Adherence to smoke-free policies in Ghana: Findings from a cross-sectional survey of hospitality venue owners and staff

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ABSTRACT

INTRODUCTION Implementation of and compliance with smoke-free policies (SFPs) can be problematic in many low- and middle-income countries (LMICs) due to limited resources. This study evaluated knowledge, opinions and compliance related to Ghana's SFPs among owners and staff of hospitality venues by city, staff designation, and venue type.

METHODS A cross-sectional study design was used in venue types including hotels, bars, pubs and restaurants in the three cities of Kumasi, Accra, and Tamale, in Ghana.

Data were collected between July and September 2019. Interviewer administered face-to-face surveys were conducted with owners and staff (n=142) recruited from randomly selected hospitality venues (n=154) in these three large cities of Ghana. The relationship between knowledge, opinions, and compliance items on SFPs, and city, venue type and staff designation was first studied using χ^2 or a Fisher's exact test, and then with univariate logistic regression model analysis.

RESULTS Of the 142 respondents, some had heard of Ghana's 2012 Tobacco Control Act (27.5%), smoking restriction in public places (29%), smoke-free places (22%), and display of 'no smoking' signage (6.3%). Knowledge levels were higher in Accra compared to Tamale (OR=3.08; 95% CI: 1.10–8.60). Staff designation and type of venue did not have any relationship with knowledge levels. Support for SFPs was over 80%, but opinions in support of SFPs were lower in Accra than Tamale (OR=0.25; 95% CI: 0.08–0.71). Compliance with SFPs was similar in the three cities. Hotels were three times more compliant compared to bars and pubs (OR=3.16; 95% CI: 1.48–6.71).

CONCLUSIONS The study highlights the strong support for restriction of smoking in public places including hospitality venues despite poor knowledge and low compliance levels with the current SFPs. A review of the current SFP in Ghana together with education of hospitality staff on the benefits and requirements of SFPs is recommended.

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INTRODUCTION

There is no safe level of exposure to secondhand smoke (SHS) attributed to cigarette smoking. SHS causes heart disease, cancer and many other diseases[1]. The World Health Organization (WHO) indicates that more than 80% of the 1.3 billion tobacco users globally live in low- and middle-income countries (LMICs), where the burden of tobacco-related illness and death is heaviest. Approximately 1.2 million non-smokers die each year as a result of exposure to SHS[2]. According to the WHO Framework Convention on Tobacco Control (WHO FCTC) Article 8 (2007), the creation of 100% smoke-

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free environments is the only effective science-based measure to protect populations from the harmful effects of exposure to SHS[3]. The benefits of implementation of smoke-free policies (SFPs) are numerous and include: a decline in SHS exposure leading to a substantial decline in heart disease morbidity and respiratory symptoms in workers; reduced cigarette consumption among continuing smokers; increased successful cessation among workers; and reduced tobacco use among youth[4,5].

The implementation of SFPs in many high-income countries in the past decade has shown substantial public health benefits[6,7], with no evidence of a decline in business activity in hospitality venues, such as restaurants or bars where policies are enforced[1]. However, more than 80% of the world's population (particularly in the LMICs) remains unprotected by these policies and much less effort has been expended on reducing exposure to SHS in several LMICs, including many in Sub-Saharan Africa (SSA)[6,8-10]. Despite low smoking rates in many African countries compared to other parts of the world[11], projections indicate that Africa will have the most rapid growth in tobacco smoking[11,12] by 2025. In terms of the effective SFPs, only a small number of African countries have a comprehensive or 100% SFPs covering all public and private places including hospitality venues[11-13]. Further, Africa has the weakest and lowest prevalence of effective SFPs[10]. Thus, endorsement and implementation of evidence-based policy initiatives such as SFPs are crucial.

Currently, Ghana, an LMIC in SSA, has a partial smoking ban, which prohibits smoking in enclosed public areas including hospitality venues such as restaurants, bars and nightclubs but allows for designated smoking areas (DSAs)[14,15]. While the overall prevalence of smoking in Ghana has been approximately 5% in adults[16-18] and 10% in adolescents[19,20], a third of adolescents are exposed to SHS[21]. Ghana's current SFP is faced with challenges relating to compliance and enforcement[22]. Earlier studies in Ghana have highlighted the lack of compliance and high levels of SHS in hospitality venues[9]. Interestingly, smoking was observed in about 30% of hospitality venues where smoking was prohibited, as indicated by our earlier air quality measurement study[23]. Notably, of all public places, the hospitality venues such as restaurants, bars, pubs and nightclubs have the highest SHS concentrations, and workers in these venues have the highest risk of SHS-related problems[7,24,25].

