

# Implementation of an indoor smoking ban and an advertising/ sponsorship ban in Lebanon: a baseline cross-sectional study

Monique Chaaya<sup>1</sup>, Rima Nakkash<sup>1</sup>, Rima Afifi<sup>1</sup>, Guillermo Adame<sup>1</sup>, Nadia Fanous<sup>1</sup>, Nabil Tabbal<sup>2</sup>, Dahlia Saab<sup>1</sup>

## ABSTRACT

**INTRODUCTION** Although the majority of countries have ratified the World Health Organization's Framework Convention on Tobacco Control (WHO FCTC), few have comprehensive smoke-free laws and compliance is not always satisfactory. In 2011, Lebanon, which has among the highest smoking rates in the Eastern Mediterranean Region, passed a comprehensive tobacco control law (Law 174). This study aimed to assess compliance with Law 174 among smokers and non-smokers in Beirut (the capital), three months after the smoking ban in closed public places and on advertisement and promotion came into effect.

**METHODS:** A population-based cross-sectional survey was conducted. Multi-stage cluster sampling identified 159 households, yielding 468 respondents aged 15-65 years of age. Data was collected face-to-face using a structured questionnaire. Weighted descriptive and bivariate analyses were performed.

**RESULTS:** Three months after the ban came into effect in 2011, all respondents knew about Law 174. Around half witnessed other people smoking in their workplace (44.2%), in restaurants/coffee shops (52.8%) and in public transportation (60.0%) during the past months. Less than 20% witnessed any tobacco promotion/advertisements, reflecting good compliance of the advertising sector. Overall, more than half the smokers continued smoking within the workplace/closed public places.

**CONCLUSIONS:** This study provides information on compliance to the smoking and advertising ban in Beirut. The advertising sector's compliance would hopefully decrease the tobacco industry's influence on the public. Further studies aiming at understanding the underlying factors behind the lack of compliance to the indoor smoking ban and finding effective solutions, in a politically unstable country with weak regulations like Lebanon, are crucial and can serve as an example for similar developing countries.

## AFFILIATION

1. American University of Beirut
2. Save the Children International, Antakya, Turkey

## CORRESPONDENCE TO

Ms. Dahlia Saab, American University of Beirut, Riad el Solh street, Beirut, Lebanon, PO-box 11-0236 Beirut, Lebanon

## KEY WORDS

tobacco control policy, tobacco control law, compliance, Beirut, smoking ban

Tob. Prev. Cessation 2016;2(May):62 <http://www.dx.doi.org/10.18332/tpc/63118>

## INTRODUCTION

The World Health Organization (WHO) Framework Convention on Tobacco Control (FCTC), the first global health treaty ever negotiated under the auspices of the WHO, came into force in 2005. The FCTC lays out evidence-based policies to decrease the burden of morbidity and mortality from tobacco use globally. To date, 179 countries and the European Union have become parties to the convention<sup>1</sup>. As a result, there are now over 2.3 billion people in the world covered by at least one effective tobacco control measure<sup>2</sup>.

Despite these remarkable advances, tobacco use is still the leading cause of preventable morbidity and mortality in the world<sup>3</sup>. It is projected that tobacco use will result in over one billion premature deaths in the 21st century, with 70% of these deaths occurring in developing countries<sup>4,5</sup>. Tobacco is the only

product, which when used exactly as directed, kills half to two-thirds of its lifetime users<sup>5,6</sup>.

Tobacco control measures are effective in countries where they have been enforced<sup>7,8</sup>. Although 90% of the world's population live in countries that have ratified the FCTC, effective implementation is rare: only 16% are covered by comprehensive smoke-free laws and 10% are covered by comprehensive tobacco advertising, promotion and sponsorship (TAPS) bans<sup>5</sup>. In addition, for successful implementation of a new law (such as the ban on smoking in closed public places), the target population should accept and comply with the new regulations<sup>9</sup>. A recent study conducted post-ban in Switzerland reported that acceptance and compliance of hospitality workers were higher in strictly smoke-free areas<sup>10</sup>. Moreover, there is still a vast disparity in compliance between developed and

## Research Article

developing countries who have tobacco control policies in place, whether comprehensive or not. For instance, low- and middle-income countries are more likely to implement bans on TAPS, but less likely to achieve high compliance than high-income countries<sup>2</sup>.

