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**Medium-term effects of the Italian smoke-free legislation:  
findings from 4 annual population based surveys**

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## **WHAT THIS PAPER ADDS**

### **What is already known on this subject?**

- Italy was the first large country that has banned smoking in all indoor public places, including restaurants and bars.
- In the short-term (1-2 years after the law came into force) the legislation was almost universally respected, supported, and did not affect the business of bars/cafes and restaurants.

### **What does this study add?**

- More than 80% of Italians reported that the smoking ban was respected in bars/cafes and restaurants, and almost 75% in workplaces, also 3 years after the law came into force.
- After the legislation, 10% of Italians went to bars/cafes and restaurants more frequently and 7% less so frequently.
- Thus, the legislation did not unfavourably affect the business of restaurants and bars.

## **ABSTRACT**

**Background:** Italy was the first large country that has banned smoking in all indoor public places, including restaurants and bars. The aim of this study was to quantify, 3 years after the law came into force, the effects of the smoking ban in terms of observance of the legislation and change of habits.

**Methods:** We considered data from 4 representative surveys on smoking, conducted between 2005 and 2008 on a total of 12,245 individuals (5,906 men and 6,339 women) aged 15 years or over.

**Results:** In 2008, more than 80% of Italians (more than 90% in northern Italy) had the perception that the smoking ban was respected in bars/cafes and restaurants, despite a slight reduction since 2005. In all the surveys combined, 75% of the Italian population reported that the smoking ban was respected in workplaces. Overall, approximately 10% of Italians reported that, after the implementation of the tobacco regulation, they went to bars/cafes and restaurants more frequently, and approximately 7% less frequently, than before.

**Conclusion:** Our study shows that in Italy the smoke-free legislation did not affect the business of restaurants and bars, and remain widely respected also 3 years after the law came into force.

## **INTRODUCTION**

Italy was the fourth European country, after Ireland, Norway and Malta, that banned smoking in all indoor public places, including restaurants and bars. After the implementation of the ban in 2005, Italian studies showed the short-term (1-2 years) favourable effects of the legislation in terms of reduced hospitalization for cardiovascular events [1-3] and out-of-hospital deaths for acute coronary events,[2] confirming findings from other countries, including the USA,[4-8] Canada,[9] Scotland,[10] and Ireland.[11] Furthermore, several studies from the USA, Norway, Ireland, Scotland, Spain and Italy showed the favourable effects of the workplace smoking ban in terms of reduction of exposure to second-hand smoke and improvement in respiratory health among workers, particularly among barmen.[12-22]

In Italy, several studies showed that the legislation was almost universally respected,[23-28] supported,[23, 24, 26-28] and did not affect the business of bars/cafes and restaurants [23, 24, 27, 28] in the short-term (1-2 years after the legislation). Furthermore, the decrease of smoking prevalence and consumption, observed during the last years, appeared to be at least in part due to the comprehensive smoking legislation.[23, 26-29]

In order to assess the medium-term changes on the attitudes towards such a smoking legislation, we present findings from 4 representative surveys conducted in Italy after the smoking ban, between 2005 and 2008.

## **METHODS**

We considered data from 4 companion surveys on smoking, conducted during March-April of 2005, 2006, 2007 and 2008 in Italy by DOXA, the Italian branch of the Gallup

International Association.[23, 26, 30, 31] Overall, the 4 surveys included a total of 12,245 individuals (5,906 men and 6,339 women) aged 15 years or over, representative of the general Italian population in terms of age, sex, geographic area, and socio-economic characteristics. The 2005 survey included 3,114 participants (1,511 men and 1,603 women),[23, 26] the 2006 survey 3,039 participants (1,461 men and 1,578 women),[26, 30] the 2007 survey 3,057 participants (1,475 men and 1,582 women),[30] and the 2008 survey 3,035 participants (1,459 men and 1,576 women).[31]

The 4 surveys used similar, previously described sampling criteria.[23, 26, 30, 31] *Ad hoc* trained interviewers collected data, using a structured questionnaire in the context of a computer-assisted personal in-house interview (CAPI). The questionnaire included general information on socio-demographic characteristics and on smoking habits, including smoking status (never/ex-/current smoker), number of cigarettes smoked per day, and (for ex-smokers) time since stopping. Current smokers were participants that smoked 100 or more cigarettes in their lifetime, or those that had quit smoking since less than 1 year; never smokers were participants that did not smoke in a lifetime more than 100 cigarettes; ex-smokers were participants that had quit smoking since at least 1 year. Education was categorized in 3 levels: low (up to primary school diploma), intermediate (middle to high school without diploma) and high (senior high school with diploma or over).

