minors during the period of observation, but sale of tobacco products by minors was not observed. Only 38% of EIs displayed board prohibiting tobacco sales; private EIs were significantly less likely to display signs prohibiting tobacco sales than government EIs (45% vs. 81%;  $P < 0.001$ ). **Conclusions:** Sale of tobacco products is common around EIs in Delhi. The use of simple technology provided quick results to policy-makers. Similar periodic surveys should help regulatory agencies to strictly enforce provisions of COTPA.

**Keywords:** Cigarettes and Other Tobacco Products Act, Delhi, educational institutions, tablet computers, tobacco

### Introduction

Tobacco use is the leading preventable cause of disease and premature deaths globally and in India.<sup>[1]</sup> Tobacco-related diseases account for an estimated 6 million deaths globally and 0.8–0.9 million deaths in India each year.<sup>[2]</sup> The Global Adult Tobacco Survey, India (2009), shows that nearly 35% of adults use tobacco, and the average age at initiation of daily tobacco use is 17.9 years.<sup>[3]</sup> The Government of India under Section 6 (a and b) of the Cigarettes and Other Tobacco Products (Prohibition of Advertisement and Regulation of Trade and Commerce, Production, Supply and Distribution) Act, 2003 (COTPA) imposed a restriction on the sale of cigarettes or any tobacco product to any person under 18 years of age and in an area within a radius of 100 yards of any educational institution (EI).

Under the COTPA law, it is the responsibility of the owner or manager

or any person in charge of affairs of the EI to put up a display board stating prohibition of tobacco sale. Any outlet selling tobacco products within a radius of 100 yards of an EI can face legal action, and any person who contravenes the provisions of Section 6 of COTPA is punishable with fine. All offenses under this section are compoundable and tried in accordance with the Indian Code of Criminal Procedure, 1973. Recent studies have shown that noncompliance of COTPA is common.<sup>[4–10]</sup> However, there is a need for regular, well-designed, cost-effective compliance studies in India.

This study assessed the compliance of Section 6 of COTPA near EIs in Delhi using GPS-enabled tablet computers with a view to institutionalize a periodic monitoring and evaluation system.

### Methods

A cross-sectional study was conducted during December 10–16, 2014, in the

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state of Delhi (population 17 838 842, area 1484 km<sup>2</sup>) to assess compliance of Section 6 of COTPA. The sample size of 100 was calculated based on 95% confidence level, 10% confidence limits, and 50% expected proportion of violations ( $N = 4Z_a^2P(1 - P)/W^2$ , where  $P$  = expected proportion,  $W$  = total width, and  $Z$  = standard normal deviation). EIs across Delhi were selected using simple random sampling from the list of 6600 EIs published on the website of the Directorate of Education, Government of Delhi, after arranging them in ascending order of their identity numbers. The list of EIs included primary, middle, and high schools, colleges, deemed school and universities, and colleges for professional education and polytechnics. The 100 random numbers were generated in MS Excel using the formula RANDBETWEEN (X, Y), where X denoted the minimum limit (i.e., one) and Y denoted the maximum limit (i.e., 6600).

Data collection was done using android-based GPS-enabled tablet computers (Samsung Galaxy Tab-4) having sim cards with active internet connection. Tablet computers had preconfigured Google maps application with selected EIs marked for quick navigation. Open Data Kit (University of Washington, USA) software was used for creating questionnaires for data collection in tablets, which had a linked server for automatic download of data. The questionnaires captured the following provisions of COTPA:

- i. Prohibition of sale of tobacco products to or by persons under the age of 18 years
- ii. The seller (shopkeeper) ascertains and ensures that the person who is buying a tobacco product is not a minor
- iii. Prohibition of sale of tobacco products within a radius of 100 yards of EIs
- iv. A display board outside an EI stating prohibition of sale of tobacco products within a radius of 100 yards.

Two teams covertly observed the selected EIs for at least 30 min during working hours on weekdays. To ensure quality and reliability of data both teams received prior training and also supervision on 50% of the observations. Data collectors covertly enquired about the sale of tobacco products within a radius of 100 yards of EIs and other provisions of Section 6 of COTPA. Tobacco products were considered to be easily accessible to minors if the EI had a tobacco sale outlet within a radius of 100 yards, located near the entrance gate or on the road leading to the entrance gate of EI, and the seller was not ensuring the age of buyer before selling.

The collected data were automatically uploaded to the server and a daily backup was created. Photographs of observed violations were taken as supporting evidence. Univariate and bivariate analyses and differences in proportions were done using Epi Info version-7 software (CDC, Atlanta, USA).

This study was conducted as part of a program evaluation with institutional approval from the National Tobacco Control Program (NTCP), Ministry of Health and Family Welfare, Government of India.

## Results

Among the 100 EIs surveyed (97 schools and 3 colleges), 53 were government and 47 private institutions. There was no statutory display board stating the prohibition of sale of tobacco products within a radius of 100 yards at 62 (62%, confidence interval [CI]: 51.7%–71.5%) EIs. Outlets selling tobacco products were found near 27 EIs (27%, CI: 18.6%–36.8%) at 43 sites within a radius of 100 yards of an EI (range: 1–6).

Twenty-seven EIs, which had outlets selling tobacco products within a radius of 100 yards, did not have a display board prohibiting the sale of tobacco products to minors. We observed one outlet selling tobacco products to minors, but sale of tobacco products by minors was not observed at any of the 27 EIs. Outlets selling tobacco products were close to the entrance of 11 EIs [Table 1].

Only 38% of EIs had a display board prohibiting sale of tobacco products; private EIs were significantly less likely to have a display board than government EIs (45% vs. 81%;  $P < 0.001$ ) [Table 2]. The rate of sale of tobacco products within a radius of 100 yards was slightly higher in private (30%) than in government institutions (24%) but the difference was not significant ( $P > 0.05$ ) [Table 2]. The absence of a display board outside the EIs for prohibition of sale of tobacco products within a radius of 100 yards was significantly associated with the presence of an outlet selling tobacco products within the stipulated range ( $P < 0.001$ ). The use of tablet computers enabled data collection in real time and facilitated quick analysis. The results of our analyses were made available to policy-makers within a week.

## Discussion

This study shows that violations of the provisions of Section 6 of COTPA are widespread around both private and government EIs in Delhi. Although COTPA (2003) and the NTCP have been in existence for many years, studies from around the country have shown poor compliance of laws for tobacco control. Studies in Rajasthan, Maharashtra, Kerala, Karnataka, and Bihar have reported sale of tobacco products within a radius of 100 yards to

**Table 1: Violations observed under Cigarettes and other Tobacco Products Act (2003) at outlets selling tobacco products near educational institutions in Delhi, December 2014**

Type of violation	Number of sites (n=43) (%)
Absence of statutory signage at the outlet	43 (100)
Sale of tobacco products by minors	0
Sale of tobacco products to minors	1 (2)
No enquiry or verification of age from children of borderline age group	4 (9)
Easy accessibility of tobacco products to minors	11 (26)

**Table 2: Violations of Section 6 of Cigarettes and other Tobacco Products Act (2003) by type of educational institutions in Delhi, December 2014**

Violation/type of institution	Frequency (%)	95% CI (%)	P
Absence of a display board prohibiting sale of tobacco products			
Private	38/47 (81)	68-90	<0.001
Government	24/53 (45)	32-59	
Total	62/100 (62)	52-71	
Outlets selling tobacco products within a radius of 100 yards			
Private	14/47 (30)	18-44	>0.05
Government	13/53 (24)	14-37	
Total	27/100 (27)	19-37	

CI=Confidence interval

be in 46%, 57%, 50%, 65%, and 62% of EIs, respectively, in 2012–2013.<sup>[6-10]</sup> Nonexistence of the statutory display boards prohibiting sale of tobacco products outside schools in the states of Rajasthan, Maharashtra, Kerala, Karnataka, and Bihar was reported in 78%, 98%, 82%, 71%, and 93% of EIs, respectively, in 2012–2013.<sup>[6-10]</sup> Tobacco control prioritization at the subnational level is low and effective implementation of tobacco laws is a challenge.<sup>[11]</sup>

Although this study in Delhi shows better compliance than earlier studies, the frequency of sale of tobacco products (27%) within a radius of 100 yards as well as the absence of a display board (62%) outside schools is still too high and unacceptable. Violations were more common around private EIs than government institutions; thus, private EIs need to be reminded about the various provisions of COTPA. Laws for tobacco control impact multisectoral issues and need to be implemented in a dynamic fashion. The departments of health, education, and police need to work together to enforce tobacco control policy. India is committed to the WHO Framework Convention of Tobacco Control target of 30% reduction in tobacco consumption by the year 2025 and only through adequate surveillance, it is possible to implement and also modify the existing policies.<sup>[12,13]</sup>

New technologies provide efficient, practical, and faster ways to collect and transmit data. They benefit epidemiological studies by online storage of data in real time.<sup>[14-16]</sup> Android-based tablets and mobile system used in some Indian studies have shown preference by research assistants because of its simple training, quick data submission, and also this technology is feasible in rural parts of India.<sup>[17,18]</sup> This study used simple technology of GPS-enabled tablet computers, which shortened the time for data collection and analyses and provided results within a week. A standardized, easy, quick, and cost-effective method is required for strengthening implementation of

COTPA across India. This study is reproducible and can be applied to various sections of COTPA in any state or district for its efficient enforcement.

The study had following limitations: (i) EI was observed during working hours for about 30 min, which may not record various violations of COTPA all through the day, especially sale to and by minors. (ii) Study used Google maps and GPS to create a 100-yard boundary around EIs; which could be a crude approximation because of GPS errors of up to 10 m.

## Conclusions

Noncompliance of the provisions of Section 6 of COTPA is common in Delhi both in private and government EIs. This study shows that it is feasible and beneficial to use a simple low-cost technology for regular monitoring the adherence to various provisions of COTPA all over India. The use of simple technology such as tablet computers can make data collection and analyze easy and provide quick results to policy-makers. Similar periodic surveys are required to enable regulatory agencies to enforce COTPA in letter and spirit to control tobacco use.

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## Conflicts of interest

There are no conflicts of interest.

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