Lebanon ratified the FCTC in 2005. Despite this, Lebanon only succeeded in passing a comprehensive tobacco control law (Law 174) in 2011. In Lebanon, cigarette smoking rates are among the highest in the region with estimated rates of 42.9% and 26.3 % among adult males and females, respectively<sup>11</sup>. Waterpipe tobacco smoking (WTS) is common as well and is reported in around one fourth of men and women<sup>11</sup>. The most recent Global Youth Tobacco Survey, conducted in 2011, revealed that 36.2% of the students in grades 7-9 smoked any tobacco product at the time of the survey, with the majority smoking waterpipe. Additionally, exposure to second hand smoking in homes was substantial, reaching 68.6 % among school children aged 13-15 years<sup>12</sup>. Prior to Law 174, advertising was rampant. These high tobacco use rates and the impact of unregulated advertising clearly point to the need for effective and sustained interventions to help smokers to quit; to prevent young people from starting to smoke; and to reduce exposure to second hand smoke. The clauses of the recently passed Law 174 provide the opportunity for such an impact. The three main articles in the law include a total ban on advertising and promotion, a prohibition of smoking in all closed public places, and larger textual as well as pictorial health warnings; and they include all types of smoking (waterpipe, cigarettes, cigars, and others). These have all been identified by the FCTC as critical evidence-based strategies. However, to date, no population-based data are available on the extent of compliance with the law. Such data is critical not only to assess the extent of compliance, but to advocate for law enforcement in case compliance is not optimal.

The main objective of this study was to assess the extent of compliance with Law 174 among a representative sample of tobacco users and non-users from the capital city of Beirut, Lebanon, three months after a ban on smoking in all closed public places and a ban on advertisement and promotion came into effect.

## METHODS

### Study design and sample

The methodology of this study was a population-based, door to door, cross-sectional survey of adolescents and adults in Beirut, the capital city of Lebanon. The sampling frame included a map of Beirut divided up into 594 equally sized clusters (encompassing 50 buildings each). Twelve clusters

were randomly selected from different areas of Beirut city, out of 60 fully enumerated sectors. At each cluster level, a three-stage sampling was performed, each cluster being divided into blocks and buildings. At the block level, a systematic sampling of buildings and households was carried out. For each selected household, interviewers filled a roster that consisted of a listing of all members of the household with their gender, birth date, residency status and smoking status. This information was provided mostly from the male head of the household (74%) or from the female spouse (15%). From this listing, all adolescents aged 15 to 17 years irrespective of their smoking status; all women smokers, one randomly chosen male smoker, and a male or female non-smoker were approached. The last two categories were chosen based on the last-Birthday method. This method inquires after the listed household member, in a specific smoking category, whose birthday was the closest to the date of the interview. Women smokers were oversampled to obtain a sufficient representation in the final sample. As for adolescents, they were all included in the study as we deemed that parents are unlikely to be aware of the smoking status of their children. In total, 159 households across the city of Beirut were selected yielding 468 respondents aged between 15 and 65 years.

### Measures

A structured questionnaire was developed consisting of common questions for all respondents and specific questions for each smoking status category: cigarette smokers, waterpipe smokers and non-smokers. A cigarette smoker was defined as someone who smoked cigarettes at least once in the previous week, and a waterpipe smoker as a person who smoked waterpipe at least once in the previous month. Individuals smoking both cigarettes and waterpipe were excluded to remove the dual smoking effect and to avoid confusion when answering questions. Common questions measured compliance with the tobacco control law, as well as socio-demographics (such as age, gender, marital and working statuses and education). Respondents were also asked if they were aware about a law that bans smoking in closed public places. Compliance with the law was measured by asking respondents to report if they had seen people smoking in closed public places that should be non-smoking areas according to the law; and if they had seen tobacco promotion advertisements, as these are prohibited by the law. Questions on compliance for cigarette smokers were limited to cigarette smoking, for waterpipe smokers to waterpipe smoking and for non-smokers about any type of smoking (for example, when asked if they had seen someone smoke in a closed public place: cigarette smokers were asked

## Research Article

if they saw anyone smoking cigarettes, waterpipe smokers were asked if they saw people smoking waterpipe and non-smokers were asked if they witnessed any type of smoking). Smokers were asked if they had smoked in different public places. Specific sections for cigarettes and waterpipe smokers included questions on smoking practices and patterns, smoking preferences, tobacco dependency using the Fagerström test,<sup>13</sup> their intention to quit smoking and awareness of the health effects of smoking.

