



Home and workplace smoking bans in Italy, Ireland, Sweden, France and the Czech Republic

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ABSTRACT: The purpose of this study was to report predictors and prevalence of home and workplace smoking bans in five European countries.

We conducted a population-based telephone survey of 4,977 females, ascertaining factors associated with smoking bans. Odds ratios and 95% confidence intervals were derived using unconditional logistic regression.

A complete home smoking ban was reported by 59.5% of French, 63.5% of Irish, 61.3% of Italian, 74.4% of Czech and 87.0% of Swedish females. Home smoking bans were associated with younger age and being bothered by secondhand smoke, and among smokers, inversely associated with greater tobacco dependence. Among nonsmokers, bans were also related to believing smoking is harmful (OR 1.20, 95% CI 1.11–1.30) and having parents who smoke (OR 0.62, 95% CI 0.52–0.73). Workplace bans were reported by 92.6% of French, 96.5% of Irish, 77.9% of Italian, 79.1% of Czech and 88.1% of Swedish females. Workplace smoking bans were reported less often among those in technical positions (OR 0.64, 95% CI 0.50–0.82) and among skilled workers (OR 0.53, 95% CI 0.32–0.88) than among professional workers.

Workplace smoking bans are in place for most workers in these countries. Having a home smoking ban was based on smoking behaviour, demographics, beliefs and personal preference.

KEYWORDS: Family, females, passive smoking, social class, tobacco, tobacco dependence

The health consequences of secondhand smoke are well documented. Secondhand smoke is particularly detrimental to respiratory and cardiovascular health and is also a cause of lung cancer and asthma and impacts immune function and other diseases [1, 2]. Based on these health risks, legislation banning tobacco smoking in public places has been passed in several European countries. There is increasing evidence that these smoking bans decrease exposure to secondhand smoke and its subsequent health effects, including respiratory illnesses and cardiovascular disease [3].

In addition to lessening exposure to secondhand smoke, smoking bans may have broader public health impacts. Although the evidence has been conflicting, smoking bans may discourage youths from initiating smoking, encourage smokers to reduce cigarette consumption or quit smoking, and may assist quit attempts and prevent relapse [4].

The proportion of persons who report their workplace being smoke free has increased over time [5]. US-based studies report that individuals

exposed to secondhand smoke at work are more likely to be young, to have fewer years of education, to be smokers themselves, and to be employed as manual labourers or to work in service positions [6, 7]. It is not known if these variations in secondhand smoke exposure are present in European countries that have enacted broad legislation to limit smoke exposure in workplaces.

In the general population, and also among smokers in particular, there is evidence in some countries of an increase over time in the proportion of persons living in smoke-free homes [5]. Although this trend is driven in part by a drop in the number of smokers, it is likely that social norms that discourage smoking have also played a role. Home smoking bans appear to be more common in households in which fewer smokers are living, among younger persons, those of higher socioeconomic status (SES), and in homes where there are children present [7–9]. Smokers who work in smoke-free workplaces may be more likely to make their home smoke free [10].

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Received:

April 23 2009

Accepted after revision:

Oct 20 2009

First published online:

Nov 19 2009

European Respiratory Journal

Print ISSN 0903-1936

Online ISSN 1399-3003

The majority of studies which have examined the prevalence and predictors of smoking bans have been in non-European countries. The purpose of this paper was to describe the prevalence and predictors of home and workplace smoking bans in five European countries at different stages of implementing comprehensive smoke-free legislation.

METHODS

A population-based telephone survey was conducted in June and July 2008 among 5,000 females aged 18 yrs and older in France, Italy, Ireland, Sweden, and the Czech Republic (1,000 per country). These countries were selected because they are at differing stages of enacting tobacco control legislation. Smoking was banned in bars and restaurants in Ireland on March 29, 2004; in Italy on January 10, 2005; in Sweden on June 1, 2005; and in France on January 1, 2008, while the Czech Republic currently allows smoking in these venues. These countries have varying policies on other tobacco control measures, such as increasing taxes on tobacco products; taking steps to limit sales to minors or to combat smuggling; limiting tobacco advertising or sponsorship; and providing support for those who wish to quit.

A stratified sampling approach was undertaken in order to enrol a sample that would be nationally representative with regards to age, smoking status and city size. Telephone numbers were taken from country-wide phone lists. Of the females reached who were eligible for participation, response rates were 64.8% in France, 41.4% in Italy, 59.0% in Sweden, 54.6% in Ireland and 30.6% in the Czech Republic. Of the 5,000 participants, 23 (<1%) were excluded from the present analysis due to missing information on age, education or whether they had a home smoking ban. The final sample included 4,977 participants.

In the survey, trained interviewers asked participants questions on their demographics, smoking behaviours, and on their attitudes and beliefs about tobacco, lung cancer and smoke-free policies in public places. All interviews were conducted in the language native to each country. To improve robustness, smokers were oversampled in all countries to reach 28% of subjects, and all results were weighted to account for the oversampling. Participants were asked if anyone was allowed to smoke inside their home and, among females employed outside the home, whether smoking was allowed in their immediate work area. Having a home smoking ban was defined as the preference to not allow smoking inside the home, which was assumed to be based on the female's choice or the agreement of family members, rather than enforced by an outside entity such as due to a local ordinance. It should be noted that only persons with a complete indoor home smoking ban, with no persons allowed to smoke, are included in this group, although there were also subjects who indicated that certain, but not all, persons were allowed to smoke in their home. In addition, it is possible that some subjects allowed smoking but took steps to lower ambient smoke in their home, such as by opening windows.