To identify drivers of attitude towards enforcement of the SFP in Ghana and to provide information that can be useful for Ghana and other countries facing challenges with implementation of SFPs, we interviewed owners and staff of hospitality venues as a follow-up to our earlier observational air-quality evaluation of hospitality venues. Specifically, we aimed to assess knowledge, opinions and compliance to the provisions of the Tobacco Control Act (TCA) (2012) and the SFP, among hospitality venue owners and staff from Ghana's three largest cities. Additionally, we sought to determine whether knowledge, opinions and compliance related to SFP differ by city, staff designation or hospitality venue type. This will help to inform context-specific recommendations towards the successful implementation of SFP in Ghana.

METHODS

Study design

A cross-sectional survey was carried out among owners and staff of hospitality venues in three cities in Ghana.

Site selection

The study was conducted in the three largest cities of Ghana (Accra, Kumasi, and Tamale) due to their large population density, diversity and high smoking prevalence. These cities also represent the major cities of the southern, middle and northern belts of the country, respectively. A list of 1532 hospitality venues including bars, pubs, restaurants, hotels and nightclubs in the three cities was obtained from the Ghana tourist authority. These venues were then stratified by the three cities: Accra (n=949), Kumasi (n=457), and Tamale (n=126). Using a margin of error of 5%, confidence limit of 95% and a response rate of 87.7% from earlier studies[22-24], a sample size of 154 venues was obtained for the study. A proportionate allocation was then made for the three cities: Accra [(949/1532) × 154 = 95], Kumasi [(457/1532) × 154 = 46], and Tamale [(126/1532) × 154 = 13]. A random number generator (Minitab version 17) was then used to randomly select the planned number of venues within each of the three

cities (simple random sampling). For consistency, the visits took place between 4 p.m. and midnight in all of the selected venues. In the case where the venue was permanently closed, the venue next on the list was selected. The study protocol was approved by the Ethics Committee of the University of Stirling (Reference number: GUEP494) and the Kwame Nkrumah University of Science and Technology (Reference number: CHRPE/AP/441/18). Informed consent was sought from each of the respondents that were interviewed for the study. Fieldworkers carried an official letter during fieldwork describing the study plus evidence of ethical approval and contact details of principal investigators.

Data collection and classification of variables

Data were collected over a 10-week period from July to September 2019, including a three-day pilot data collection in Kumasi. Owners and staff of the hospitality venues were interviewed via a pretested face-to-face interviewer-administered questionnaire adapted from similar studies[24,26]. Once the trained interviewers (n=4) arrived at the selected hospitality venues, they were required to seek an informed consent from the managers (or any person with similar authority) before commencement of the survey. If the manager or the owner was not available for an interview, we then interviewed another staff member based on the managers' recommendations. Only one eligible and consenting worker was interviewed at each venue due to the busy nature of such settings. Data were collected in a private secure place within the premises to ensure confidentiality. Descriptive variables that were collected included: type of venue (bar, hotel, nightclub, restaurant, pub), staff designation (owner, manager, waiter, other), tobacco products sold (yes or no), nature of venue (only indoor, only outdoor or both indoor and outdoor), types of tobacco products sold at the venue (manufactured cigarettes, hand-rolled cigarettes, pipes, cigars, shisha, electronic cigarettes and smokeless tobacco products), smoking allowed at venue (yes or no), sale of alcohol at venue (yes or no), presence of designated smoking area (yes or no), restriction to minors (yes or no), and smoking status of staff (smoker, non-smoker).

Respondents were then assessed on their knowledge, opinions and compliance to the SFP using KAP (knowledge, attitude and practice) scores. First, knowledge on Ghana's Tobacco Control Act (TCA) and SFP was assessed using a 9-item scale such as: ban on advertising and promotion (1), components related to SFP (3), government and tobacco industry interaction (1), advertising and promotion (1), sale and display of tobacco products (1), sale of tobacco products to minors (1), and warning on tobacco products (1). Each item response was coded as either '1=yes' or '0=no'. The mean score for each item (across all participants) was calculated and then a mean of those item-specific means was calculated to get the overall mean score. The overall mean score was then used as a cut-off for 'more knowledge' (≥ 0.09) and 'less knowledge' (<0.09) on TCA. Second, their opinions on Ghana's SFP were assessed by 10 questions on a 5-point Likert scale with options ranging from 'strongly agree' to 'strongly disagree'. The questions included the respondent's opinions on whether they had adequate information on SFPs and their views on the following statements: smoking ban has a negative effect on business, smoking ban causes financial losses, smoking ban is an unfair restriction on smokers, smoking ban results in unemployment, smoke-free bars make visits more comfortable, smoke-free bars protect the health of workers, smoking ban will encourage smokers to quit, smoking ban is necessary in public bars, and prohibition of indoor smoking in public places. For data analysis purposes, we created dichotomous outcome variables with a score of 1 given for 'agree' (strongly agree/agree) and 0 for 'disagree' (undecided/strongly disagree/disagree). Opinion scores for individual items were also computed in a similar way to knowledge scores. The overall mean score was used as a cut-off to categorize the opinions as 'agree/support' (≥ 0.54) and 'disagree/against' (<0.54).