In all the 4 surveys, some specific questions referred to the attitudes towards the new smoking regulation, including 2 questions formulated as follows: i) “According to your recent observation, do you think that the new smoke-free legislation is respected in bars/cafes and restaurants?” ii) “Do you think that the new smoke-free legislation is respected in the workplaces (public and private)?”. Another question referred to the

implications of the smoking ban on one's own habit of going to bars/cafes and restaurants. Since 2007, 2 questions were formulated in order to investigate the influence of the smoking ban on smoking cessation among ex-smokers, and on smoking habit among current smokers.

## **RESULTS**

In 2005 25.6% of Italians described themselves as current smokers (29.3% of men, and 22.1% of women); in 2006 smoking prevalence was 24.3% (28.6% for men, and 20.3% for women); in 2007 was 23.5% (27.9% for men, and 19.3% for women); and in 2008 was 22.0% (26.4% for men, and 17.9% for women).

Table 1 shows the attitudes of the population towards smoke-free policies after the implementation of the tobacco regulation, according to year of interview. Participants reporting that the legislation was respected in bars/cafes and restaurants declined from 90.5% in 2005 to 83.9% in 2008 ( $p$  for trend<0.001). The smoking ban was respected in workplaces by around 75% in all the surveys ( $p$  for trend=0.19). Overall, in the 4 surveys considered, approximately 10% of Italians reported that, after the implementation of the tobacco regulation, they went to bars/cafes and restaurants more frequently, and approximately 7% less frequently than previously. We observed a peak in 2006 of the prevalence of Italians reporting to go to bars/cafes and restaurants more frequently (13.3% for the survey conducted in 2006 vs a mean of 9.3 for the other surveys;  $p<0.001$ ).

Participants reporting that the legislation was respected in bars/cafes and restaurants were less frequently women compared to men ( $p=0.01$ ), and more frequently older participants ( $p$  for trend<0.001), with higher levels of education ( $p$  for trend<0.001),

current smokers ( $p<0.001$ ) and from northern Italy ( $p<0.001$ ) [Table 2]. In particular, 94.2% of Italians reported that the legislation was respected in northern Italy vs 79.3% in southern Italy.

Likewise, participants reporting that the legislation was respected in workplaces were more frequently older ( $p$  for trend $<0.001$ ) and from northern Italy ( $p<0.001$ ), and less frequently ex-smokers ( $p<0.001$ ). No significant difference was found according to sex and level of education.

Participants reporting that, after the implementation of the tobacco regulation, they went to bars/cafes and restaurants more often than before were more frequently those with higher levels of education ( $p$  for trend $<0.001$ ) and living in northern Italy ( $p<0.001$ ), and less frequently smokers ( $p<0.001$ ). No significant difference was found according to sex and age group. The estimates provided in Table 2 were consistent in the 4 surveys considered.

Table 3 shows the effects of the tobacco regulation on smoking habit, among current and ex-smokers, using data from the 2 surveys conducted in 2007 and 2008. Approximately 30% of ex-smokers since less than 3 years reported that their smoking cessation has been influenced by the smoking ban. Almost 83% of current smokers reported that the tobacco regulation has had no effect on their smoking habit, 12% reported a reduction in their smoking consumption (with approximately 5.0% that reduced and subsequently relapsed) and approximately 3.5% have stopped smoking (with approximately 2.5% that stopped and subsequently relapsed).