We report factors associated with having home and workplace smoking bans. All analyses were conducted using SAS 9.1 (Cary, NC, USA). For the multivariable model of factors related to home smoking bans, variables considered for inclusion in

the model were those previously associated with the use of such bans, including age, marital status, SES, urban/rural residence, smoking behaviours, degree of tobacco dependence and beliefs about the harm of tobacco smoke [8, 9, 11–14]. Tobacco dependence was measured using time to first cigarette [15] and the number of cigarettes per day. After it was determined that number of cigarettes per day added little to analyses, it was left out of the final model. Tobacco dependence questions were asked of both daily and occasional smokers. Because of variation across countries in the number of years required to achieve educational degrees, and in differences in the equivalence of degrees, we measured educational attainment as the age at which females finished their education. Several health behaviour theories, such as the Health Belief Model and the Theory of Reasoned Action, state that the adoption of a healthy lifestyle change is dependent on one's perception of risk [16, 17]. Thus, we included perceived risk of lung cancer in the model. Because females' perceptions of health risks are influenced by having a family history of disease [18], we included family history of lung cancer in the model. As familial smoking has been associated with the smoking behaviour of young females and the decision to have a smoke-free home [19, 20], we also included parental smoking in the model. The questions regarding beliefs about the harms of tobacco were scored on a four-point Likert scale. To improve robustness of the measure, Likert items were analysed as continuous variables. Odds ratios and 95% confidence intervals were derived using unconditional logistic regression. For the analysis of home smoking bans, we conducted separate analyses for smokers and nonsmokers.

For the model of predictors of workplace smoking bans, factors considered were age, marital status, smoking status, country, educational attainment and job classification, which have been seen in other studies as being associated with workplace secondhand smoke exposure [5, 7]. Job classification was measured using the International Standard Classification of Occupation, 1988 version (ISCO-88) [21]. As workers who are bothered by secondhand smoke may choose to leave a job or request a transfer to a smoke-free work area, we also included in the model if participants were bothered by secondhand smoke. Due to the small number of participants in some countries who were exposed to secondhand smoke at work, models were underpowered to examine results by each country separately. We therefore provided a summary model for all five European countries.

RESULTS

Across the countries, 14–18% of participants were current daily smokers, while an additional 4% smoked some days or occasionally (table 1); Ireland and the Czech Republic had a larger proportion of females who smoked occasionally. Among smokers, Ireland had a larger proportion with high levels of tobacco dependence (26% having a cigarette within 5 min of waking), while the Czech Republic had a large proportion of females with low tobacco dependence (58% having their first cigarette after 60 min). A quarter of females had worked in professional positions, while 40% were skilled workers and 15% homemakers. Over a third of all participants resided in urban areas.

TABLE 1 Description of the population

	France	Ireland	Italy	Czech Republic	Sweden	All
Subjects n	993	994	995	998	997	4977
Age yrs						
18–24	8.2	11.4	6.5	8.3	8.2	8.5
25–34	17.2	22.0	19.5	20.1	15.2	18.8
35–44	18.6	19.9	18.9	16.0	18.3	18.3
45–54	18.2	16.9	16.8	17.9	18.7	17.7
≥55	37.8	29.8	38.3	37.7	39.7	36.7
Marital status						
Married	46.4	36.9	51.9	38.0	31.8	41.0
Divorced/separated	20.5	8.2	7.8	16.9	17.6	14.2
Widowed	3.4	18.2	11.6	22.1	8.8	12.8
Single, never married	11.2	33.0	25.5	21.6	16.6	21.6
Living with a partner	18.6	3.6	3.1	1.4	25.2	10.4
Age at completing education yrs						
≤19	38.3	63.8	59.3	55.0	49.3	53.1
20–25	49.5	28.4	29.8	35.0	26.7	33.9
≥26	12.2	7.8	10.8	10.0	24.1	13.0
Job category (ISCO-88)[#]						
Professionals (ISCO 1, 2)	15.5	28.8	22.4	42.6	19.9	25.9
Technical positions (ISCO 3)	3.1	8.0	1.1	3.0	7.4	4.5
Skilled workers (ISCO 4, 5, 6, 7, 8, 10)	34.3	27.3	45.3	35.6	59.4	40.4
Unskilled workers (ISCO 9)	30.7	3.8	2.0	5.6	5.0	9.4
Homemaker	12.5	28.4	24.2	5.1	2.4	14.5
Full-time student	4.0	3.6	5.1	8.1	6.0	5.3
City population						
<5000 persons	28.2	28.1	13.1	29.1	36.4	27.0
5000–100000 persons	31.6	35.7	33.8	37.4	32.9	34.3
>100000 persons	40.2	36.2	53.1	33.5	30.7	38.7
Smoking status						
Smokes every day or almost	17.7	16.8	15.3	14.2	14.9	15.8
Smokes some days or occasionally	2.8	6.7	2.3	5.0	3.7	4.1
Former smoker	17.3	25.7	22.2	15.1	27.2	21.5
Never-smoker	62.2	50.8	60.2	65.7	54.3	58.6
One or both parents smoked						
Yes	58.6	63.8	56.9	49.1	56.2	56.9
Family history of lung cancer						
Yes	24.1	17.5	18.2	22.8	16.3	19.7
Perceived risk of lung cancer						
Low	40.3	51.1	40.1	44.6	59.9	47.2
Medium	36.4	20.0	28.7	23.8	20.8	26.0
High	15.2	10.5	18.2	5.2	13.7	12.6
Don't know	8.0	18.4	13.1	26.4	5.6	14.2
Time to first cigarette in the morning[†] min						
<5	19.2	26.4	14.7	13.9	22.9	19.8
6–30	30.3	19.5	28.5	19.2	33.8	25.9
31–60	6.3	9.0	11.7	9.2	10.7	9.3
>60	44.2	45.1	45.1	57.7	32.6	45.0
Cigarettes per day[*]						
1–10	55.7	48.3	55.8	64.9	63.7	57.2
11–20	37.9	43.1	38.5	31.0	33.6	37.1
≥21	6.3	8.7	5.6	4.0	2.7	5.6

Data are presented as weighted percentages, unless otherwise stated. ISCO-88: International Standard Classification of Occupation, 1988 version. [#]: occupation of current job; females not currently working were asked to identify their most recent job. [†]: current smokers only.

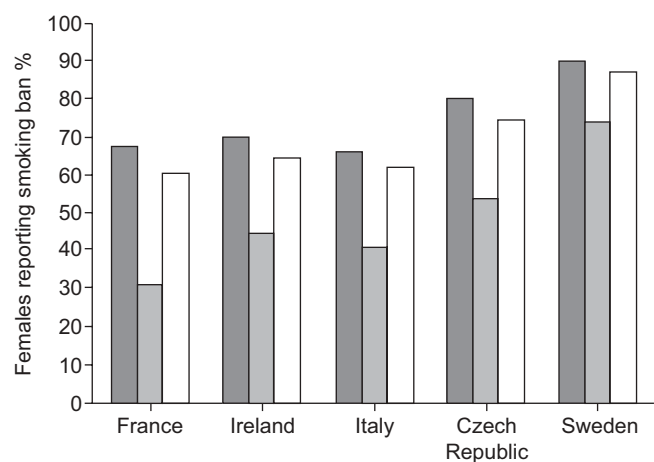


FIGURE 1. Proportion of females who reported having a smoking ban in their home. ■: nonsmokers; ■: smokers; □: all participants.

Considering all countries together, the prevalence of a smoking ban at home varied between smokers and nonsmokers (fig. 1). It was reported among 75% of the nonsmokers and 50% among smokers. Differences across countries were more apparent among smokers than among nonsmokers. Sweden had the largest proportion of participants who reported having a smoke-free home, and this was the case both among smokers and nonsmokers (table 2). Among nonsmoking participants, Italy had the lowest proportion with a home smoking restriction (66%), while among smokers, France had the lowest proportion having a smoking restriction at home (31%). Among females

employed outside of the home, Ireland had the lowest proportion of participants reporting that smoking was allowed in their immediate working area, while Italy had the highest.

When examining the prevalence of smoking bans across demographic variables, it could be seen that females aged 25–44 yrs were among the most likely to have home smoking bans (table 3). Bans were generally more common among married females and females living with a partner. In the Czech Republic, home smoking bans were seen more often among those with greater years of education. There was heterogeneity between countries with regards to job category and home smoking bans. In every country, smokers were less likely than nonsmokers to have home smoking bans. Smoking bans were more common among those who perceived the risk of lung cancer to be low. Home smoking bans were more common among females who believe smoking is harmful and that exposure to smoke is dangerous to pregnant females and their children. Having home smoking bans was strongly associated with being bothered by secondhand smoke.

In four of the five countries, workplace smoking bans were more common among females who finished their education after the age of 20 yrs (table 4). While there was no difference according to job category in France, Ireland, or Sweden, bans were more common among professional females in Italy and the Czech Republic.

In multivariate analyses, there were differences across countries in factors associated with smokers having home smoking bans (table 5). Married females were more likely to have home bans than other females. There was heterogeneity by country, but

TABLE 2 Proportion of respondents with smoking bans at home and at work							
	France	Ireland	Italy	Czech Republic	Sweden	All	p-value
Subjects n	993	994	995	998	997	4977	
Is anyone allowed to smoke cigarettes inside your home?							
All participants [#]							<0.0001
No, no one	59.5	63.5	61.3	74.4	87.0	69.2	
Yes, but only certain persons are allowed	12.7	14.9	13.8	15.1	7.1	12.7	
Yes, anyone can smoke	27.8	21.6	24.9	10.5	5.9	18.1	
Nonsmokers [†]							<0.0001
No, no one	67.0	69.5	65.9	79.4	90.2	74.5	
Yes, but only certain persons are allowed	12.6	15.2	14.2	15.1	6.4	12.7	
Yes, anyone can smoke	20.4	15.3	19.9	5.5	3.5	12.9	
Smokers [‡]							<0.0001
No, no one	30.7	44.3	39.7	53.1	73.3	47.8	
Yes, but only certain persons are allowed	13.1	13.6	12.1	15.4	10.2	12.9	
Yes, anyone can smoke	56.1	42.2	48.3	31.5	16.5	39.3	
Participants who reported that smoking is allowed in their immediate work area [§]							
All participants	7.4	3.5	22.1	20.9	11.9	13.4	<0.0001
Nonsmokers	6.4	2.8	21.9	22.4	12.2	13.6	<0.0001
Smokers	10.8	5.5	23.1	15.0	10.9	12.7	0.0002
Data are presented as weighted percentages, unless otherwise stated. p-values were calculated by Chi-squared test. [#] : n=4,977; [†] : n=3,563; [‡] : n=1,414; [§] : among employed females who had a regular work area.							

TABLE 3 Proportion of subjects who reported having a smoking ban at home

	France		Ireland		Italy		Czech Republic		Sweden		All	
	Subjects %	p-value	Subjects %	p-value	Subjects %	p-value	Subjects %	p-value	Subjects %	p-value	Subjects %	p-value
Subjects n	993		994		995		998		997		4977	
Age yrs		0.6		0.1		0.0003		0.5		<0.0001		<0.0001
18–24	55.0		61.1		55.3		73.1		92.0		67.4	
25–34	64.3		69.3		67.7		79.1		90.2		73.5	
35–44	60.7		67.0		72.3		74.7		94.3		73.6	
45–54	59.0		62.5		58.3		73.9		89.4		69.0	
≥55	58.1		58.4		55.0		72.2		80.3		65.2	
Marital status		0.02		0.0008		0.02		0.4		<0.0001		<0.0001
Married	63.6		71.1		65.9		76.2		91.1		72.2	
Divorced/separated	57.2		61.6		50.5		76.2		82.5		67.8	
Widowed	74.2		63.3		56.4		72.7		79.0		68.0	
Single, never married	48.4		55.1		57.4		70.0		80.4		61.9	
Living with a partner	57.5		60.9		61.3		82.8		91.8		75.5	
Age at completion of education yrs		0.7		0.0003		0.4		0.005		0.4		0.0001
≤19	58.3		59.1		61.5		71.6		85.8		67.1	
20–25	60.8		72.9		59.1		75.1		89.4		70.0	
≥26	58.3		66.0		66.1		87.1		86.9		75.6	
Job category (ISCO-88)		0.09		0.06		0.2		0.07		0.3		0.003
Professionals (ISCO 1, 2)	66.4		68.7		58.7		74.6		85.5		71.2	
Technical positions (ISCO 3)	44.0		68.9		63.3		73.3		89.5		72.6	
Skilled workers (ISCO 4, 5, 6, 7, 8, 10)	55.2		56.8		63.1		75.2		86.8		70.0	
Unskilled workers (ISCO 9)	62.1		70.7		76.7		58.7		82.2		65.2	
Homemaker	60.2		62.6		62.2		71.8		100.0		63.9	
Full-time student	60.1		61.4		46.7		82.2		90.3		71.3	
City population		0.8		0.6		0.2		0.4		0.02		<0.0001
<5000 persons	60.5		61.2		66.1		75.5		89.3		72.2	
5000–100000 persons	60.2		65.1		63.4		75.9		88.6		70.8	
>100000 persons	58.4		63.8		58.8		71.7		82.6		65.7	
Smoking status		<0.0001		<0.0001		<0.0001		<0.0001		<0.0001		<0.0001
Smokes every day or almost	28.5		32.7		35.5		47.2		70.4		42.1	
Smokes some days	44.8		73.0		67.2		69.9		84.8		69.9	
Former smoker	57.2		61.7		63.3		66.4		89.5		69.0	
Never-smoker	69.7		73.4		66.9		82.4		90.5		76.5	
Time to first cigarette in the morning[#] min		<0.0001		<0.0001		<0.0001		<0.0001		<0.0001		<0.0001
<5	18.8		33.4		16.7		31.8		73.6		36.8	
6–30	20.3		17.0		38.1		48.3		73.6		40.2	
31–60	21.4		44.9		34.4		41.6		79.4		46.1	
>60	44.4		62.3		49.5		61.7		70.7		57.4	
Cigarettes per day[#]		0.003		<0.0001		0.03		0.02		0.9		<0.0001
1–10	36.8		60.1		49.8		63.0		78.3		58.2	
11–20	26.8		31.7		29.2		34.5		68.2		36.9	
21+	0.0		18.9		11.2		30.4		17.1		14.6	
One or both parents smoked		0.0003		<0.0001		<0.0001		0.0008		0.1		<0.0001
No	66.2		74.5		69.0		78.9		89.0		75.8	
Yes	54.8		57.3		55.5		69.7		85.5		64.1	
Family history of lung cancer		0.1		0.7		0.5		0.3		0.3		0.3
No	55.0		62.3		63.5		77.3		84.3		67.8	
Yes	61.0		63.8		60.8		73.5		87.6		69.5	

TABLE 3 Continued

	France		Ireland		Italy		Czech Republic		Sweden		All	
	Subjects %	p-value	Subjects %	p-value	Subjects %	p-value	Subjects %	p-value	Subjects %	p-value	Subjects %	p-value
Perceived risk of lung cancer		0.001		<0.0001		0.02		0.008		0.007		<0.0001
Low	67.0		69.9		67.0		77.9		89.8		75.5	
Medium	56.8		56.5		55.7		73.1		84.6		64.0	
High	50.3		50.2		59.6		55.9		79.6		59.9	
Don't know	56.7		60.5		59.9		74.8		84.1		67.0	
The medical evidence that smoking is harmful is exaggerated		0.0001		<0.0001		0.001		<0.0001		0.04		<0.0001
Disagree or strongly disagree	63.3		68.1		64.3		76.9		88.0		72.5	
Agree or strongly agree	49.9		44.6		50.5		60.2		82.4		56.8	
Exposure to secondhand smoke is dangerous to a pregnant female and her child		0.05		0.0004		0.02		0.03		0.03		<0.0001
Disagree or strongly disagree	36.6		37.5		22.1		45.2		70.3		42.8	
Agree or strongly agree	60.1		65.4		62.0		75.0		87.8		70.1	
Are you bothered by secondhand smoke?		<0.0001		<0.0001		<0.0001		<0.0001		<0.0001		<0.0001
No	42.9		42.9		34.3		50.0		77.0		50.1	
Yes	68.2		73.8		69.4		82.1		91.6		77.0	

Data are presented as weighted percentages, unless otherwise stated. Smoking bans at home were defined as having a complete ban, with no persons allowed to smoke. p-values were calculated by Chi-squared test or ANOVA. ISCO-88: International Standard Classification of Occupation, 1988 version. #: asked of current smokers only (n=1,414).

younger smokers were in general more likely to have smoking bans than older smokers. A smoking ban in the workplace had little impact on the likelihood of having a home smoking ban. There was no association between smoking bans and SES, as measured by age at leaving education; there was similarly no association when we used the ISCO job classification to measure SES (data not shown). As in the unadjusted data, Swedish smokers were the most likely to have home bans.

Patterns differed slightly among nonsmokers (table 6). Nonsmokers with home smoking bans tended to be younger. Having a ban was strongly associated with being bothered by secondhand smoke, and in most countries, with believing that smoking is harmful. In France and the Czech Republic, never-smokers were more likely to have bans than former smokers. In Italy and Ireland, bans were inversely associated with parental smoking. The Czech Republic was the only country where family history of lung cancer was associated with the choice to have bans. As in the unadjusted data, Swedish nonsmokers were the most likely to have home bans.

Females who worked outside the home in Ireland, France and Sweden were more likely have a work smoking ban than workers in the Czech Republic (table 7). Workers in technical positions and skilled workers were less likely than those in professional positions, and females who were widowed or living with a partner were less likely than married females to have smoking bans at work. All workers younger than 55 yrs were more likely to have work smoking bans than workers aged over 55 yrs. Females who finished their education at an older age were less likely to have smoking bans, as were daily smokers and former smokers.

DISCUSSION

Although this study reported differing factors across countries that were associated with indoor home smoking bans, some commonalities were seen. Across several countries, younger age, being married, dislike of secondhand smoke, and personal smoking behaviours were associated with having home and workplace smoking bans. Our findings suggest that to promote smoking bans among nonsmokers, it may be useful to appeal to nonsmokers with a family history of lung cancer, or through the reinforcement of social norms and beliefs that smoking is both bothersome and dangerous to health. Among smokers, the likelihood of taking up a home smoking ban was associated with smoking dependence, and to increase the prevalence of bans, the best method is likely to be through assisting smokers to quit.

Although age and marital status have been independently associated with having smoking bans [8, 9], it is not known to what degree these variables are in part proxies for having children in the home, a strong predictor of home smoking bans in other studies [12, 13, 19]. In some but not all studies, parents with younger children (age <6 yrs) in the home appear to have higher uptake of smoking bans than parents of older children or adolescents [9, 22]; this difference may have impacted the relationship between age and smoking bans observed in our study. Increasing prevalence of smoking bans over time [5] combined with a decreasing proportion of smokers who choose to smoke in front of children [23] also may suggest there may be cohort effects in the choice to have a home smoking ban.

TABLE 4 Proportion of subjects who reported having a smoking ban at work

	France		Ireland		Italy		Czech Republic		Sweden		All	
	Subjects	% p-value	Subjects	% p-value	Subjects	% p-value	Subjects	% p-value	Subjects	% p-value	Subjects	% p-value
Subjects n	833		676		710		862		915		3996	
Age yrs		0.9		<0.0001		<0.0001		<0.0001		<0.0001		<0.0001
18–24	95.0		100.0		87.2		79.5		83.2		91.5	
25–34	91.3		97.9		86.7		92.3		95.5		92.8	
35–44	93.6		98.3		89.9		90.1		94.8		93.4	
45–54	92.7		96.0		93.0		80.8		92.5		90.6	
≥55	92.3		87.3		53.3		65.9		80.7		74.5	
Marital status		0.3		0.001		0.04		0.0001		0.0009		<0.0001
Married	94.5		96.8		79.4		83.6		91.2		88.5	
Divorced/separated	91.4		95.1		80.7		81.6		85.5		86.3	
Widowed	83.8		85.4		61.4		62.9		74.4		68.5	
Single, never married	92.7		97.8		78.7		86.0		91.2		89.3	
Living with a partner	90.2		100.0		78.9		100.0		89.3		89.9	
Age at completion of education yrs		0.5		0.03		0.007		0.005		<0.0001		<0.0001
≤19	91.6		94.7		73.9		75.0		82.2		82.5	
20–25	93.6		98.3		79.7		84.6		94.8		90.4	
≥26	91.2		100.0		88.7		84.6		92.8		91.3	
Job category (ISCO-88)		0.9		0.4		0.04		0.002		0.1		0.0002
Professionals (ISCO 1, 2)	92.3		97.3		84.5		84.6		91.3		89.4	
Technical positions (ISCO 3)	96.6		98.6		74.2		67.3		83.4		88.7	
Skilled workers (ISCO 4, 5, 6, 7, 8, 10)	92.3		94.9		75.0		73.4		88.2		84.2	
Unskilled workers (ISCO 9)	92.7		96.0		72.2		77.2		81.3		88.3	
City population		0.6		0.5		0.001		0.6		0.9		0.007
<5000 persons	91.2		97.9		88.9		80.6		88.8		88.9	
5000–100000 persons	92.7		95.5		81.9		79.7		87.7		87.2	
>100000 persons	93.5		96.5		73.0		77.1		87.6		84.6	
Smoking status		0.04		0.4		0.5		<0.0001		0.3		0.0002
Smokes every day or almost	88.2		94.4		77.7		83.6		88.4		86.5	
Smokes some days	95.9		94.6		71.3		90.0		92.4		90.6	
Former smoker	89.9		96.5		74.1		61.0		84.9		82.0	
Never-smoker	94.5		97.5		79.7		81.7		89.3		88.0	
Are you bothered by secondhand smoke?		0.6		0.03		0.7		0.09		0.04		0.2
No	92.1		94.2		78.8		74.7		84.5		85.5	
Yes	93.2		97.7		77.5		80.5		89.5		87.1	

Data are presented as weighted percentages, unless otherwise stated. The presence of work smoking bans was asked only of females (n=3,996) who worked outside the home, had a regular work area and were not full-time students. p-values were calculated by Chi-squared test. ISCO-88: International Standard Classification of Occupation, 1988 version.

When comparing the five countries to each other, home bans were more common among nonsmokers in the Czech Republic and among all participants in Sweden. The Czech Republic appeared to have a larger proportion of smokers with lower tobacco dependence. Uptake of smoking bans appears to be widespread in Sweden in comparison to other European countries. Little is known as to whether the uptake of smoking bans has affected the smoking behaviours of Swedes, although there is speculation that smokers may be switching to snus. Nonetheless, surveys indicate that the proportion of Swedish females using snus is low (<5%) [24].

Although studies in other countries report differences by SES in the likelihood of having a smoke-free home [14], we observed little association in multivariable analyses of any

association with SES, with the exception of among nonsmoking females in the Czech Republic. We also found little association between city size and smoking bans, in contrast to that seen elsewhere [14].

In some countries, particularly among nonsmokers, there was evidence that female respondents' choice to have home smoking bans was related to parental smoking or family history of lung cancer. The differences by country are most likely due to cultural variation in family ties and living arrangements. In Italy, a larger proportion of young adults live with their parents than is seen in France, the UK or in Scandinavian countries [25]. Females also may be more strongly influenced than males by parental smoking, both in their own tobacco use and their attitudes towards tobacco [26].

TABLE 5 Odds of having a smoking ban at home among smokers

	France	Ireland	Italy	Czech Republic	Sweden	All countries
Subjects n	327	278	279	229	231	1414
Age yrs						
18–24	1.98 (0.36–10.8)	9.21 (1.84–46.2)	3.75 (0.54–26.3)	7.95 (1.26–50.2)	6.07 (0.78–47.3)	3.57 (1.85–6.91)
25–34	5.40 (1.19–24.5)	5.30 (1.21–23.3)	4.41 (0.99–19.5)	6.25 (1.54–25.3)	2.02 (0.53–7.76)	3.16 (1.82–5.46)
35–44	5.19 (1.22–22.1)	1.07 (0.29–4.03)	2.47 (0.66–9.23)	3.04 (0.92–9.98)	2.88 (0.86–9.59)	2.25 (1.35–3.73)
45–54	2.31 (0.50–10.7)	0.86 (0.23–3.21)	0.87 (0.22–3.45)	1.34 (0.43–4.16)	3.20 (0.97–10.5)	1.39 (0.84–2.28)
≥55	Referent	Referent	Referent	Referent	Referent	Referent
Marital status						
Married	Referent	Referent	Referent	Referent	Referent	Referent
Living with partner	0.58 (0.22–1.52)	0.17 (0.02–1.21)	0.40 (0.05–3.19)	0.05 (0.00–0.69)	0.55 (0.16–1.86)	0.61 (0.35–1.06)
Divorced/separated	0.39 (0.12–1.28)	1.06 (0.32–3.56)	0.87 (0.26–2.92)	1.05 (0.38–2.90)	0.58 (0.18–1.91)	0.81 (0.52–1.28)
Never married	0.28 (0.09–0.87)	0.23 (0.07–0.69)	0.48 (0.15–1.53)	0.32 (0.10–1.05)	0.30 (0.08–1.07)	0.42 (0.27–0.65)
Widowed	0.47 (0.03–8.46)	0.71 (0.15–3.35)	0.67 (0.09–5.14)	0.65 (0.17–2.57)	2.76 (0.20–38.4)	0.85 (0.42–1.70)
Age at completion of education yrs						
≤19	1.39 (0.59–3.26)	1.03 (0.38–2.78)	0.60 (0.24–1.47)	1.05 (0.46–2.42)	1.79 (0.60–5.35)	1.12 (0.78–1.59)
20–25	Referent	Referent	Referent	Referent	Referent	Referent
≥26	0.94 (0.29–3.04)	0.22 (0.03–1.45)	0.80 (0.23–2.79)	3.51 (0.80–15.4)	0.51 (0.15–1.73)	0.85 (0.50–1.43)
City population						
<5000 persons	0.67 (0.26–1.74)	0.73 (0.28–1.90)	3.13 (0.98–10.0)	1.83 (0.71–4.75)	1.85 (0.68–5.06)	1.43 (0.98–2.11)
5000–100000 persons	1.00 (0.41–2.42)	1.02 (0.45–2.34)	2.13 (0.88–5.17)	1.81 (0.75–4.35)	1.26 (0.43–3.64)	1.45 (1.02–2.07)
>100000 persons	Referent	Referent	Referent	Referent	Referent	Referent
Smoking status						
Smokes every day	0.66 (0.23–1.93)	0.30 (0.12–0.76)	0.29 (0.08–1.08)	0.34 (0.13–0.89)	0.32 (0.09–1.17)	0.41 (0.27–0.63)
Smokes some days	Referent	Referent	Referent	Referent	Referent	Referent
One or both parents smoked						
Yes	1.01 (0.44–2.29)	0.72 (0.33–1.56)	0.31 (0.14–0.69)	0.74 (0.33–1.65)	0.65 (0.24–1.80)	0.63 (0.46–0.88)
Family history of lung cancer						
Yes	0.75 (0.32–1.79)	1.25 (0.50–3.12)	0.65 (0.23–1.82)	0.41 (0.15–1.10)	0.49 (0.16–1.48)	0.73 (0.50–1.08)
Perceived risk of lung cancer						
Low	Referent	Referent	Referent	Referent	Referent	Referent
Medium	1.04 (0.36–2.98)	1.69 (0.62–4.62)	0.57 (0.20–1.67)	1.52 (0.55–4.26)	3.36 (0.97–11.6)	1.27 (0.83–1.95)
High	0.89 (0.28–2.86)	0.85 (0.29–2.52)	0.85 (0.27–2.73)	0.64 (0.16–2.44)	2.03 (0.60–6.91)	0.96 (0.60–1.53)
Don't know	0.11 (0.01–1.77)	1.22 (0.35–4.24)	0.37 (0.06–2.39)	1.03 (0.34–3.16)	0.82 (0.15–4.66)	0.87 (0.49–1.55)
The medical evidence that smoking is harmful is exaggerated[#]						
Mean Likert Score	1.14 (0.81–1.61)	1.18 (0.86–1.61)	1.40 (0.91–2.16)	1.05 (0.73–1.50)	1.11 (0.77–1.60)	1.14 (0.99–1.31)
Exposure to secondhand smoke is dangerous to a pregnant female and her child[#]						
Mean Likert Score	0.60 (0.24–1.46)	0.72 (0.39–1.34)	1.68 (0.77–3.65)	0.46 (0.18–1.17)	0.66 (0.35–1.27)	0.76 (0.56–1.01)
Are you bothered by secondhand smoke?						
Yes	1.37 (0.62–3.04)	2.02 (0.90–4.55)	2.79 (1.18–6.58)	1.69 (0.78–3.66)	0.79 (0.34–1.81)	1.48 (1.08–2.03)
Participant has a smoking ban at their workplace						
Yes	1.37 (0.52–3.56)	0.48 (0.20–1.16)	1.03 (0.42–2.50)	1.40 (0.58–3.39)	0.79 (0.28–2.23)	0.99 (0.70–1.41)
Time to first cigarette in the morning min						
≤5	0.36 (0.11–1.11)	0.64 (0.24–1.69)	0.42 (0.10–1.72)	0.59 (0.19–1.87)	1.85 (0.57–5.97)	0.63 (0.40–0.98)
6–30	0.58 (0.23–1.49)	0.22 (0.08–0.64)	1.34 (0.49–3.66)	1.20 (0.44–3.29)	1.84 (0.64–5.30)	0.70 (0.47–1.04)
31–60	0.46 (0.10–2.20)	1.01 (0.28–3.62)	0.57 (0.15–2.10)	1.02 (0.26–4.02)	1.79 (0.37–8.66)	0.83 (0.48–1.43)
>60	Referent	Referent	Referent	Referent	Referent	Referent
Country						
Ireland						Referent
Czech Republic						1.13 (0.71–1.81)
France						0.51 (0.31–0.84)
Italy						0.80 (0.50–1.29)
Sweden						4.77 (2.82–8.05)

Data are presented as OR (95% CI), unless otherwise stated. All variables were adjusted for all other factors in the model. [#]: four-point Likert scale: 1: strongly agree; 2: agree; 3: disagree; 4: strongly disagree.

There is scant literature on how familial norms and expectations and a family history of cancer may impact females' choices to have home smoking bans.

To our knowledge, there are few other studies that have addressed these questions in these five countries. A 2001 survey of Parisian workers found 18% exposed to secondhand smoke [27], which suggests the 2008 smoke-free legislation has made a strong impact in lowering smoke exposure in France.

The proportion of Italians who said smoking bans exist in their workplaces was similar to that seen in a recent population-based study, which found 75% of workers said that smoking bans were respected [28]. Workplace bans were more common in Ireland, France and Sweden, countries that have adopted comprehensive public bans; as Italy has passed similar legislation, it is not known why this survey found more workers there were exposed to secondhand smoke. Italy, along with some other European countries, does allow bars,

TABLE 6 Odds of having a smoking ban at home among nonsmokers

	France	Ireland	Italy	Czech Republic	Sweden	All countries
Subjects n	666	716	716	699	766	3563
Age yrs						
18–24	3.26 (1.37–7.73)	1.71 (0.79–3.71)	0.95 (0.43–2.11)	3.27 (1.05–10.2)	5.26 (1.56–17.7)	2.21 (1.52–3.21)
25–34	2.24 (1.27–3.97)	2.37 (1.19–4.74)	2.36 (1.32–4.21)	1.75 (0.84–3.64)	3.02 (1.14–8.02)	2.34 (1.76–3.09)
35–44	1.46 (0.86–2.46)	1.60 (0.85–3.01)	3.18 (1.78–5.68)	1.09 (0.56–2.14)	5.79 (1.73–19.4)	2.02 (1.54–2.64)
45–54	1.22 (0.76–1.98)	1.28 (0.71–2.31)	1.21 (0.72–2.04)	1.38 (0.70–2.72)	2.64 (1.17–6.00)	1.40 (1.10–1.79)
≥ 55	Referent	Referent	Referent	Referent	Referent	Referent
Marital status						
Married	Referent	Referent	Referent	Referent	Referent	Referent
Living with partner	0.79 (0.48–1.30)	0.63 (0.18–2.23)	0.91 (0.32–2.60)		0.77 (0.33–1.83)	0.94 (0.66–1.34)
Divorced/separated	0.92 (0.60–1.40)	0.87 (0.41–1.82)	0.76 (0.38–1.52)	1.01 (0.53–1.95)	0.84 (0.35–2.00)	0.90 (0.69–1.17)
Never married	0.66 (0.34–1.27)	0.36 (0.22–0.60)	0.85 (0.53–1.37)	0.58 (0.28–1.20)	0.30 (0.13–0.68)	0.54 (0.42–0.70)
Widowed	4.05 (1.10–14.9)	0.99 (0.55–1.77)	1.06 (0.60–1.87)	0.66 (0.37–1.18)	0.38 (0.16–0.93)	0.91 (0.69–1.20)
Age at completion of education yrs						
≤ 19	1.17 (0.81–1.68)	0.78 (0.50–1.21)	1.18 (0.80–1.73)	0.87 (0.55–1.40)	0.83 (0.43–1.62)	0.97 (0.80–1.17)
20–25	Referent	Referent	Referent	Referent	Referent	Referent
≥ 26	1.37 (0.76–2.47)	0.94 (0.44–1.99)	1.12 (0.60–2.09)	2.87 (1.08–7.63)	1.04 (0.48–2.25)	1.27 (0.95–1.71)
City population						
<5000 persons	1.37 (0.90–2.09)	1.07 (0.67–1.71)	1.22 (0.71–2.10)	1.12 (0.66–1.92)	1.64 (0.84–3.22)	1.21 (0.97–1.50)
5000–100000 persons	1.35 (0.90–2.03)	1.09 (0.70–1.70)	1.09 (0.74–1.60)	1.16 (0.71–1.89)	1.79 (0.90–3.55)	1.18 (0.97–1.43)
>100000 persons	Referent	Referent	Referent	Referent	Referent	Referent
Smoking status						
Never-smoker	Referent	Referent	Referent	Referent	Referent	Referent
Former smoker	0.62 (0.41–0.92)	0.86 (0.58–1.26)	0.90 (0.61–1.31)	0.59 (0.35–0.99)	1.58 (0.85–2.91)	0.81 (0.67–0.97)
One or both parents smoked						
Yes	0.72 (0.51–1.02)	0.45 (0.30–0.67)	0.60 (0.43–0.85)	0.70 (0.46–1.06)	0.60 (0.34–1.04)	0.62 (0.52–0.73)
Family history of lung cancer						
Yes	0.94 (0.63–1.41)	1.10 (0.68–1.78)	1.38 (0.88–2.16)	1.70 (1.00–2.88)	0.80 (0.41–1.59)	1.18 (0.96–1.45)
Perceived risk of lung cancer						
Low	Referent	Referent	Referent	Referent	Referent	Referent
Medium	0.90 (0.62–1.32)	0.60 (0.36–0.99)	0.50 (0.33–0.77)	1.08 (0.62–1.91)	0.73 (0.37–1.43)	0.73 (0.59–0.89)
High	1.58 (0.89–2.80)	1.74 (0.72–4.23)	0.68 (0.40–1.16)	2.23 (0.69–7.20)	0.84 (0.32–2.19)	1.15 (0.84–1.55)
Don't know	1.27 (0.68–2.39)	0.77 (0.47–1.27)	0.80 (0.48–1.36)	1.20 (0.73–1.98)	2.49 (0.52–12.0)	0.98 (0.76–1.26)
The medical evidence that smoking is harmful is exaggerated[#]						
Likert scale	1.22 (1.06–1.42)	1.25 (1.04–1.51)	1.07 (0.89–1.28)	1.26 (1.01–1.58)	1.09 (0.85–1.41)	1.20 (1.11–1.30)
Exposure to secondhand smoke is dangerous to a pregnant female and her child[#]						
Likert scale	1.13 (0.70–1.83)	0.76 (0.51–1.13)	0.62 (0.37–1.05)	0.43 (0.21–0.90)	1.57 (0.67–3.67)	0.82 (0.66–1.02)
Are you bothered by secondhand smoke?						
Yes	2.56 (1.77–3.70)	2.74 (1.77–4.23)	5.08 (3.31–7.80)	4.77 (2.92–7.79)	4.80 (2.73–8.46)	3.46 (2.86–4.18)
Participant has a smoking ban at their workplace						
Yes	1.42 (0.97–2.08)	1.22 (0.79–1.90)	1.07 (0.73–1.56)	1.09 (0.70–1.70)	0.80 (0.40–1.59)	1.07 (0.89–1.28)
Country						
Ireland						Referent
Czech Republic						1.51 (1.15–1.98)
France						0.99 (0.75–1.30)
Italy						0.84 (0.65–1.08)
Sweden						4.55 (3.26–6.35)

Data are presented as OR (95% CI), unless otherwise stated. All variables were adjusted for all other factors in the model. [#]: four-point Likert scale: 1: strongly agree; 2: agree; 3: disagree; 4: strongly disagree.

restaurants and indoor workplaces to have special separate and ventilated rooms for smoking; however, it is estimated that a small proportion (<10%) of businesses have set up such rooms [29]. It has been reported that the smoking ban is widely observed in Italian public places, despite the fact that restaurant and café owners are no longer held responsible for its enforcement [29].

Workplace smoking bans were related to demographic factors, as well as ISCO job classification, smoking behaviours and personal preference with regards to secondhand smoke exposure. In this study, skilled workers had only half the likelihood of having a smoking ban in their workplace in

comparison to professionals. Part of this difference may be explained by co-workers smoking as, in many countries, individuals from lower social classes tend to smoke at higher rates than those from higher social classes [30]. Thus, the implementation of workplace bans may serve to lessen social class disparities related to tobacco use and exposure to secondhand smoke.

Workplace smoking bans appear to decrease cigarette consumption and smoking prevalence among workers [4, 31]. However, the possibility also exists that smokers consuming fewer cigarettes may alter their smoking behaviour to compensate, perhaps by taking deeper puffs or smoking more

TABLE 7 Odds of having a smoking ban at work

All countries	
Age yrs	
18–24	3.24 (1.81–5.78)
25–34	3.74 (2.65–5.28)
35–44	4.05 (2.89–5.70)
45–54	2.98 (2.19–4.06)
≥55	Referent
Marital status	
Married	Referent
Living with partner	0.62 (0.42–0.92)
Divorced/separated	0.85 (0.62–1.15)
Never married	0.85 (0.61–1.18)
Widowed	0.61 (0.44–0.83)
Age at finish of education yrs	
≤19	Referent
20–25	0.86 (0.59–1.26)
≥26	0.57 (0.40–0.82)
Job category (ISCO-88)	
Professionals (ISCO 1, 2)	Referent
Technical positions (ISCO 3)	0.64 (0.50–0.82)
Skilled workers (ISCO 4, 5, 6, 7, 8, 10)	0.53 (0.32–0.88)
Unskilled workers (ISCO 9)	0.73 (0.49–1.11)
City population	
<5000 persons	1.27 (0.97–1.52)
5000–100000 persons	1.19 (0.94–1.52)
>100000 persons	Referent
Smoking status	
Never-smoker	Referent
Former smoker	0.63 (0.49–0.81)
Smokes every day	0.73 (0.54–0.99)
Smokes some days	0.87 (0.48–1.61)
Are you bothered by secondhand smoke?	
Yes	1.23 (0.97–1.55)
Country	
Ireland	6.14 (3.73–10.1)
Czech Republic	Referent
France	3.21 (2.19–4.71)
Italy	0.87 (0.65–1.16)
Sweden	2.46 (1.79–3.37)

Data are presented as OR (95% CI) and included only participants who worked outside the home, had a regular work area, and were not full-time students (n=3996). All variables were adjusted for all other factors in the model. ISCO-88: International Standard Classification of Occupation, 1988 version.

of the cigarette, or *via* displacement of smoking to other environments. The cross-sectional nature of data collection left us unable to determine whether workplace smoking bans had any effect on smoking behaviours in the home. Some, but not all, studies have suggested that smokers working under bans are more likely to have a ban at home [9, 10, 32]. This study found no association between workplace smoking bans and the implementation of a ban in the home.

This survey was limited by its brief length, which did not allow us to collect additional information potentially relevant to the implementation of smoking bans, such as the presence of

children or other smokers in the home. An additional limitation is that all data were collected by self-report. There have been concerns about the validity of self-reported data on home smoking bans, particularly in households with children [13, 33]. Strengths of the study include the large sample size and the population-based design. However the participation rates were suboptimal and varied by country, perhaps due to cultural factors that influence willingness to participate in a telephone survey. It is not known whether any association exists between smoking bans and willingness to participate in telephone surveys. There was also evidence, in some countries, that our sample included a larger proportion of professional females than should be expected in a population-based sample [34]. This may be due to the requirement of having a home telephone, or due to differences by social class in the willingness to participate in our survey. