



# Assessing compliance to smoke-free legislation: results of a sub-national survey in Himachal Pradesh, India

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## ABSTRACT

**Introduction:** Exposure to second-hand smoke (SHS) is a serious public health concern. The Indian smoke-free legislation 'Prohibition of Smoking in Public Places Rules, 2008' prohibits smoking in public places, including workplaces.

**Objective:** To measure the status of compliance to legal provisions that protects the public against harms of SHS exposure, identifies the potential areas of violations and informs policy makers for strengthening enforcement measures.

**Design:** A cross-sectional survey in 1401 public places across 11 district headquarters in Himachal Pradesh, India, using a compliance guide developed by partners of the Bloomberg initiatives to reduce tobacco use.

**Results:** In 1401 public places across 11 district headquarters, 42.8% public places had signage; in 84.2% public places, no smoking was observed and in 83.7%, there was absence of smoking accessories such as ashtray, matchbox and lighter. Tobacco litter like cigarette butts was absent in 64.7% of the public places. Overall, at the state level, there was more than 80% compliance on at least three of the five indicators. Among all categories of public places, educational institutions and offices demonstrated highest compliance, whereas most frequently visited public places, eateries and accommodation facilities had least compliance.

**Conclusions:** The compliance to 'Prohibition of Smoking in Public Places Rules, 2008' was variable in various district headquarters of Himachal Pradesh. This study identified the potential areas of violations that need attention from enforcement agencies and policymakers.

**Key words:** Cigarettes and other tobacco products act, jurisdiction, public places, smoke-free

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## INTRODUCTION

Tobacco use is the single most preventable cause of premature adult death. There are more than one billion smokers globally, who can potentially expose all others to second-hand smoke (SHS).<sup>[1]</sup> More than 80% of the world's smokers live in low- and middle-income countries.<sup>[2]</sup> It is now unequivocally established that exposure to SHS is as harmful as active smoking and causes death, disease

and disability. Every year, exposure to SHS causes over 600 000 premature deaths worldwide.<sup>[3]</sup>

India has a high prevalence of exposure to SHS. About 29.9% adults of age  $\geq 15$  years are exposed to SHS in workplaces, 52.3% at home and 29% at public places.<sup>[4]</sup> India enacted a comprehensive legislation in May 2003 for tobacco control called as the Cigarettes and Other Tobacco Products Act (COTPA). Section 4 of COTPA prohibits

smoking in public places, public transport, workplaces and all other places accessible to public.<sup>[5]</sup>

With respect to protecting the public from SHS, the emphasis, globally, has been on the enforcement of appropriate legislation. A Cochrane Review of 50 studies from developed countries confirms that legislation when enforced can effectively reduce SHS exposure, especially at workplaces and public places.<sup>[6]</sup>

In the context of developing countries like India, enactment of legislation is not sufficient to stop smoking in public places. India's experiences in enforcing public health laws has been dismal.<sup>[7]</sup> In India, four jurisdictions were declared smoke-free based upon a locally adopted tool in May 2010.<sup>[8]</sup>

According to Global Adult Tobacco Survey,<sup>[4]</sup> smoking prevalence in Himachal Pradesh is lower than the national average, but exposure from SHS is high. In all district headquarters, rigorous enforcement of the provisions of COTPA has been instituted after gaining political and administrative support and after creating awareness among the public. This study measured the compliance to legal provisions that protect the public against harms of SHS exposure and identifies areas of violations, where enforcement needs to be strengthened. This study also demonstrates the feasibility of administering a simple, cost-effective method for assessing compliance that can inform enforcers and policymakers.

## MATERIALS AND METHODS

### Study design and setting

A cross-sectional survey was designed using a protocol developed by the Bloomberg Initiative to Reduce Tobacco Use and its partners (which include Campaign for Tobacco-Free Kids, Johns Hopkins Bloomberg School of Public Health and International Union Against Tuberculosis and Lung Disease).<sup>[9]</sup> The survey was conducted on 19-28 May 2011 in the State of Himachal Pradesh (population 6.8 million; area 55,673 km<sup>2</sup>),

India, which comprises 12 districts. There is a high-level of political and administrative commitment for tobacco control in the State, which declared its capital and district headquarter, Shimla smoke-free in 2010.<sup>[10]</sup> This survey was conducted to measure compliance in advancing smoke-free in the 11 (other) district headquarters of the State.

### Sampling methodology

This survey measured compliance of smoke-free status in public places. Public places are defined under COTPA.<sup>[5]</sup>

To identify public places within district headquarters, a list of all public places (except public transport) within municipal jurisdiction was obtained from district authorities. For the purpose of the surveys, the public places were grouped into seven broad categories, namely, educational institutions, accommodation facilities, eateries, offices, healthcare facilities, other 'most frequently visited public places' and public transport. The investigation team also prepared a list of public places that may not have been registered or reported under local municipal authorities. The list of public transport facilities was prepared during the field visit at major bus and taxi stands at the time of survey. The final list was developed after triangulation of these lists. Category-wise sample size was determined using the range prescribed by the compliance guide.<sup>[9]</sup> In all 1401 public places in district headquarters were selected through a simple random sampling method [Table 1].

### Study tool

An observational checklist was adapted from the compliance guide<sup>[9]</sup> and was pilot tested in Kusumpati sub-town of Shimla city. Five criteria were adapted from the guide, which conform to the smoke-free provisions of COTPA as key to measure compliance. These included the following:

1. Presence of no smoking signage: Any pictorial, graphical or textual message displayed in a public place, which warns that smoking is prohibited in a public place, was recorded as a signage. Each signage was further tested for compliance with specifications,

**Table 1: District headquarter-wise number of public places surveyed**

District	Population of the district (as per census 2001)	Name of the district headquarter	Population of the district headquarter	Number of line listed public places	Number of sampled public places
Bilaspur	340,735	Bilaspur	13,058	143	107
Chamba	460,499	Chamba	20,237	169	133
Kangra	1,338, 538	Dharamshala	19,124	252	153
Hamirpur	412,009	Hamirpur	17,252	165	136
Kullu	379,865	Kullu	18,306	172	122
Lahul and Spiti	33,224	Keylong	1,977	103	88
Mandi	900,987	Mandi	26,873	203	148
Sirmour	458,351	Nahan	26,053	166	136
Kinnaur	83,950	Recong-Peo	2,968	101	93
Solan	499,380	Solan	34,206	198	153
Una	447,967	Una	15,900	162	132

as prescribed by COTPA for size, textual content, colour, font and design<sup>[11]</sup>

2. Absence of active smoking: At the time of observation.
3. Absence of smoking aids: Smoking aids like ashtrays, matchboxes and lighters are a proxy indicator that smoking is permitted in that public place; its absence indicates that smoking is not encouraged
4. Absence of odour emanating from cigarette or *bidi*: An indirect evidence of no (recent) smoking in that public place
5. Absence of cigarettes butts or *bidi* ends: An indicator suggesting that smoking has not taken place in recent times.

### Investigation team

Four teams comprising four trained field investigators were designated by the Directorate of Health Service to undertake and complete the survey at district headquarter level. Field investigators were trained to observe violations and to record these on the checklist. Errors and omissions made in the recording were discussed and further clarified to field investigators. The checklist was also refined after the field training based on comments of investigators to improve recording observations.

### Data collection

Public places were observed during the peak visiting hours as per the compliance guide.<sup>[9]</sup> Photographs were taken as an additional evidence of potential or actual violations. Observations were made for 7-10 min in each public place and recorded within the checklist after exiting the premises, but before beginning the process for the next observation. During the field surveys, the principal investigator visited at least 25% of the observed public places in every district headquarters, along with field investigator to verify and validate the recordings.

### Data analysis

Data were collected, triangulated and entered at district headquarter level; 10% of observation checklists were

randomly selected and cross-checked to detect any error and validate the data entry. District-wise and category-wise data analysis was done using Epi Info 3.5.3 (Centers for Disease Control and Prevention, Atlanta, United States of America).<sup>[12]</sup>

### Ethical approval

The survey protocol was reviewed and approved by the Department of Health and Family Welfare, Government of Himachal Pradesh. In public places with restricted entry (like schools, hotel rooms, offices), verbal and prior informed consent was taken from the in-charge. The data were coded and confidentiality of details was maintained.

## RESULTS

There was significant variation in signage display across district headquarters (17% in Solan to 89% in Keylong). In Keylong and Chamba, the signage conformed to COTPA specifications (text, size and design) as compared with other district headquarters [Table 2].

Despite showing low coverage of signage in districts, these districts offered high levels of protection (e.g. Kullu and Solan in Table 2). However, these districts performed variably on other criteria for compliance.

Among all categories, educational institutions had the least signage display (26.6%), while offices had the highest (62.2%), but both of these had least active smoking (97.2% and 95.9%, respectively) [Table 3]. Therefore, the correlation between display of signage and absence of active smoking is not clearly established. Public places like eateries and accommodation facilities having moderate signage display show relatively higher incidence of active smoking. Furthermore, 'most frequently visited public places' had the second highest percentage of signage display, yet highest violation were observed in terms of active smoking in these places.

**Table 2: District wise results of the smoke-free compliance survey in Himachal Pradesh, India**

Parameters	District headquarters no. and percentage of public places											
	Bilaspur (n=107)	Mandi (n=148)	Kullu (n=122)	Chamba (n=133)	D/Shala (n=153)	Hamirpur (n=136)	Una (n=132)	Nahan (n=136)	Solan (n=153)	Key long (n=88)	Recong-Peo (n=93)	Total N (%)
No. and percentage of public places displaying signage	41 (38.03)	33 (22.3)	24 (19.7)	103 (77.4)	70 (45.8)	55 (40.4)	42 (31.8)	75 (55.1)	27 (17.6)	79 (89.8)	51 (54.8)	600 (42.8)
No. and percentage of public places observing no-active smoking	87 (81.3)	113 (76.4)	111 (90.9)	123 (92.5)	117 (76.4)	112 (82.3)	117 (88.6)	107 (78.6)	135 (88.2)	73 (82.9)	84 (90.3)	1179 (84.2)
No. and percentage of public places with no-smoking aids	86 (80.3)	123 (83.1)	105 (86.1)	114 (85.7)	107 (69.9)	111 (84.5)	122 (92.4)	125 (91.9)	135 (88.2)	71 (80.7)	74 (79.5)	1173 (83.7)
No. and percentage of public places with absence of odour from cigarette or <i>bidi</i>	73 (68.2)	111 (75.0)	109 (89.3)	117 (87.9)	119 (77.8)	110 (80.8)	114 (86.3)	124 (91.0)	133 (86.9)	72 (81.8)	82 (88.2)	1164 (83.1)
No. and percentage of public places with no cigarettes or <i>bidi</i> butts found	63 (58.9)	108 (73.0)	72 (59.0)	70 (52.6)	111 (72.5)	91 (66.9)	60 (45.5)	116 (85.3)	130 (85.0)	44 (50.0)	42 (45.2)	907 (64.7)

**Table 3: Public place category-wise results of a smoke-free compliance survey in Himachal Pradesh, India**

Parameters	Categories of the public places						
	Educational institute (n=218)	Accommodation facility (n=216)	Eateries (n=285)	Offices (n=370)	Health care facilities (n=117)	Other most frequently visited places (n=95)	Public transport facilities (n=100)
No. and percentage of public places displaying signage	58 (26.6)	76 (35.2)	95 (33.3)	230 (62.2)	43 (36.8)	49 (51.6)	49 (49.0)
No. and percentage of public places with no-active smoking	212 (97.2)	157 (72.7)	204 (71.6)	355 (95.9)	110 (94.0)	54 (56.8)	87 (87.0)
No. and percentage of public places with no-smoking aids	216 (99.1)	96 (44.4)	208 (73.0)	367 (99.2)	114 (97.4)	83 (87.4)	93 (93.0)
No. and Percentage of public places with absence of odour cigarette or <i>bidi</i>	211 (96.8)	146 (67.6)	202 (70.9)	350 (94.6)	115 (98.3)	51 (53.7)	89 (89.0)
No. and percentage of public places with no cigarettes or <i>bidi</i> butts	186 (85.3)	116 (53.7)	120 (42.1)	263 (71.1)	93 (79.5)	40 (42.1)	85 (85.0)

All healthcare facilities also showed low signage display in comparison to other public places, yet there was a moderately high compliance to the act of smoking, which was verified with the absence of smoking aids, smell of tobacco smoke or tobacco litter.

Public transport facilities had a moderate level of signage (49%) and showed comparatively higher levels of compliance to all criteria.

## DISCUSSION

This study confirms that signage display is currently inadequate and that more efforts are needed to cover public places within the districts of the state. Signage display was >90% in previously conducted studies in four Indian jurisdictions<sup>[8]</sup> and another jurisdiction in north India.<sup>[13]</sup> Similar results were seen in compliance surveys done in developed countries such as Ireland,<sup>[14]</sup> Scotland<sup>[15]</sup> and Ontario city,<sup>[16]</sup> where there has been a high level of enforcement leading to high compliance.

However, the mere presence of signage does not necessarily translate into protection from SHS. The districts headquarter Solan showed the least signage (17.6%), but a better compliance in no-active smoking (88.2%) than the district headquarter Keylong with highest signage display and relatively low compliance to no-active smoking. In fact, there are other factors that come into play, including increased public awareness, earned media support and strong enforcement of law, which contributes towards better compliance to no-active smoking. The present study had notably less compliance in terms of absence of active smoking than in the previously declared Indian jurisdictions.<sup>[8,13]</sup>

Active smoking was found to be variable within and across the districts. Districts *per se* had variable numbers of public places and by type, therefore such variance is expected. Furthermore, 'most frequently visited public places'

had the second highest percentage of signage display, yet had the highest violation in term of active smoking. 'Most frequently visited places' were difficult to monitor since they did not have clearly identified enforcement authority or manager and hence compliance and reporting of violation were expected to be low. In terms of overall compliance, our results are similar to those reported in an earlier compliance study from Mohali district in India.<sup>[13]</sup>

Minimal signage display and least violations *in toto* in educational institutions suggests that smoking and perhaps tobacco use are confined by the type and nature of the public place and may be attributed to greater awareness among visitors to this public place. Increased public awareness appears to have improved compliance on all criteria despite moderate level of signage in public transport system. Public places like eateries (restaurants and bars) and accommodation facilities (hotels and lodges) had very high violations in nearly all indicators. Our data are in agreement with another study from Latin America, which reported higher levels of airborne nicotine level in bars/restaurants in comparison with that in educational institutions.<sup>[17]</sup>

## CONCLUSIONS

The findings of this study have wider implications for implementation of smoke-free legislation in India. While display of signage in public places conveyed the effectiveness of the tobacco control initiatives (of the State), good compliance in term of prescribed signage is essential for enforcement. The study identified the potential areas of violations that needs attention from enforcement agencies and policy makers. Sustained awareness campaigns, backed by enforcement drives, followed by periodical compliance surveys using simple methods that prioritize additional attention and revising strategies will strengthen implementation of smoke-free legislation in Himachal Pradesh and perhaps in other parts of India.

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