



Knowledge and opinion about smoke-free laws and second-hand smoke among hospitality venue managers in Gujarat and Andhra Pradesh, India

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ABSTRACT

Background: India's Smoke-Free Law (SFL) was implemented in 2004 and reinforced on 2nd October 2008. This research attempts to understand the knowledge and opinion of hospitality venue (HV) managers about second-hand smoke (SHS) and SFL as well as self-reported compliance with SFL in two Indian states.

Methods: A survey was conducted among 804 randomly sampled HVs from project STEPS (Strengthening of tobacco control efforts through innovative partnerships and strategies) in Gujarat and Andhra Pradesh, India. Four hundred and three HVs from two districts in Gujarat and 401 HVs from six districts in Andhra Pradesh were selected. The owner, manager or supervisor of each HV was interviewed using a pre-tested structured interview schedule. Association of opinion scales with respondents' background characteristics was assessed through the analysis of variance (ANOVA) method.

Results: Out of the 403 respondents in Gujarat and 401 in Andhra Pradesh, 56.1% and 84.3% had knowledge about SFL respectively. Compliance of HVs with SFL was 21.8% in Gujarat and 31.2% in Andhra Pradesh as reported by the managers. Knowledge about SHS was noted among 39.7% of respondents in Gujarat and 25.4% in Andhra Pradesh. Bivariate results indicated that more educated HV managers showed higher support for smoke-free public places ($P < 0.001$) and were more concerned about the health effects of SHS exposure ($P = 0.002$).

Conclusion: Complete self-reported compliance with, and knowledge of SFL as well as SHS was not found in Gujarat and Andhra Pradesh. The education level of HV managers is an important determinant to ensure compliance with SFL in public places.

Key words: Smoke-free law, second-hand smoke, public places, awareness, opinion, tobacco

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INTRODUCTION

Exposure to second-hand smoke (SHS) is a major public health hazard accounting for more than 600 000 global deaths annually.¹ Smoke-free laws (SFL) eliminate smoking from public places, reduce exposure to SHS² and protect non-smokers from its harmful effects.³ SFL are based on mounting scientific evidence that there is no risk-free or safe level of exposure to SHS.

Recent studies have shown that, of all public places, restaurants and bars have the highest SHS concentrations.^{4,6} Restaurants and bars are frequently visited by the public for entertainment. Supportive attitudes and good awareness of hospitality venue (HV) managers are important for ensuring compliance with SFL, not only for their customers but for their own staff. Previous studies have highlighted that awareness levels among restaurant and bar owners about SHS is associated with prohibition or restricted smoking in their venues.^{7,8} Those

not in support of SFL in their venues were more concerned that legislation would reduce revenue, and felt that adequate ventilation systems were sufficient to reduce SHS, rather than implementation of SFL.⁹

In line with global statistics, the highest levels of SHS exposure in Indian cities are found in entertainment venues and restaurants.⁹ According to the Global Adult Tobacco Survey (GATS) conducted in India in 2010, 29% of adults (aged ≥ 15 years) are exposed to SHS at any public place and about one in nine (11%) adults who visit restaurants are exposed to SHS.¹⁰ In Gujarat and Andhra Pradesh, 31.7% and 33.5% of adults are exposed to SHS in public places, respectively, and 84.7% and 63.2% believe that exposure to SHS causes serious illness in non-smokers.¹⁰

India enacted comprehensive tobacco control legislation – Cigarettes and Other Tobacco Products (Prohibition of Advertisement and Regulation of Trade and Commerce, Production, Supply and Distribution) Act in 2003.¹¹ Section 4 of the Act prohibits smoking in all public places, except hotels with 30 or more rooms, restaurants with 30 or more seats and in airports. These venues are allowed to have a designated smoking area or a space, adhering to the prescribed ventilation and placement guidelines.¹² The rules for SFL were implemented in India in 2004, and revised and enforced by a Supreme Court ruling on 2nd October 2008.¹³

Despite the Supreme Court orders, compliance with SFL in India is low. HV managers' attitude and awareness are likely to impact how well such laws are obeyed and enforced, and thus how well they achieve the health goal of reducing SHS exposure in these venues. This study aims:

- to describe the characteristics of HVs and their owners/managers/supervisors (respondents) and to document their practices with regard to SFL;
- to assess the level of knowledge among respondents and their opinion on SHS and SFL;
- to assess the association between knowledge and opinion of the respondents regarding SHS and SFL.

METHODS

Ethical approval for this study was obtained from the Institutional Ethics Committee of the Public Health Foundation of India. Written informed consent was obtained from all the participants, who were free to opt out at any stage of the study.

Study design and setting

Project STEPS (Strengthening of tobacco control efforts through innovative partnerships and strategies), a three-year multicomponent intervention, was implemented in Gujarat and Andhra Pradesh as they are leading tobacco-producing states in India. A survey was conducted in randomly selected HVs as a baseline from two districts implementing STEPS in Gujarat (Rajkot and Surat) and six districts in Andhra Pradesh (East Godavari, Karim Nagar, Kurnool, Mahabub Nagar,

Prakasam and Vishakhapatnam). The sampling frames were urban mandals in Andhra Pradesh and urban talukas in Gujarat (mandals and talukas are third and fourth level administrative units in India, respectively).

The primary sampling units were municipal wards that were chosen through probability proportion to size from selected mandals and talukas. A census was carried out in these wards to list all HVs. The sample size was based on the formula for cluster randomized control trials¹⁴ at 95% confidence level and 80% power to detect 12% reduction (effect size) in the proportion of venues not adhering to SFL. According to GATS conducted in India in 2009–2010, baseline compliance with SFL was 50%. Thus, 1209 venues were randomly selected (out of a census list of 2477 venues), of which 804 were HVs (403 in Gujarat and 401 in Andhra Pradesh) and 405 were other public places (202 in Gujarat and 203 in Andhra Pradesh). In this paper, only the results of HVs are presented. In the selected HVs, either the owner, manager or supervisor was interviewed. The authors use the term manager uniformly to represent owner, manager or supervisor. There were five refusals in Gujarat and seven in Andhra Pradesh. Also, 11 venues in Gujarat and 14 in Andhra Pradesh were dropped due to non-availability of managers.

Data collection

Six teams were trained for data collection in each state and each team was led by one investigator and one supervisor. Investigators explained the purpose and background of the study to the managers of the venues to seek their consent. In the case of refusals, the next venue on the list was selected. In addition, on-site observation was also conducted by the supervisors at each venue to assess the characteristics and compliance with SFL. Only self-reported results are discussed in this manuscript.

The survey among HV managers was carried out using a pre-tested structured interview schedule. The survey instrument was developed and translated into Gujarati and Telugu for administration in Gujarat and Andhra Pradesh respectively. After the training of the data collection team, a pilot exercise was conducted to test the survey tool as per the study protocol. The pilot test was conducted in the cities of Ahmedabad in Gujarat and Hyderabad in Andhra Pradesh. Ten HVs and 10 other public places from each state were selected for the pilot test. The questionnaire was finalized after incorporating edits from pilot results. The venues for the pilot study were different from those included in the main study. Details of the HVs such as type of establishment, room/seating capacity, separate smoking area or space and building characteristics were collected.

Measures

Knowledge about SFL and SHS: This was assessed using binary variables by asking the respondents whether they were aware of any policy or law that bans smoking in public places and whether they had ever heard about passive smoking/SHS. Source of information about SFL, specifications, and

Table 1: Description of opinion scales on SFL and SHS (n=804)¹

Scales	Number of items	Range	Mean (SE)	Cronbach's alpha	Example
Opinion on smoke-free public places	5	0–20	17.5 (0.1)	0.60	A place being smoke free is good for its public image.
Health concern related to SHS exposure	4	0–16	12.7 (0.1)	0.65	Ban on smoking in public places will protect people from the hazards of passive smoking.
Overall supportive attitude to SFL	7	0–28	19.7 (0.2)	0.63	Ban on smoking in public places is unfair to smokers (reversely coded).

¹Details of the scales are available from the authors.

SE: standard error.

respondents' understanding about SHS and its effects on health were also assessed.

Opinion scale on SFL and SHS: Sixteen statements were used to assess the opinion of the respondents on SFL and SHS. Each statement was based on a five-point Likert scale varying from strongly disagree coded as '0' to strongly agree coded as '4'. These statements were categorized according to three specific issues: opinion on smoke-free public places, health concern related to SHS exposure, and overall supportive attitude to SFL. Reliability of the scales was checked through Cronbach's alpha. The scores for statements related to "overall supportive attitude to SFL" were initially negative (i.e. high score tends to negative opinion) and later reverse coding was done (i.e. strongly disagree coded as '4' to strongly agree coded as '0') to make the statements positive. Short descriptions of the scales are provided in Table 1.

SHS-related health effects: Knowledge about SHS-related health effects was also assessed from HVs managers. The responses were either spontaneous or aided. The proportion of respondents who spontaneously provided the correct answer for each health-related effect is presented here.

Data analysis

Descriptive statistics such as frequency distribution and proportion were provided for the characteristics of respondents as well as for HVs. Association of opinion scale scores with respondents' background characteristics and their knowledge about SFL and SHS were assessed through the ANOVA test. All the analyses were undertaken using STATA 11.2.

RESULTS

Characteristics of the hospitality venues and respondents

Table 2 presents the characteristics of the HVs and the demographic profile of the respondents. The majority of HVs in both states were restaurants (Gujarat 61.5%, Andhra Pradesh 54.9%). As Gujarat is a state where sale, purchase and consumption of alcoholic beverages is banned by law, there

were no bars and pubs in the study sample whereas in Andhra Pradesh, bars/pubs constituted 15.2% of the total sample.

In Gujarat, 21.8% of the HVs had a policy that prohibits smoking while in Andhra Pradesh this was 31.2%. In Gujarat, tobacco products were sold inside 3.0% of the establishments while in Andhra Pradesh they were sold in 6.5%. Smoking was allowed inside 7.4% of the venues in Gujarat and in 27.2% of venues in Andhra Pradesh. Neither of the two restaurants in Gujarat that allowed smoking and had a seating capacity of more than 30 had a designated smoking room (DSR); in Andhra Pradesh, only 2 of the 42 restaurants with a seating capacity over 30 and where smoking was allowed had a DSR (data not shown).

More than half of the respondents in both states were in the age group of 31–45 years (Gujarat 55%, Andhra Pradesh 53%). The mean age of key informants was 37.3 years in Gujarat and 38.0 years in Andhra Pradesh. The proportion of female respondents was less than 1% in both states. Education for more than 10 years was found among 47.9% of respondents in Gujarat, and 70.6% in Andhra Pradesh. About three quarters (73.4%) of respondents were owners of the HVs in Gujarat but only about half (48.4%) in Andhra Pradesh (see Table 2).

Knowledge about SFL

Table 3 depicts the knowledge of HV managers regarding SFL and SHS. Awareness of SFL was shown in 56.1% of respondents in Gujarat and 84.3% in Andhra Pradesh. Television and newspapers were reported to be the major source of knowledge for the respondents in both states. Of those who were aware of the SFL, 66.8% in Gujarat and 59.5% in Andhra Pradesh reported that the law was enacted in 2008 in India. In addition, 76.1% of the respondents in Gujarat and 88.5% in Andhra Pradesh reported that their establishment came under the jurisdiction of SFL. It was observed that awareness of the penalty for violation of SFL (fine of up to INR 200 or US\$ 3.3) was reported by 73.9% of the respondents in Gujarat and 88.5% in Andhra Pradesh.

Displaying 'No Smoking' signage inside the establishment was reported as the main responsibility of HV management by 60.2% and 70.5% of respondents in Gujarat and Andhra Pradesh respectively. Of respondents who reported that the management should put up 'No Smoking' signage, more than

Table 2: Characteristics of hospitality venues and respondents in Gujarat and Andhra Pradesh

	Gujarat n (%)	Andhra Pradesh n (%)
Total sample	403^a	401^b
Type of establishment		
Hotel/guest house	91 (22.6)	44 (11.0)
Coffee/tea shop	64 (15.9)	76 (18.9)
Restaurant	248 (61.5)	220 (54.9)
Bar/pub	0	61 (15.2)
Room capacity of hotels/guest house		
Less than 30 rooms	80 (87.9)	38 (86.4)
30 rooms or more	11 (12.1)	6 (13.6)
Seating capacity		
Less than 30 seats	273 (87.5)	214 (59.9)
30 seats or more	39 (12.5)	143 (40.1)
Smoking allowed inside the establishment	30 (7.4)	109 (27.2)
Alcoholic drinks served inside the establishment	13 (3.2)	73 (18.2)
Establishment has a policy that prohibits smoking in any way	88 (21.8)	125 (31.2)
Tobacco products are sold inside the establishment	12 (3.0)	26 (6.5)
"No smoking" signage displayed in the establishment	22 (5.5)	74 (18.5)
Sociodemographic profile of respondents		
Age group (years)		
18–30	108 (26.8)	112 (27.9)
31–45	222 (55.1)	212 (52.9)
46+	73 (18.1)	77 (19.2)
Sex		
Male	402 (99.8)	399 (99.5)
Female	1 (0.2)	2 (0.5)
Educational qualification		
No formal schooling	31 (7.7)	33 (8.2)
< 10 years of education	179 (44.4)	85 (21.2)
≥ 10 years of education	193 (47.9)	283 (70.6)
Job function		
Owner	296 (73.4)	194 (48.4)
Supervisor	57 (14.2)	72 (18.0)
Manager	50 (12.4)	135 (33.6)

^a In Gujarat, out of 50 hospitality venues with more than 30 seats/30 rooms, none had a separate smoking area or space.

^b In Andhra Pradesh, four hospitality venues had a separate smoking area or space, one of which was a hotel having less than 30 rooms and one was a restaurant having a seating capacity less than 30.

half (Gujarat 55%, Andhra Pradesh 65%) felt that it should be put at the entrance of the venue (result not shown) (see Table 3).

Knowledge about SHS

Around 40% of respondents in Gujarat and 25% in Andhra Pradesh had heard of passive smoking/SHS (Table 3). Of these,

Table 3: Knowledge about SFL and SHS in Gujarat and Andhra Pradesh

	Gujarat n (%)	Andhra Pradesh n (%)
Total sample	403	401
Awareness of any policy of ban of smoking at public places	226 (56.1)	338 (84.3)
Source of knowledge about SFL		
Television	178 (78.8)	248 (73.4)
Newspaper	152 (67.3)	224 (66.3)
Posters/hoardings/billboards	62 (27.4)	54 (16.0)
Radio	53 (23.5)	54 (16.0)
Government officials	13 (5.8)	51 (15.1)
Circulars	8 (3.5)	23 (6.8)
Restaurant association	18 (8.0)	6 (1.8)
Knowledge of year of enactment of SFL in India (from 2008)	151 (66.8)	201 (59.5)
Awareness that establishment is under the jurisdiction of SFL	172 (76.1)	300 (88.5)
Awareness of penalty for violation of SFL	167 (73.9)	299 (88.5)
Management responsibility to implement SFL		
Create a smoking area/space	2 (0.9)	14 (4.1)
Create a no smoking policy	105 (46.5)	107 (31.6)
Put a no smoking signage	136 (60.2)	239 (70.5)
Others	0 (0.0)	14 (4.1)
Public places allowed to have a smoking area	11 (4.9)	37 (10.9)
Ever heard of "passive/second-hand smoking"		
Yes	160 (39.7)	102 (25.4)
No	228 (56.6)	281 (70.1)
Don't know/can't say	15 (3.7)	18 (4.5)
Understand "Passive/second-hand smoking"	160	102
Inhalation of any kind of smoke	0 (0.0)	5 (4.9)
Smoke from lit cigarette/bidi/ other smoking product or smoke exhaled by smokers	160 (100.0)	97 (95.1)
Smoke has any effect on the people around		
Yes	293 (72.7)	381 (92.8)
No	47 (11.7)	22 (5.5)
Don't know/Can't say	63 (15.6)	7 (1.7)

all in Gujarat and 95.1% in Andhra Pradesh reported that this was smoke exhaled by smokers or smoke from a lit cigarette/bidi/other smoking product. Interestingly, most respondents in both states (73% in Gujarat and 93% in Andhra Pradesh) believed that smoke exhaled by smokers can adversely affect people around them. Respiratory diseases were the most reported SHS-related health effect in both states. The other

major reported effects were lung cancer and heart diseases. The fact that smoking around children and pregnant women could be harmful was reported by a lower proportion of respondents in both states (Figure 1).

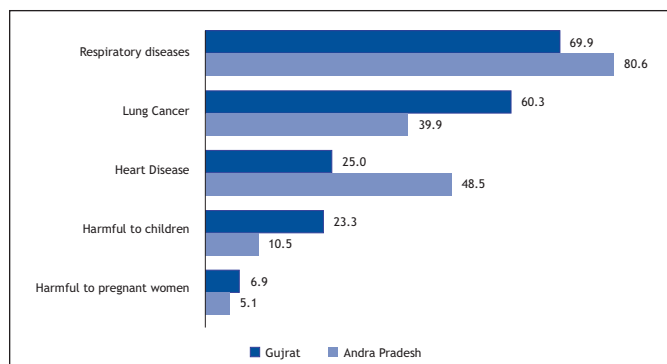


Figure 1: Percentage of hospitality venue owners, managers or supervisors aware of SHS-related health effects in Gujarat ($n=403$) and Andhra Pradesh ($n=401$)

Opinions on SFL and SHS

The mean opinion score on smoke-free public places was higher in Andhra Pradesh (18.1) than Gujarat (16.9), $P < 0.001$ (Table 4). Similarly, mean scores of health concerns related to SHS exposure and overall supportive attitude to SFL were also higher in Andhra Pradesh ($P < 0.01$).

The mean opinion score on smoke-free public places was significantly higher among managers with more than 10 years of education (17.8) compared with those with less than 10 years of education (17.1) and those with no formal schooling (17.0), $P < 0.001$. The score for health concern related to SHS exposure was also significantly higher among managers who had 10 years or more education (mean score 13.0). The mean score for overall supportive attitude to SFL was lowest among managers without formal schooling and highest among those who had less than 10 years of education.

Mean opinion scores on smoke-free public places and health concern related to SHS were significantly higher among those who had knowledge about SFL than those who did not ($P < 0.001$). Respondents in restaurants with more than 30 seats were more supportive of the SFL compared with those from restaurants with less than 30 seats ($P < 0.001$). Respondents who were employed in establishments that prohibited smoking had a higher mean opinion score on smoke-free public places than employees in establishments that did not prohibit smoking ($P < 0.001$) (see Table 4).

DISCUSSION

This study assessed the knowledge and awareness about SFL and SHS as well as self-reported compliance with SFL among managers of HVs, including restaurants, bars and hotels.

We observed that 43.9% HV managers in Gujarat and 15.7% in Andhra Pradesh were still not fully aware of SFL. Our findings are similar to those observed in developing countries such as Armenia and Mongolia, where only a third of HV workers are aware of SFL.^{17,18} In our study, the majority of managers who were aware of SFL believed that 'No Smoking' signage is to be displayed wherever smoking is prohibited and that their establishment came under the jurisdiction of this law. We also highlight that knowledge of SFL among HV managers is less than optimal; at the same time, self-reported compliance with SFL was also low in both Gujarat and Andhra Pradesh. Sensitizing HV managers and providing them with pertinent information about the SFL is therefore of utmost importance. Strengthening the enforcement mechanism of SFL (including display of signs, smoke-free policies, penalties and inspection) may further improve compliance with legislation in India through changes in attitudes and norms about SHS exposure as observed in other developed countries.¹⁷

While data suggest that few managers had heard the term 'passive smoking' or 'second-hand smoke', among those who had, most understood its true meaning. However, most managers were unaware of the full harmful effects of SHS. Lung cancer and respiratory diseases were the most frequently reported health effects while other health conditions like heart and cardiovascular diseases, and harmful effects on pregnant women and children were the least reported. Studies in other settings have also revealed that respiratory diseases are more frequently associated with SHS exposure.¹⁸ It may be that managers are more familiar with specific information about certain health hazards of SHS, but lack a full understanding of the risks of SHS. This highlights the need to sensitize the managers of HVs about SHS and SFL and the harm associated with SHS exposure.

Support towards smoke-free public places and health concern related to SHS exposure were significantly higher among managers who were more educated and who had knowledge of SFL. Targeted campaigns are therefore essential to inform and create awareness about the risks of exposure to SHS, among managers belonging to diverse educational backgrounds. SFL in India needs to be made comprehensive and should require all public places to be 100% smoke free. WHO states that: "[a]pproaches other than 100% smoke free environments, including ventilation, air filtration and the use of designated smoking areas (whether with separate ventilation systems or not), have repeatedly been shown to be ineffective and there is conclusive evidence, scientific and otherwise, that engineering approaches do not protect against exposure to tobacco smoke."¹⁹ The provision of DSRs still exists in the Indian SFL, but is widely flouted as found in our study. Therefore 100% smoke-free public places are highly recommended for complete protection from SHS. In addition, it is proposed to conduct routine monitoring for SFL compliance as part of annual licence renewal of HVs.

This is the first study that analyses the knowledge and awareness about SFL and SHS as well as self-reported compliance with SFL among HV managers in India. Also, the current study has

Table 4: Opinion of respondents from Gujarat and Andhra Pradesh about SFL and SHS by demographic profile, knowledge and characteristics of hospitality venue

	Opinion scale ^a		
	Support for smoke-free public places	Health concern related to SHS exposure	Overall supportive attitude to SFL
	Mean score (95% CI)	Mean score (95% CI)	Mean score (95% CI)
State			
Gujarat	16.9 (16.6–17.1)	11.7 (11.5–12.0)	19.2 (18.6–19.7)
Andhra Pradesh	18.1 (17.9–18.3)	13.6 (13.3–13.8)	20.1 (19.8–20.5)
<i>P</i> value ^b	< 0.001	< 0.001	0.003
Education			
No formal schooling	17.0 (16.4–17.6)	12.4 (11.7–13.0)	18.9 (17.7–20.1)
< 10 years of education	17.1 (16.8–17.4)	12.2 (11.8–12.5)	20.0 (19.3–20.6)
≥ 10 years of education	17.8 (17.6–18.0)	13.0 (12.7–13.2)	19.6 (19.2–20.0)
<i>P</i> value ^c	< 0.001	0.002	0.245
Job function			
Owner	17.4 (17.2–17.6)	12.9 (12.6–13.1)	19.3 (18.9–19.8)
Supervisor	17.2 (16.7–17.7)	12.8 (12.2–13.3)	19.5 (18.8–20.2)
Manager	17.9 (17.6–18.1)	12 (11.6–12.5)	20.7 (20–21.3)
<i>P</i> value ^b	0.05	0.004	0.004
Awareness about SFL			
Yes	17.8 (17.6–18.0)	13.4 (13.2–13.6)	19.4 (19.0–19.7)
No	16.8 (16.4–17.1)	11.0 (10.5–11.4)	20.4 (19.8–21.0)
<i>P</i> value ^b	< 0.001	< 0.001	0.005
Knowledge about SHS			
Yes	17.3 (17.0–17.6)	13.7 (13.4–13.9)	19.2 (18.5–19.8)
No	17.6 (17.4–17.8)	12.2 (11.9–12.4)	19.9 (19.5–20.2)
<i>P</i> value ^a	0.091	<0.001	0.038
Type of establishment			
Hotel/guest house	17.3 (16.9–17.7)	12.6 (12.3–13.0)	19.2 (18.2–20.2)
Coffee/tea shop	17.6 (17.2–17.9)	13.0 (12.6–13.4)	19.9 (19.2–20.6)
Restaurant	17.5 (17.3–17.7)	12.4 (12.2–12.7)	19.6 (19.2–20.0)
Bar/pub	17.8 (17.1–18.5)	13.6 (12.9–14.3)	20.9 (20.2–21.7)
<i>P</i> value ^c	0.66	0.015	0.095
Room capacity of hotel/guest house			
Less than 30 rooms	17.3 (16.9–17.7)	12.5 (12.1–12.9)	19.1 (18.0–20.2)
30 rooms or more	17.5 (16.0–18.9)	13.8 (12.7–14.8)	19.6 (17.5–21.7)
<i>P</i> value ^a	0.784	0.024	0.755
Seating capacity			
Less than 30 seats	17.6 (17.4–17.8)	12.8 (12.5–13.1)	19.4 (19.0–19.9)
30 seats or more	17.3 (17.0–17.7)	12.2 (11.8–12.7)	20.6 (20.1–21.1)
<i>P</i> value ^b	0.24	0.03	0.003
Establishment has a policy that prohibits smoking in any way			
Yes	18.1 (17.8–18.4)	13.0 (12.6–13.4)	19.4 (18.9–19.9)
No	17.3 (17.1–17.5)	12.5 (12.3–12.8)	19.8 (19.4–20.2)
<i>P</i> value ^b	< 0.001	0.069	0.27
Is the “no smoking” signage displayed in the establishment?			
Yes	18.3 (17.9–18.7)	13.9 (13.5–14.4)	20.2 (19.5–20.9)
No	17.4 (17.2–17.6)	12.5 (12.3–12.7)	19.6 (19.2–19.9)
<i>P</i> value ^b	0.001	<0.001	0.21

^a A higher score for all three opinion scales is supportive.

^b *P* value is for the difference of mean score using t-test.

^c *P* value is for the difference of mean score using one way ANOVA.

CI, confidence interval; SFL – smoke-free legislation; SHS – second-hand smoke.

strong policy implications for prevention of exposure to SHS in HVs. The study focused specifically on managers' knowledge and attitudes regarding SFL and SHS as well as self-reported compliance across two states in the country, which may not be representative of all states in India.

CONCLUSIONS

Complete self-reported compliance with SFL and knowledge of SFL and SHS was not found in Gujarat or Andhra Pradesh. The education level of HV managers is an important determinant to ensure compliance with SFL in public places.

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How to cite this article: Gupta VK, Arora M, Sharma I, Nazar GP, Modi B, Singh D, et al. Knowledge and opinion about smoke-free laws and second-hand smoke among hospitality venue managers in Gujarat and Andhra Pradesh, India. *WHO South-East Asia J Public Health* 2013; 2(3-4): 174-180.

Source of Support: This work was supported by Bill & Melinda Gates Foundation Grant No OPP51858 to the Public Health Foundation of India, New Delhi. **Conflict of Interest:** The authors declare that they have no conflict of interest.