Lastly, compliance with the SFP included five items with multiple choice options related to the venue's smoking policy. These items included: the respondent's best description of the venue's smoking policy; actions taken if someone smoked at the venue; awareness of violation penalties; law prohibiting sale and advertisements of tobacco products; and importance of no-smoking signage. Each response was coded as compliance (score = 1) or non-compliance (score = 0). The mean score for each item (across all respondents) was calculated

and then a mean of those item-specific means was calculated to get the overall mean score. The scale classified a score of ≥0.7 as 'more compliant' and a score of <0.7 as 'less compliant'.

Data analysis

Data collected were checked in the field for errors, corrected by the researchers and checked for inconsistencies before exporting into STATA 12. The names of the respondents and of the hospitality venues were not used to ensure anonymity and confidentiality. Descriptive variables such as city, type of venue, presence of designated smoking areas, types of tobacco products sold at the venue, smoking in the premises, and smoking status of interviewee, were reported as frequencies and percentages.

The relationship between knowledge, opinions and compliance items on SFP, and city, venue type and staff designation were first studied using χ^2 or Fisher's exact test (when the number in the table was <6) and then with a univariate logistic regression model. The results are presented as odds ratios (OR) with 95% confidence interval, with significance set at an alpha level of 5% ($p \leq 0.05$).

RESULTS

Characteristics of hospitality venues

A total of 154 venues were visited during the period between July to September 2019, but 142 were only analyzed as 12 (7.8%) had incomplete data. The majority of the venues were in Accra, the capital city of Ghana (47.2%), followed by Kumasi (38.0%), and Tamale (14.9%) (Table1). Hotels formed the largest part of the venues visited (69%), and most of the respondents were waiters or receptionists (76.8%). Smoking was allowed in 31% of the venues, and designated smoking areas were present in only 14%. Of the venues, 1.4% had outdoor facilities only and 98.6% had indoor facilities or both (Table 1). Approximately one in ten venues (n=18; 12.7%) had tobacco products visible for sale. The tobacco products commonly sold were manufactured cigarettes (15 venues), smokeless tobacco (18 venues) and shisha (10 venues).

Knowledge of hospitality staff on Ghana's Tobacco Control Act and smoke-free policy

Of the 142 respondents, 27.5% had heard of the TCA (2012). Table 2 provides the findings of knowledge related to the TCA stratified by city type (Accra, Kumasi, and Tamale), staff designation (owners, other) and venue type (hotel, bars, and pubs). About a third (29%) of the respondents were aware of the restriction of smoking in public places, 22% were aware of smoke-free places and only 6.3% were aware of the display of 'no smoking' signage, as components of the TCA. In addition, only 8.5% of all respondents were aware of the component on ban on tobacco advertising and promotion, and 5% were aware of the components on sale of tobacco and tobacco products. All these components were significantly different across the three cities ($p<0.05$), with more respondents in Tamale aware of them except for the component on restriction of smoking in public places (Kumasi 29.6%, Accra 35.8%, and Tamale 4.8%). All respondents were unaware of two of the components: warning labels on tobacco products, and limiting Government interaction with tobacco industry.

Overall, respondents had limited knowledge of almost all the components of the TCA with an overall mean score of 0.09. Respondents in Kumasi had the lowest knowledge scores (0.05), followed by Accra (0.10), and then Tamale (0.13). However,

Table 1. Characteristics of hospitality venues surveyed in the three cities (N=142)

Characteristics	n (%)
City	
Accra	67 (47.2)
Kumasi	54 (38.0)
Tamale	21 (14.8)
Type of venue	
Hotels	98 (69.0)
Other (bars/pubs/restaurants/night clubs)	44 (31.0)
Staff designation	
Owners	31 (23.2)
Other (waiters/receptionists)	111 (76.8)
Sale of alcohol	92 (64.8)
Restriction to minors	59 (41.6)
Sale of tobacco products	18 (12.7)
Smoking allowed at venue	44 (31.0)
Designated smoking area	20 (14.1)
Smoking status of hospitality staff	
Smoker	14 (9.9)
Non-smoker	128 (90.1)

Table 2. Knowledge items of hospitality venue staff on Ghana's Tobacco Control Act and smoke-free policy