## DISCUSSION

In the present study we found a slight reduction of the observance of the smoke-free law in bars/cafes and restaurants from 2005 to 2008, confirming data from a study conducted between 2004 and 2006 on 471 Italian hospitality premises.[24] Such a reduction is partly or largely attributable to the covered outdoor smoking places (dehors), built by some bars/cafes and restaurants since the end of 2005.[27] Moreover, the reduced observance of the legislation could be, at least in part, attributable to the fact that since August 2005 owners of bars/cafes and restaurants are no longer responsible for enforcing the legislation,[26, 32] and to the lack of re-enforcement by the health authorities once the effect of the novelty of the law has passed. In Spain a similar effect has been observed 2 years after the law came into effect, with a slight increase in the levels of second-hand smoke (measured as vapour-phase nicotine) in bars/cafes and restaurants.[33] The legislation was largely respected among subjects with more privileged socio-economic characteristics (from northern Italy and more educated participants) but less so among subjects with a lower socio-economic level, particularly in southern Italy. Nevertheless, in 2008, 3 years after the implementation of the tobacco regulation, more than 80% of Italian adults reported that the smoking ban was respected in bars/cafes and restaurants.

Moreover, consistently in all the surveys, three quarters of Italians reported that the smoking ban was respected in workplaces. Still, a quarter of Italians, most likely working in workplaces with a limited number of employees, reported that the law was not respected. Accordingly, another survey conducted in 2 Italian cities showed that 19% (in Belluno) and 39% (in Florence) of non-smoker workers reported second-hand smoke (SHS) exposure at workplaces.[34] These proportions are higher than those

derived from self-reported exposure data in Ireland, where 14% of non-smokers declared to continue to be exposed at SHS in the workplace [35] and similar to Spain where 28% of non-smokers declared to be exposed at SHS in the workplace.[36]

Considering all the 4 surveys conducted after the implementation of the legislation, approximately 7% of Italians reported they went to bars/cafes and restaurants less frequently and approximately 10% more frequently than before. These findings confirm that the legislation did not unfavourably affect the business of bars/cafes and restaurants in Italy,[23, 26] as well as in other countries.[28, 37] In 2006 a peak in prevalence of Italians reporting to go more frequently to hospitality premises has been observed. This could be explained through an immediate but not consistent change of this habit, that could not be observed only 2 to 3 months after the implementation of the legislation (i.e. when the 2005 survey was conducted). As expected, current smokers reported to go less frequently and non-smokers more frequently to bars/cafes and restaurants after the legislation came into force. This explains at least part of the differences found in strata of level of education and geographic area, the lower educated subjects and subjects from southern Italy being more frequently current smokers.[31]

Almost a third of ex-smokers since less than 3 years reported to have stopped smoking as a consequence of the tobacco regulation, although this result was based on a limited number of subjects (101 in 2007, and 98 in 2008), and approximately 15% of current-smokers reported to have modified their smoking habit (stopping or reducing daily cigarette consumption). This result, obtained through a prevalence study, shows that the legislation acts as a strategy to reduce smoking prevalence and consumption, confirming findings from before-after studies.[23, 26-29, 38, 39]

The limitations of this study include those that are typical of population-based surveys,

such as reporting errors. Although the trained interviewers and the CAPI system have been designed to reduce this type of information bias, participants may have responded inaccurately because of failure to remember correctly or because of a desire to give a certain response. These limitations notwithstanding, the probability sampling design of the present study allowed us to accurately estimate the prevalence of smoking and related behaviors, because the samples of various surveys were highly representative of the Italian population.

In conclusion, our study confirms that, besides the favourable effects in terms of morbidity and mortality,[1-10, 12-19, 27, 28, 40-42], and reduction of smoking prevalence and consumption,[23, 26] smoke-free legislations did not affect the business of owners of bars/cafes and restaurants, and remain largely respected also 3 years after the law came into force. Part of the success should be attributable to the extensiveness and comprehensiveness of the Italian legislation.[43, 44] In fact, a study conducted in Ireland 6 months after a similar smoke-free legislation came into force showed compliance levels of 94% [45]. Moreover, a before-after study conducted 1 year after the introduction of the ban on 38 public houses in Dublin showed that there was no significant decrease in customer numbers [46]. Conversely, several other European countries, including Germany, Belgium, Spain and Portugal, have recently adopted a less strict smoke-free legislation, that has been shown to be weak and only partially effective, at least in bars and restaurants.[22, 47] Therefore, the adoption of complete smoke-free bans are encouraged by our results.

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Table 1: Percent distribution of the Italian population according to the attitudes towards smoking regulation, based on 4 representative samples of 12,245 individuals interviewed from 2005 to 2008.

Year	2005	2006	2007	2008	P for trend*
<i>Total</i>	(3,114)	(3,039)	(3,057)	(3,035)	
<b>Degree of observance of the legislation in bars/cafes and restaurants</b>					
Moderately/strongly respected	90.5	89.8	86.0	83.9	p<0.001
Not frequently/not at all respected	9.5	10.2	14.0	16.1	
<b>Degree of observance of the legislation in workplaces</b>					
Moderately/strongly respected	76.8	75.2	77.7	74.3	p=0.19
Not frequently/not at all respected	23.2	24.8	22.3	25.7	
<b>After the introduction of the tobacco regulation, Italians go to bars/cafes and restaurants</b>					
More frequently	9.6	13.3	9.5	8.7	p=0.85
Less frequently	7.4	6.3	6.9	6.0	

\* Adjusted for sex and age group.

Table 2: Percent distribution of the Italian population according to their attitudes towards smoking regulation, in strata of selected characteristics. Italy, 2005-2008.

Strata	Bars/cafes and restaurants: observance of the legislation		Workplaces: observance of the legislation		Go to bars/cafes and restaurants:		
	%	p-value*	%	p-value*	more frequently (%)	less frequently (%)	p-value*†
<b>Total</b>	87.6	-	76.0	-	10.3	6.7	-
<b>Sex</b>							
<b>Men</b>	88.7	p=0.01	75.6	p=0.68	10.4	8.1	p=0.25
<b>Women</b>	86.6		76.4		10.1	5.4	
<b>Age group (years)</b>							
<b>&lt;25</b>	82.1	p<0.001‡	70.1	p<0.001‡	10.6	6.2	p=0.37‡
<b>25-44</b>	89.1		76.6		11.6	7.2	
<b>45-64</b>	89.2		77.0		10.0	7.1	
<b>≥65</b>	86.1		77.5		8.0	5.6	
<b>Level of education</b>							
<b>Low</b>	83.9	p<0.001‡	75.0	p=0.17‡	6.6	6.3	p<0.001‡
<b>Medium</b>	87.6		75.8		8.5	6.7	
<b>High</b>	88.9		76.4		12.8	6.8	
<b>Geographic area</b>							
<b>South</b>	79.3	p<0.001	69.0	p<0.001	9.4	8.8	p<0.001
<b>Centre</b>	86.7		71.5		7.2	5.6	
<b>North</b>	94.2		83.4		12.2	5.5	
<b>Smoking status</b>							
<b>Never smokers</b>	86.1	p<0.001	76.4	p<0.001	13.6	4.5	p<0.001
<b>Ex-smokers</b>	87.8		73.4		10.3	4.2	
<b>Current smokers</b>	91.0		77.0		2.1	13.9	

\* p-values were adjusted for sex, age group, level of education, geographic area, smoking status and survey.

† Limited to participants reporting they changed their habit of going to bars/cafes and restaurants after the law came into force.

‡ p for trend

Table 3: Percent distribution and corresponding 95% confidence intervals (CI) of the Italian population according to the effects of tobacco regulation on smoking habit among current and ex-smokers. Italy, 2007-2008.

<b>Year</b>	<b>2007 (95% CI)</b>	<b>2008 (95% CI)</b>
<i>Ex-smokers (since less than 3 years)</i>	<i>101</i>	<i>98</i>
<b>Tobacco regulation influence on smoking cessation</b>		
<b>Moderately/strongly influenced</b>	26.4 (17.8-35.0)	32.6 (23.3-41.9)
<b>Slightly/not at all influenced</b>	73.7 (65.1-82.3)	67.5 (58.2-76.8)
<i>Current smokers</i>	<i>718</i>	<i>668</i>
<b>Tobacco regulation effects on smoking habit</b>		
<b>Smoking cessation</b>	0.9 (0.2-1.6)	1.1 (0.3-1.9)
<b>Smoking cessation and relapse</b>	2.3 (1.2-3.4)	2.8 (1.5-4.1)
<b>Reduction of smoking consumption</b>	7.1 (5.2-9.0)	6.5 (4.6-8.4)
<b>Reduction of smoking consumption and relapse</b>	5.4 (3.7-7.1)	4.6 (3.0-6.2)
<b>No effects</b>	82.8 (80.0-85.6)	82.6 (79.7-85.5)
<b>Start subsequent</b>	1.4 (0.5-2.3)	2.4 (1.2-3.6)