**Data collection**

Data were collected through face-to-face interviews. Data collection started in December 2012 and lasted for four months. Prior to data collection, interviewers were trained in techniques of interviewing, probing and questioning. They also had to complete the Collaborative Institutional Training Initiative (CITI) certification for the ethical conduct of research. A high response rate was obtained from 9 of the 12 selected sectors, with an average of 90%. For the remaining 3 sectors that reflect a population of high socio economic status, response rates varied from 0 to 25 %. All research

procedures were approved by the Institutional Review Board at the American University of Beirut and a written informed consent was signed prior to administering the questionnaire. Adolescents signed an assent form that was taken after obtaining their parents' consent.

**Statistical methods**

Descriptive analysis was performed to assess implementation of and compliance with Law 174, segregated by the smoking status of the respondents. Bivariate analyses were performed to assess differences in compliance according to selected socio-demographic variables (age, education, and income). Statistical significance was set at p-value < 0.05. Weighted frequencies and percentages were computed to adjust for the sampling imbalance between the clusters. Analysis was performed using Stata 10.

**RESULTS**

The sample included 468 respondents of whom 58.6% were women, 43.6% were aged 40 years and above, and 69.0% were ever married. Over 40% of respondents had a university

**Table 1: Socio-demographic characteristics of the sample according to smoking status (N=468), Lebanon**

VARIABLES	Cigarette smoker (N=154)		Waterpipe smoker (N=138)		Non-smoker (N=176)		Total N=468	
	N	Weighted %	N	Weighted %	N	Weighted %	N	Weighted %
<b>Sex (N=465)</b>								
<b>Male</b>	84	55.9	76	48.2	64	28.0	224	41.4
<b>Female</b>	70	44.1	60	51.8	111	72.0	241	58.6
<b>Age (N=467)</b>								
<b>15-29</b>	41	22.8	75	51.8	90	40.4	206	38.1
<b>30-39</b>	23	15.8	29	19.3	24	19.3	76	18.3
<b>40 and above</b>	90	61.5	33	28.9	62	40.3	185	43.6
<b>Marital Status (N=403)</b>								
<b>Ever Married</b>	112	76.7	68	62.0	94	66.6	274	68.7
<b>Never Married</b>	35	23.3	56	38.0	38	33.4	129	31.3
<b>Educational status (N=467)</b>								
<b>Primary / Intermediate</b>	58	31.8	17	12.4	51	18.6	126	20.9
<b>Secondary / Technical</b>	50	30.7	58	44.7	67	40.5	175	38.7
<b>University</b>	45	37.4	63	42.9	58	40.9	166	40.4
<b>Currently employed (N=449)</b>								
<b>Yes</b>	82	58.7	69	50.3	69	40.6	220	48.4
<b>No</b>	68	41.3	58	49.7	103	59.4	229	51.6
<b>Monthly household income (N=419)</b>								
<b>500,000 to &lt;1,500,000 LBP (~333.3 to &lt;1,000 USD)</b>	57	34.4	52	44.2	57	35.7	166	37.4
<b>1,500,000 LBP (~1,000 USD) and above</b>	89	65.6	70	55.8	94	64.3	253	62.6

Table 2: Indicators of compliance to bans of smoking in indoor public places by smoking status

VARIABLES	Cigarette smoker		Waterpipe smoker		Non - smoker		Total		p-value
	N	%	N	%	N	%	N	%	
<b>People smoked in workplace during last month (For employed; N=241)</b>									
Yes	42	56.1	35	41.2	37	35.7	114	44.2	0.721
No	45	43.9	45	58.8	37	64.3	127	55.8	
<b>People smoking in restaurants or coffee-shops during last month (For those who went there; N=385)</b>									
Yes	63	57.7	72	62.4	49	44.0	184	52.8	<0.001*
No	63	42.3	42	37.6	96	56.0	201	47.2	
<b>People smoking in public transportation during last month (For those who used public transportation; N=206)</b>									
Yes	51	61.9	-	-	70	59.8	121	60.5	0.977
No	36	38.1	-	-	49	40.2	85	39.5	
<b>The respondent smoked in restaurants /coffee-shops during last month (For smokers who went there; N=240)</b>									
Yes	55	51.3	61	53.9	-	-	116	52.5	0.099
No	72	48.7	52	46.1	-	-	124	47.5	

\*: significant at 0.05.

P-values correspond to the comparison of the three smoking categories: non-smokers, cigarette smokers and waterpipe smokers by indicators of compliance using the Pearson's Chi-Square Test

Table 3: Indicators of compliance to bans on tobacco advertising /sponsorship by smoking status

VARIABLES	Cigarette smoker		Waterpipe smoker		Non - smoker		Total		p-value
	N	%	N	%	N	%	N	%	
<b>Ads on TV (For all respondents; N=464)</b>									
Yes	18	15.8	12	13.5	18	11.5	48	13.4	0.702
No	136	84.2	126	86.5	154	88.5	416	86.6	
<b>Ads on billboards (For all respondents; N=456)</b>									
Yes	26	18.4	13	8.7	28	24.6	67	18.4	0.115
No	122	81.6	124	91.3	143	75.4	389	81.6	
<b>Ads on radio (For all respondents; N=446)</b>									
Yes	1	0.7	5	3.7	2	1.1	8	1.7	0.126
No	147	99.3	130	96.3	161	98.9	438	98.3	
<b>Ads on Newspapers/magazines (For all respondents; N=447)</b>									
Yes	9	8.6	9	10.4	16	7.1	34	8.4	0.506
No	135	91.4	125	89.6	153	92.9	413	91.6	
<b>Ads on Movie theatres (For all respondents; N=427)</b>									
Yes	8	4.5	5	2.8	6	2.7	19	3.3	0.632
No	129	95.5	125	97.2	154	97.3	408	96.7	
<b>Ads on shops (For all respondents; N=455)</b>									
Yes	31	22.1	17	11.8	40	21.3	88	18.9	0.039*
No	115	77.9	121	88.2	131	78.7	367	81.1	
<b>Ads on public transportations vehicles (For all respondents; N=449)</b>									
Yes	3	4.3	4	2.5	1	0.5	8	2.2	0.281
No	143	95.7	130	97.5	168	99.5	411	97.8	
<b>Ads on restaurants/coffee-shops (For all respondents; N=451)</b>									
Yes	9	4.9	12	7.2	5	2.2	26	4.3	0.084
No	137	95.1	123	92.8	165	97.8	425	95.7	

Ads in nightclubs (For all respondents; N=260)									
Yes	1	0.3	0	0.0	0	0.0	1	0.2	0.294
No	123	99.7	0	0.0	136	100.0	259	99.8	
Ads in educational institutions (For all respondents; N=405)									
Yes	2	1.7	1	0.3	1	0.7	4	0.9	0.745
No	130	98.3	116	99.7	155	99.3	401	99.1	
Sponsorship of sports events (For all respondents; N=378)									
Yes	1	0.3	3	2.3	3	1.8	7	1.5	0.519
No	122	99.7	103	97.7	146	98.2	371	98.5	
Sponsorship of concerts (For all respondents; N=380)									
Yes	0	0.00	3	2.4	0	0.0	3	0.6	0.020*
No	122	100.0	103	97.6	152	100.0	377	99.4	
Distribution of tobacco samples (For all respondents; N=384)									
Yes	2	1.6	2	1.3	1	0.5	5	1.0	0.652
No	121	98.4	106	98.7	152	99.5	379	99.0	
Distribution of gifts/discounts (For all respondents; N=379)									
Yes	1	3.6	3	2.4	0	0.0	4	1.7	0.091
No	120	96.4	104	97.6	151	100.0	375	98.3	
Competitions linked to tobacco products (For all respondents; N=379)									
Yes	1	0.3	3	1.8	1	0.5	5	0.7	0.281
No	119	99.7	104	98.2	151	99.5	374	99.3	

\*: significant at 0.05.

P-values correspond to the comparison of the three smoking categories: non-smokers, cigarette smokers and waterpipe smokers by indicators of compliance using the Pearson's Chi-Square Test

degree (40.4%) as opposed to only 20.9% with intermediate education or below. Almost half of them were working (48.4%) at the time of the survey, while more than one third of the households (37.4%) had a monthly income of less than 1,500,000 LBP (equivalent to 1,000 US dollars). In terms of smoking status, 32.9% of respondents were cigarette smokers and 29.5% waterpipe smokers (Table 1).

Knowledge of the ban on smoking in public places was nearly universal (98.3%) irrespective of smoking status and socio-demographic profile. Table 2 shows indicators of compliance with the indoor smoking ban according to smoking status (the breakdown of compliance indicators by other factors such as educational level, gender and age is not shown in table 2). Only smoking in restaurants or coffee shops during the last month was statistically significantly different by smoking status ( $p < 0.001$ ). When asked about whether they saw people smoking in a closed workplace in the past month, a little less than half of the respondents (44.2%) said yes. This percentage is higher for people with lower educational levels (64.3% for primary and intermediate vs. 53.9% for secondary and technical and 34.5% for university), with a lower monthly household income (54.4% vs. 40.6%) and older age (57.2% for those 40 years and above vs. 39.2% for people aged 30-39

years and 33.3% for those 15-29 years old). As for smoking in restaurants and coffee shops, more than half of respondents who went to these establishments (52.8%) reported seeing people smoking in those establishments, a percentage that is statistically significantly higher for waterpipe and cigarette smokers than for non-smokers (62.4% and 57.7% vs. 44.0%,  $p < 0.001$ ). More people in their thirties saw people smoking in restaurants compared to younger or older ages (68.2% vs. 46.2% and 51.2% respectively). This percentage is also higher among those never married (60.7% vs. 49.9%) and people with lower educational backgrounds (59.6% vs. 51.0% for those with secondary education or technical degrees and 51.6% for those with a university degree). Also, 60.5% of respondents who used public transportation reported seeing people smoke in public transportation with higher percentages reported among the young population (70.4%) in comparison to the older one (65.5%). Among cigarette and waterpipe smokers who went to restaurants and coffee-shops in the month preceding the survey, more than half reported smoking while there (51.3% and 53.9% for cigarettes and waterpipe smokers, respectively), indicating lack of compliance.

Table 3 shows indicators of compliance related to tobacco advertisement and sponsorship by smoking status. Only two

## Research Article

indicators were significantly different by smoking status: noticing sponsorship of tobacco products in concerts and noticing ads in shops (p-values: 0.02 and 0.039 respectively). With respect to tobacco advertisements, between 0.2% (for ads in night clubs) and 18.9% (for ads in shops) reported seeing advertisements or exposure to tobacco product promotional activities in a variety of media/places. The percentage of cigarette smokers and non-smokers who noticed ads in shops is significantly higher than that of waterpipe smokers (22.1%, 21.3% and 11.8%, respectively) (p-value=0.039). This percentage is also higher for males as compared to females (22.3% versus 16.1%). In fact, males noticed ads more than females on the TV, the radio, in movie theatres and on shops (16.8% versus 10.4% for TV; 2.3% versus 1.2% for the radio, and 4.1% versus 2.6% for movie theatres respectively). Nevertheless, when asked about noticing ads on billboards and newspapers/magazines, females were more likely to respond positively than males (21.2% versus 14.3% for billboards and 10.7% versus 5.0% for newspapers/magazines). In addition, 1.5% and 0.6% of respondents reported seeing tobacco sponsorship of sports' events or concerts, respectively.

Finally, only 1% stated they had received free samples of tobacco products (whether cigarettes or waterpipe), and 1.7% received free gifts or other discounts on other products when purchasing tobacco.

## DISCUSSION

The findings of the study indicate that there is a high level of public awareness on Law 174. However, there is weak implementation of some of its components, notably the ban on smoking in closed public places. Results from the current study show that even early after the law came into effect, only about half of closed public restaurants, workplaces, and transportation were compliant.

Globally, countries have had differing levels of success in implementing tobacco control policies. Facilitating factors seem to be countries with strong governments and robust law enforcement activities such as Australia, Canada, the United Kingdom and the United States<sup>14, 15</sup>. Barriers to compliance include the lack of priority to address or allocate resources to tobacco control; the lack of investment in tobacco control efforts due to shortages of funds; a lack of infrastructure for monitoring of control measures; and a lack of enforcement<sup>16</sup>. In addition, the presence of the strong tobacco industry has not only been identified as a main barrier to implementation and compliance but has also been implicated in contributing to all the other listed barriers<sup>17</sup>. These barriers resonate in

Lebanon. The government has been in a state of uncertainty for many years. The lack of law enforcement was obvious. For example, since the commencement of the law in 2012, many restaurants or café's have obtained more than 20 fines but no further action was taken, despite the stipulation of a jail sentence after the second misdemeanor<sup>18</sup>. Tobacco industry interference in tobacco control policy making has also been reported to take place in Lebanon<sup>19, 20</sup>. In addition, the hospitality and tourism sectors have engaged in deliberate and organized efforts to oppose Law 174 in all its forms<sup>21</sup>. Although the majority were aware of the law, another reason for the poor compliance could be the lack of knowledge on specific articles of Law No. 174. This was reported in a survey of hospitality venues owners and managers in the capital city, Beirut, 3 months before the full implementation of the legislation<sup>22</sup>. Results indicated that people of higher socio-economic status, and with higher educational status, were less likely to report witnessing people smoking in their workplace. These results echo findings from developed countries that indicate that social inequity exists in the implementation of tobacco control laws with less optimal implementation in areas that were most disadvantaged within these countries<sup>15</sup>. This inequity translates into a differentiated impact by socio-economic status, a situation that is unjust, unfair, unacceptable and preventable. The finding that waterpipe and cigarette smokers were more likely to report seeing people smoking in restaurants and coffee shops more than non-smokers (62.4, 57.7 and 44.0% respectively) is expected, as smokers would make a conscious choice of going to places that allow them to smoke. Although we found that the provision of Law 174, related to smoking in closed public places was not implemented adequately, other aspects of the law including the ban on advertisements and sponsorships of concerts and sports events seem to be well implemented. This is most likely due to the fact that there was little opposition at the national level by stakeholders, such as the advertising sector. Another study conducted 3 months after the ban in Lebanon, that audited compliance with ban of indoor advertisements (point of sale) in tobacco retail stores, found that 62% of the shops had tobacco advertisements as opposed to 18.9% of respondents in this study who noticed tobacco ads in shops<sup>23</sup>. This difference might be explained by the fact that Salloum et al. study was conducted 3 months after the Law 174,<sup>23</sup> while the current study took place much later in time, so compliance might have actually improved in time. Additionally, this difference might be due to different methodologies of data collection: while the current study

## Research Article

depended on people's recollection of viewing the ad, the other study consisted of in-store observation.

### Limitations

To our knowledge, this is the first population-based study to document compliance with Lebanese Law 174 at the very early stages of its implementation. The results of the current study however, are subject to some limitations. Only residents of Beirut were included in the sample, rendering our results not generalizable to the national level. Additionally, within Beirut, people with a higher socio-economic status were more likely to have a lower response rate. This is actually a non-documented phenomenon that researchers have noticed while conducting surveys in Lebanon. We expect that in the peripheral areas of the city where law enforcement in general is weaker, the situation will be even worse than as noted. Recall bias is another potential limitation. Respondents were asked to remember situations dating back to a month prior to the administration of the questionnaire. Nevertheless, since answers to questions were binary ("yes"/ "no"), we do not believe that recall bias had any significant effect on the results. Moreover, results could have been subject to information bias due to the face-to-face manner of data collection, which could have led smokers to adopt socially acceptable answers. Finally, since smokers were asked to respond to indicators of compliance pertaining only to their smoking categories (cigarette smokers were asked about cigarette smoking, waterpipe smokers on waterpipe smoking), generalizability of the results might have been affected. We do not however perceive this as a major limitation. as we removed the effect of dual use and avoiding respondents' confusion while answering the questions.

### CONCLUSION

The results of this study clearly show that in Lebanon, compliance to Law 174 was weak, particularly with regards to the ban of smoking in closed public places.

International evidence suggests several best practices for sustained implementation of smoke-free policies including: continued advocacy for smoke-free policies, signing of a manifesto to counter tobacco industry interference, establishing aggressive and effective mechanisms to monitor the implementation of the laws, having adequate funding and personnel to cover all public places, and sharing scientific results showing a decrease in second-hand smoke exposure in public places after the enforcement of a smoke-free ordinance<sup>24-26</sup>. Consequently, if Lebanon is to ever attain strong compliance, strong government leadership that will not be swayed by tobacco industry interference is needed. This leadership will be further strengthened through partnerships

with the civil society, including a strong non-smokers right movement. In addition, continuous monitoring mechanisms need to be in place to ensure enforcement, with the Ministry of Public Health's leadership. However, with the current stalemate in the Lebanese government and other competing priorities, alternative ways to increase public compliance without governmental enforcement are needed. One way could be through empowering non-smokers to be vocal about their rights for a smoke free environment<sup>27</sup>. Developing and testing possible alternate non-government based best practices will support implementation in the many countries of the developing world with weak governments.

This study has established baseline information regarding compliance to Law 174 in Lebanon. Nevertheless, there is a need for follow-up studies to better understand the long term effects of the Law and monitor the changing levels of compliance. In this population based survey, we used self-reported information to measure compliance. Observations could be supplemented by the monitoring of air quality in indoor places that provides a more accurate indicator of compliance with the smoke free legislation. This is particularly useful as we have data from 2008 on air quality prior to the implementation of the tobacco control law that could be used for comparison<sup>28</sup>. In the 2009-2011 strategic plan, the National Tobacco Control Program has stated that such monitoring would indeed take place in indoor public places in 40 key areas to monitor compliance. This has yet to be implemented<sup>29</sup>. Continued vigilance and advocacy of all levels will be needed to reap the promised benefits of law 174 in reduced mortality and morbidity.

### REFERENCES

1. World Health Organization. 10th Anniversary of the WHO Framework Convention on Tobacco Control: Saving lives for a decade. [http://www.who.int/fctc/FCTC\\_Anniversary\\_leaflet\\_web.pdf](http://www.who.int/fctc/FCTC_Anniversary_leaflet_web.pdf) Accessed 1 June 2015.
2. World Health Organization. WHO Report on Global Tobacco Epidemic 2013: Enforcing bans on tobacco advertising, promotion and sponsorship. [http://www.who.int/tobacco/global\\_report/2013/en/](http://www.who.int/tobacco/global_report/2013/en/) Accessed 2 May 2015.
3. World Health Organization. WHO Report on the Global Tobacco Epidemic, 2009: Implementing smoke-free environments. <http://www.who.int/tobacco/mpower/2009/en/> Accessed 2 May 2015.
4. Ezzati M, Lopez AD. Estimates of global mortality attributable to smoking in 2000. *Lancet* 2003, 362(9387):847-852.
5. Eriksen M, Mackay J, Schluger NW, et al. *The Tobacco Atlas* (5th edition). American Cancer Society 2015.
6. Studlar DT. *Tobacco control: Comparative politics in the United States and Canada*. Peterborough, Ontario: Broadview Press 2002.
7. Hammond D, Fong GT, McDonald PW, et al. Impact of the graphic Canadian warning labels on adult smoking behaviour. *Tob Control* 2003, 12:391-395.
8. Hyland A, Laux FL, Higbee C, et al. Cigarette purchase patterns

## Research Article

- in four countries and the relationship with cessation: findings from the International Tobacco Control (ITC) Four Country Survey. *Tob Control* 2006, 15 Suppl 3:iii59–iii64.
9. Fong GT, Hyland A, Borland R, et al. Reductions in tobacco smoke pollution and increases in support for smoke-free public places following the implementation of comprehensive smoke-free workplace legislation in the Republic of Ireland: findings from the ITC Ireland/UK Survey. *Tob Control* 2006, 15:iii51–iii58.
  10. Rajkumar S, Hoffman S, Roosli M, Bauer GF. Evaluation of implementation, compliance and acceptance of partial smoking bans among hospitality workers before and after the Swiss Tobacco Control Act. *J Public Health (oxf)* 2015, 37(1):89–96.
  11. Sibai A, Tohme RA, Mahfoud Z, et al. Non-communicable diseases and behavioral risk factor survey. World Health Organization-Lebanon office 2009. <http://www.moph.gov.lb/Publications/Documents/final%20report%20abla%20sibai%20NCD%2009%20dat.pdf> Accessed 1 June 2015.
  12. World Health Organization. Lebanon 2011 (Ages 13–15) Global Youth Tobacco Survey (GYTS). Global Youth Tobacco Survey fact sheets and country reports. World Health Organization: Regional Office for the Eastern Mediterranean 2012.
  13. Heatherton TF, Kozlowski LT, Frecker RC. The Fagerström Test for Nicotine Dependence: A revision of the Fagerström Tolerance Questionnaire. *Br J Addict* 1991, 86:1119–27.
  14. The International Tobacco Control Policy Evaluation Project. Are Tobacco Control Policies Working in China? International Innovation: Professor Geoffrey Fong. <http://www.itcproject.org/sites/default/files/files/fong2012international-innovations-profile.pdf> Accessed 6 July 2015.
  15. Lin V. Commentary: The Framework Convention on Tobacco Control and health promotion: strengthening the ties. *Glob Health Promot* 2010, 17 Suppl 1:76–80.
  16. Sparks M. Advocacy strategies to address NCDs: Tobacco control. Global Handbook on noncommunicable diseases and health promotion, McQueen, D.V. (Ed.): Springer Science & Business Media LLC 2013.
  17. Fong GT, Cummings KM, Borland R, et al. The conceptual framework of the International Tobacco Control (ITC) Policy Evaluation Project. *Tob Control* 2006, 15 Suppl 3:iii3–iii11.
  18. The Daily Star. Relaxation of smoking ban draws fire. The Daily Star, 2015. February 20, 2015. <http://www.dailystar.com.lb/News/Lebanon-News/2015/Feb-20/288130-relaxation-of-smoking-ban-draws-fire.ashx> Accessed 4 June 2015.
  19. Nakkash R, Lee K. Smuggling as the “key to a combined market”: British American Tobacco in Lebanon. *Tob Control* 2008, 17:324–331.
  20. Nakkash R, Lee K. The tobacco industry’s thwarting of marketing restrictions and health warnings in Lebanon. *Tob Control* 2009, 18:310–316.
  21. The Daily Star. Hospitality sector vows to ignore smoking ban. The Daily Star, 2012. November 8, 2015. <http://www.dailystar.com.lb/Business/Lebanon/2012/Nov-08/194312-hospitality-sector-vows-to-ignore-smoking-ban.ashx> Accessed 21 Oct 2015.
  22. Alaaeddine G, Al Kuhaimi T, Al Assaad R, et al. Assessing knowledge and attitudes of owners or managers of hospitality venues regarding a policy banning indoor smoking. *Public Health* 2013, 127:461–466.
  23. Salloum RG, Nakkash RT, Myers AE, et al. Point-of-sale tobacco advertising in Beirut, Lebanon following a national advertising ban. *BMC Public Health* 2013, 13(534).
  24. Balane MA, Antonio MS, Munsayac R, et al. Going smoke free: enforcement of tobacco control policies at the local government level [Abstract]. 16th World Conference on Tobacco and Non-communicable Diseases. Abstract book 2015: 117. Abu Dhabi, United Arab Emirates. 17–21 March 2015.
  25. Singh D. Low compliance even after declaration as smoke-free city: experience from Shimla city [Abstract]. 16th World Conference on Tobacco and Non-communicable Diseases. Abstract book 2015:115. Abu Dhabi, United Arab Emirates. 17–21 March 2015.
  26. Yang J, Zhu XQ. Research on the influential factors of enforcement of smoke-free law in five cities in China [Abstract]. 16th World Conference on Tobacco and Non-communicable Diseases. Abstract book 2015:114. Abu Dhabi, United Arab Emirates. 17–21 March 2015.
  27. Lazuras L, Savva CS, Talias MA, Soteriades ES. Support for smoke-free policies in the Cyprus hospitality industry. *Int J Public Health* Published Online First: 1 October 2015. doi: 10.1007/s00038-015-0747-y.
  28. Saade G, Seidenberg AB, Rees VW, et al. Indoor secondhand tobacco smoke emission levels in six Lebanese cities. *Tob Control* 2010, 19(2):138–142.
  29. World Health Organization. National Tobacco Control Program Strategic Plan for the coming year 2009–2011. Framework Convention on Tobacco Control NA [http://apps.who.int/ftc/reporting/Lebanon\\_annex2\\_nationalTCstrategy.pdf](http://apps.who.int/ftc/reporting/Lebanon_annex2_nationalTCstrategy.pdf). Accessed 10 Oct 2015

**ACKNOWLEDGEMENT**

This research was funded by the University Research Board (URB) at the American University of Beirut and the Issam Fares Institute for Public Policy and International Affairs.

**CONFLICT OF INTEREST**

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

**FUNDING**

There was no source of funding for this research.

**PROVENANCE AND PEER REVIEW**

Not commissioned; externally peer reviewed