Knowledge items	City				Venue type			Staff designation			
	Kumasi (n=54) n (%)	Accra (n=67) n (%)	Tamale (n=21) n (%)	p	Hotels (n=98) n (%)	Other* (n=44) n (%)	p	Owners (n=31) n (%)	Other** (n=111) n (%)	p	Mean KAP [a] score
Ban on tobacco advertising and promotion											0.08
Yes	0 (0)	7 (10.5)	5 (23.8)	**0.001**	9 (9.2)	3 (6.8)	0.754	3 (9.7)	9 (8.1)	0.725	
No	54 (100)	60 (89.6)	16 (76.2)		89 (90.8)	41 (93.2)		28 (90.3)	102 (91.9)		
Smoke-free places (public, work and transport)											0.22
Yes	5 (9.3)	19 (28.4)	7 (33.3)	**0.011**	23 (23.5)	8 (18.2)	0.481	4 (12.9)	27 (24.3)	0.223	
No	49 (90.7)	48 (71.6)	14 (66.7)		75 (76.5)	36 (81.8)		27 (87.1)	84 (75.7)		
Display of no-smoking signs											0.06
Yes	1 (1.9)	2 (3.0)	6 (28.6)	**0.001**	8 (8.2)	1 (2.3)	0.274	1 (3.2)	8 (7.2)	0.684	
No	53 (98.2)	65 (97.0)	15 (71.4)		90 (91.8)	43 (97.7)		30 (96.8)	103 (92.8)		
Warnings on tobacco products											0
Yes	0	0	0		0	0		0	0		
No	54 (100)	67 (100)	21 (100)		98 (100)	44 (100)		31 (100)	111 (100)		
Sale and display of tobacco and tobacco products											0.05
Yes	0 (0)	5 (7.5)	2 (9.5)	**0.047**	5 (5.1)	2 (9.1)	1.000	3 (9.7)	4 (3.6)	0.176	
No	54 (100)	62 (92.5)	19 (90.5)		93 (94.9)	42 (95.5)		28 (90.3)	107 (96.4)		
Prohibition of supply of tobacco to minors											0.05
Yes	1 (1.8)	3 (4.5)	3 (14.3)	0.086	6 (6.1)	1 (2.3)	0.436	0 (0)	7 (6.3)	0.347	
No	53 (98.2)	64 (95.5)	18 (85.7)		92 (93.9)	43 (97.7)		31 (100)	104 (93.7)		
Regulation of tobacco products											0.04
Yes	2 (3.7)	3 (4.5)	0 (0)	1.000	4 (4.1)	1 (2.3)	1.000	3 (9.7)	2 (1.8)	0.069	
No	50 (96.3)	62 (95.5)	25 (100)		94 (95.9)	43 (97.7)		28 (90.3)	109 (98.2)		
Limiting gov't interaction with tobacco industry											0
Yes	0	0	0		0	0		0	0		
No	54 (100)	67 (100)	21 (100)		98 (100)	44 (100)		31 (100)	111 (100)		
Awareness of restrictions of smoking in public places											0.29
Yes	16 (29.6)	24 (35.8)	1 (4.8)	**0.014**	26 (26.5)	15 (34.1)	0.358	8 (25.8)	33 (29.7)	0.670	
No	38 (70.4)	43 (64.2)	20 (95.2)		72 (73.5)	29 (65.9)		23 (74.2)	78 (70.3)		
Overall mean KAP scores											
	0.05	0.10	0.13		0.09	0.08		0.08	0.09		0.09

a KAP: knowledge, attitude and practice. Knowledge scores were assessed by giving 1 to a yes answer and 0 to a no answer for each respondent. Overall mean scores ≥0.09 were taken as more knowledge and <0.09 as less knowledge on Tobacco Control Act. Value of p was based on chi-squared or Fisher's exact test as appropriate, significance set at p≤0.05. *Other: bars, pubs, nightclubs, and restaurants. **Other: waiters and receptionists.

knowledge scores did not differ greatly by venue or staff designations. The mean knowledge scores for two of the smoke-free components (smoke-free places and awareness of restriction of smoking in public places) were higher (0.22 and 0.29, respectively) compared to other components. The lowest mean scores were observed for regulation of tobacco products (0.04). Respondent's mean scores were also low for the component on the need to display 'no smoking' signage (0.06) (Table 2).

Opinion of the hospitality staff on the SFP

Table 3 shows response to the opinions related to SFP stratified by city, venue and staff designation. Overall, nine in ten respondents supported a smoking ban in all public places: 95% in Accra, 87% in Kumasi, and 76% in Tamale (p=0.028). Similarly, 89% of all respondents supported a smoking ban in hospitality venues. A high percentage of hotel staff (92%) supported the ban compared to the staff of other venues such as bars/pubs (81%) (p=0.048), but no differences were observed across the three cities. With regard to a smoking ban protecting the health of workers, all respondents from Kumasi, and >80% from Accra and Tamale, agreed with that statement (p=0.016). Overall, over half of the respondents disagreed with the statement that smoking ban will have a negative effect on business: Kumasi 61.1%, Accra 86.8%, and Tamale 52.4% (p<0.001). However, about half of the respondents in Kumasi (53.7%) and Tamale (57.1%), and about a fourth from Accra (23.9%), agreed with the statement that a smoking ban will result in unemployment (p=0.001). In addition, about a third of the respondents (30.3%) agreed with the statement that the smoking ban is an unfair restriction on smokers, and this was

Table 3. Opinions of hospitality venue staff on Ghana's smoke-free law

Opinions	City				Venue type			Staff designation			
	Kumasi (n=54) n (%)	Accra (n=67) n (%)	Tamale (n=21) n (%)	p	Hotels (n=98) n (%)	Other* (n=44) n (%)	p	Owners (n=31) n (%)	Other** (n=111) n (%)	p	Mean KAP [a] score
Adequately informed about Ghana's SFP											0.17
Agree	8 (14.8)	13 (19.4)	3 (14.3)	0.787	18 (18.4)	6 (13.6)	0.487	5 (16.1)	19 (17.1)	1.000	
Disagree	46 (85.2)	54 (80.6)	18 (85.7)		80 (81.6)	38 (86.4)		26 (83.9)	92 (82.9)		
Public smoking ban will have a negative effect on business											0.28
Agree	21 (38.9)	9 (13.4)	10 (47.6)	**<0.001**	27 (27.6)	13 (29.5)	0.807	8 (25.8)	23 (20.7)	0.741	
Disagree	33 (61.1)	58 (86.6)	11 (52.4)		71 (72.4)	31 (70.5)		23 (74.2)	79 (79.3)		
Public smoking ban will cause financial losses											0.13
Agree	8 (14.8)	6 (9.0)	5 (23.8)	0.199	10 (10.2)	9 (20.5)	0.097	2 (6.5)	17 (15.3)	0.247	
Disagree	46 (85.2)	61 (91.0)	16 (76.2)		88 (89.8)	35 (79.5)		29 (93.5)	94 (84.7)		
Public smoking ban is an unfair restriction on smokers											0.30
Agree	14 (25.9)	17 (25.4)	12 (57.1)	**0.015**	30 (30.6)	13 (29.5)	0.898	9 (29.0)	34 (30.6)	0.864	
Disagree	40 (74.1)	50 (74.6)	9 (42.9)		68 (69.4)	31 (70.5)		22 (71.0)	77 (69.4)		
Smoking ban will result in unemployment											0.40
Agree	29 (53.7)	16 (23.9)	12 (57.1)	**0.001**	36 (36.7)	21 (47.7)	0.217	14 (45.2)	43 (38.7)	0.519	
Disagree	25 (46.3)	51 (76.1)	9 (42.9)		62 (63.3)	23 (52.3)		17 (54.8)	68 (61.3)		

Continued

Table 3. Continued

Opinions	City				Venue type			Staff designation			
	Kumasi (n=54) n (%)	Accra (n=67) n (%)	Tamale (n=21) n (%)	p	Hotels (n=98) n (%)	Other* (n=44) n (%)	p	Owners (n=31) n (%)	Other** (n=111) n (%)	p	Mean KAP [a] score
Smoke-free bars make visits more comfortable											0.82
Agree	41 (75.9)	56 (83.6)	19 (90.5)	0.451	83 (84.7)	33 (75.0)	0.128	27 (87.1)	89 (80.2)	0.596	
Disagree	12 (24.1)	11 (16.4)	2 (9.5)		14 (15.3)	11 (25.0)		4 (12.9)	21 (19.8)		
Smoking ban will encourage smokers to quit											0.56
Agree	32 (59.3)	37 (55.2)	11 (52.4)	0.837	61 (62.2)	19 (43.2)	**0.034**	19 (61.3)	61 (55.0)	0.529	
Disagree	22 (40.7)	30 (44.8)	10 (47.6)		37 (37.8)	25 (56.8)		12 (38.7)	50 (45.0)		
Smoking ban protects the health of workers											0.96
Agree	54 (100)	64 (95.5)	18 (85.7)	**0.016**	94 (95.9)	42 (95.5)	1.000	30 (96.8)	106 (95.5)	1.000	
Disagree	0 (0)	3 (4.5)	3 (14.3)		4 (4.1)	2 (4.5)		1 (3.2)	5 (4.5)		
Smoking ban is necessary in public bars											0.89
Agree	48 (88.9)	61 (91.0)	18 (85.7)	0.708	91 (92.9)	36 (81.8)	**0.048**	29 (93.5)	98 (88.3)	0.523	
Disagree	6 (11.1)	6 (9.0)	3 (14.3)		7 (7.1)	8 (18.2)		2 (6.5)	13 (11.7)		
Prohibition of indoor smoking in all public places											0.89
Support	47 (87.0)	64 (95.5)	16 (76.2)	**0.028**	89 (90.8)	38 (86.4)	0.425	27 (87.1)	100 (90.1)	0.741	
Do not support	7 (13.0)	3 (4.5)	5 (23.8)		9 (9.2)	6 (13.6)		4 (12.9)	11 (9.9)		
Overall mean KAP scores											
	0.59	0.66	0.71		0.72	0.45		0.71	0.62		**0.54**

a KAP: knowledge, attitude and practice. Opinion was assessed as a score of 1 for agree/support and 0 for disagree/do not support. The scale classified opinion as agree/support with scores ≥0.54 and disagree/against <0.54. Value of p was based on chi-squared or Fisher's exact test as appropriate, significance set at p≤0.05.

significantly different across the three cities with over half from Tamale and a fourth from Accra and Kumasi (p=0.015). Staff designation did not have any significant association with any of the responses to the opinions related to SFP.

In general, respondents had a positive attitude towards supporting SFP with an overall mean score of 0.54. Scores were highest for opinions related to prohibition of indoor smoking in public places (0.89), smoking ban is necessary in public bars (0.89), smoking ban protects the health of workers (0.96), and smoke-free bars make visits more comfortable (0.82). The lowest scores were observed for opinions related to whether respondents were adequately informed on SFP (0.17), with only 17% of the staff feeling that they were adequately informed of the SFP (Table 3). Poor assistance from enforcement authorities (n=97; 68.3%) and revenue loss from smokers (n=44; 31%) were identified as the main challenges in ensuring a smoke-free establishment in hospitality venues (Table 3).

Compliance to the smoke-free laws at the hospitality venues

Table 4 shows the response to items related to compliance to SFP at the premises visited based on

Table 4. Compliance towards Ghana's smoke-free policy

Compliance	City				Venue type			Staff designation			
	Kumasi (n=54) n (%)	Accra (n=67) n (%)	Tamale (n=21) n (%)	p	Hotels (n=98) n (%)	Other* (n=44) n (%)	p	Owners (n=31) n (%)	Other** (n=111) n (%)	p	Mean KAP [a] score
Best description of indoor SFP at your establishment											0.9
Smoking is allowed anywhere	2 (3.7)	4 (6.0)	1 (4.8)		1 (1.0)	6 (13.6)		1 (3.2)	6 (5.4)		
Smoking is allowed only in some indoor areas	3 (5.6)	9 (13.4)	3 (14.3)	0.603	6 (6.1)	9 (20.1)	**<0.001**	1 (3.2)	14 (12.6)	0.254	
Smoking is not allowed in any indoor areas	42 (77.8)	50 (74.6)	15 (71.4)		83 (84.7)	24 (54.5)		28 (90.3)	79 (71.2)		
There is no policy/don't know	7 (12.9)	4 (6.0)	2 (9.5)		8 (8.2)	5 (23.8)		1 (3.2)	12 (10.8)		
Action taken in case someone smokes in premises											0.9
Nothing, smoking is allowed	2 (3.7)	6 (8.9)	3 (14.3)	0.134	3 (3.1)	8 (18.2)	**0.007**	2 (6.5)	9 (8.1)	0.967	
Ask the person to go to a designated smoking area	11 (20.4)	9 (13.4)	0 (0)		11 (11.2)	9 (20.5)		4 (12.9)	16 (14.4)		
Ask the person to stop smoking	20 (37.0)	20 (29.7)	5 (23.8)		32 (32.7)	13 (29.5)		10 (32.3)	35 (31.5)		
Ask the person to leave the premises	19 (35.2)	31 (46.3)	12 (57.1)		48 (49.0)	13 (29.5)		15 (48.4)	47 (42.3)		
Don't know	2 (3.7)	1 (1.5)	1 (4.6)		4 (4.1)	0 (0)		0 (0)	4 (3.7)		
Aware of violation penalties on smoking in public places											0.2
Yes	16 (29.6)	4 (6.0)	4 (19.0)	**0.002**	18 (18.4)	6 (13.6)	0.487	3 (9.7)	21 (90.1)	0.286	
No	38 (70.4)	63 (94.0)	17 (81.0)		80 (81.6)	38 (86.4)		28 (90.3)	90 (9.9)		
Law prohibiting all advertisements for tobacco products											0.9
Approve	48 (88.9)	60 (89.6)	20 (95.2)	0.798	92 (93.9)	36 (81.8)	0.076	29 (93.5)	99 (89.2)	0.756	
Disapprove	4 (7.4)	5 (7.5)	0 (0)		4 (4.1)	5 (1.4)		2 (6.5)	7 (6.3)		
Refused	2 (3.7)	2 (2.9)	1 (4.8)		2 (2.0)	3 (6.8)		0 (0)	5 (4.5)		
Importance of no-smoking signs at premises											0.6
The smoking signs already present	30 (55.6)	46 (68.7)	16 (76.2)		73 (79.6)	19 (43.2)		21 (67.7)	71 (64.0)		
Yes, but we don't have signs	20 (37.0)	14 (20.9)	2 (9.5)	1.000	19 (19.5)	17 (38.6)	**0.001**	8 (11.9)	28 (25.2)	0.904	
No, they are not necessary	4 (7.4)	7 (10.4)	3 (14.3)		6 (6.1)	8 (18.2)		2 (6.5)	12 (10.8)		
Overall mean KAP scores	0.70	0.68	0.71		0.74	0.59		0.72	0.67		0.7

a KAP: knowledge, attitude and practice. Compliance was assessed by giving a score of 1 to compliance and 0 to non-compliance. The scale classified less compliant as an overall mean score <0.7 and more compliant ≥0.7. Value of p was based on chi-squared or Fisher's exact test as appropriate, significance set at p≤0.05. *Other: bars, pubs, nightclubs, and restaurants. **Other: waiters and receptionists.

Table 5. Univariate logistic regression analysis of respondent knowledge, opinion and compliance by city, the type of venue and role of the interviewee

Variable	More knowledge		Agree/support		More compliance	
	OR (95% CI)	p	OR (95% CI)	p	OR (95% CI)	p
Cities						
Tamale	1		1		1	
Kumasi	0.76 (0.27–2.11)	0.596	0.46 (0.15–1.32)	0.148	0.65 (0.21–2.00)	0.452
Accra	3.08 (1.10–8.60)	**0.031**	0.25 (0.08–0.71)	**0.010**	0.94 (0.30–2.87)	0.915
Venue type						
Other*	1		1		1	
Hotels	1.18 (0.54–2.55)	0.672	2.01 (0.91–4.37)	0.080	3.16 (1.48–6.71)	**0.003**
Staff designation						
Other**	1		1		1	
Owners	0.70 (0.30–1.64)	0.417	0.94 (0.40–2.18)	0.887	1.40 (0.56–3.44)	0.464

*Other: bars, pubs, nightclubs, and restaurants. **Other: waiters and receptionists. Statistical significance set at p≤0.05. OR: odds ratio. CI: confidence interval.

city, type of venue, and role of staff. About eight in ten hotels (84.7%) have an indoor SFP policy that does not allow smoking in any indoor area compared to only about half of the bars and pubs (54.5%) (p<0.001). In addition, only 6% of respondents in Accra were aware of violation penalties on smoking in public places, compared to 29.6% in Kumasi and 19% in Tamale (p=0.002). However, awareness of violation penalties was not significantly associated with the venue or staff designation. In addition, just under half (49%) of hotel staff were likely to ask individuals to leave the premise if they detected smoking activity, compared to 29% of other venue staff (p=0.007). Further, hotels were more likely to have 'no smoking' signs (76.6%), in comparison with other venues (43.2%) (p=0.007).

The overall mean score of compliance to SFP was 0.7. Compliance scores were lowest in Accra (0.68) in comparison with Kumasi (0.70) and Tamale (0.71), and hotels were observed to be more complaint (mean score 0.74) than other venues (mean score 0.59). Similar to the knowledge and opinion items, staff designation did not have any significant association on compliance levels (Table 4).

Table 5 reports the results for the summary dichotomous variable for each of the three outcomes (knowledge, opinion and compliance), which were classified based on the overall mean score for each outcome. Results suggest that compared with respondents in Tamale, respondents in Accra had higher knowledge levels of the TCA and SFP (OR=3.08; 95% CI: 1.10–8.60) than in Tamale. The odds of opinions in support for SFP were lower in Accra (OR=0.25; 95% CI: 0.08–0.71) in comparison with Tamale. Hotels were three times more compliant than other venues (OR=3.16; 95% CI: 1.48–6.71) (Table 5).

DISCUSSION

This study sought to determine the knowledge, opinions and compliance of hospitality venue staff towards the current SFP in three cities in Ghana. Knowledge levels related to the SFP among hospitality venue workers in the three cities were found to be very low. Among the three cities, the odds of having high knowledge scores were three times higher in Accra compared to Tamale, and Kumasi had lower knowledge scores compared to Tamale. High opinion scores in support were observed for prohibition of indoor smoking, smoking ban is necessary in public bars, smoking ban protects health of workers, and smoke-free bars make visits more comfortable. Compliance to smoke-free laws was higher in Tamale compared to Accra and Kumasi. Also, hotels were found to be more compliant than bars and pubs. Staff designation did not have any effect on knowledge, compliance levels or opinions in support for SFPs.

Studies in African countries such as Nigeria[27] and Uganda[28], and in the Middle East such as Lebanon[29] using similar tools, indicate higher

levels of awareness of their respective national laws (>50%). This difference could partly be attributed to the educational background of the respondents in these studies; most of the respondents in the Uganda and Lebanon studies were managers, whereas in our study, >70% of the respondents were waiters or receptionists. The level of education was found, for instance in Kenya[30] and Turkey[31], to also influence the presence and enforcement of a work SFP. Although, knowledge levels on the TCA and SFP were generally poor across the three study cities, respondents in Accra were three times more likely to have more knowledge than those in Tamale. Further, hotels were also twice as likely to support SFPs compared to bars and pubs, but the difference was not statistically significant. The differences observed between the three cities could partly be explained by the country's literacy level distribution, which is highest for Accra (86%), the capital city for Ghana, with Tamale at 43% and Kumasi at 50%[32]. In addition, literacy levels could also explain the differences observed in hotels and other venues such as bars and pubs; hotel staff may be more educated compared to the staff of bars and pubs. Thus, it is important for the public health community and tobacco control advocates to embark on educational campaigns to sensitize and educate hospitality workers on the Tobacco Control Act and its SFP components, particularly in Tamale and Kumasi, given that the SSA region, of which Ghana is part, is projected to experience a rapid increase in tobacco smoking by 2025[33] and hospitality industry workers have been known to have higher levels exposures to SHS.

Comparable to earlier studies in Ghana among adults[34] and the youth[35], our study also shows high support for opinions for SFPs among hospitality staff. Similarly, strong support (>80%) for a ban on smoking in hospitality venues in other countries in Africa[36] and Europe[31] has also been observed. Findings from the Global Adult Tobacco Survey data in SSA[37] (Nigeria, Cameroon, Kenya, and Uganda) also indicate strong support for the prohibition of smoking in public places (>90%). Aside the positive attitude towards the support for the SFP by the hospitality staff, they were not in agreement with any substantial negative economic impact of implementing effective SFP. Smoke-free policies do not reduce sales, revenues, or personnel requirements of bars and restaurants, which has been the main argument of protagonists of comprehensive SFPs[37]. However, the odds of a positive attitude towards SFPs were less in Accra compared to Tamale. This may be attributed to the perceptions of higher economic benefits related to smoking and the growing level of international connectedness[38] in Accra compared to Kumasi and Tamale. Respondents in the study also alluded that SFPs make hospitality venues more comfortable and also protect their health from SHS effects. These findings call for tobacco control proponents to advocate a review of the current partial SFP to a comprehensive SFP (100% smoke-free). Implementing 100% smoke-free venues has been shown to reduce levels of harmful biomarkers such as nicotine by 90% and cotinine by 50–89% in biological samples[39]. Nevertheless, to achieve the desired benefits of reducing SHS exposure and tobacco use, these laws must be coupled with a strong enforcement programme with well-defined regulations[39].

Findings from our earlier study[23], on air-quality measurements and observations, showed that although 60% of the hospitality locations were at least partially compliant with the smoke-free legislation, DSAs were present in only 1% of the hospitality locations, and only 50% of the venues had 'no smoking' signage. Also, compliance and air quality were poorer in Accra compared to Kumasi and Tamale. In the present survey, self-reported compliance was not significantly different across the three cities. Our study also shows that venues such as bars and pubs had lower compliance to SFPs compared to hotels, similar to previous studies[31]. One reason for this could be that the hospitality staff in bars and pubs are less likely to enforce SFPs due to fears of losing customers and consequently lowering revenues. Compliance with SFPs requires a coordinated enforcement system[37,40]. Indeed, 7 in 10 respondents in our study indicated poor assistance from enforcement authorities as the main challenge in ensuring a smoke-free establishment in hospitality venues. Although the staff designation did not have any influence on the level of compliance at the venues, studies have shown that venue managers have conflicts about enforcing a policy among their

customers on whom their livelihood depends on. Some possible solutions include actions by civil society organizations to show public support for smoke-free venues, stakeholder engagement and evidence-based advocacy as in Uganda[28]. Future studies on perceptions of civil society organizations and policy makers in Ghana on smoke-free law implementation and challenges, and opportunities related to achieving compliance with a particular focus on hospitality venues, are needed.

Strengths and limitations

The study has a number of limitations. First, findings were based on self-reports and it is possible that respondents could display social desirability bias in their response and articulate socially acceptable views on tobacco control. All respondents were, however, assured that their responses were anonymous in order to reduce this bias. Second, our study is limited to only three major cities and the findings may therefore not be representative of all hospitality venues in the country. The exclusion of the 12 venues with missing data might also slightly reduce the generalizability of the findings. Third, the sample size was relatively small, which reduced the power of the study to observe statistically significant differences between the groups. Fourth, most of our respondents were waiters and receptionists rather than managers and owners (who were unavailable for the interviews due to their limited availability), which has to be kept in mind when interpreting the results. Despite these limitations, our study provides strong evidence on the knowledge, opinion and compliance of hospitality staff towards the SFP in Ghana using a validated questionnaire[26]. Further, the use of a random sampling strategy for venue selection, collection of both observational and objective data[23] and the selection of the three largest cities in Ghana are potential strengths of this study.

CONCLUSIONS

Our findings highlight strong support for prohibition of smoking in public places including hospitality venues despite poor knowledge and low compliance levels with the current SFPs in Ghana. Ghana urgently needs to step up efforts that will help accomplish the obligations of the FCTC Article 8. In order to achieve this, there is the need to prioritize the enforcement and implementation of existing legislation. A further action is for policy makers and civil society organizations advocates dedicating resources to implement targeted media and educational campaigns to inform the public/hospitality workers about the health hazards of SHS to the non-smokers. Finally, a review of the current policy is required to facilitate the adoption and implementation of comprehensive SFPs as required by the FCTC.

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CONFLICTS OF INTEREST
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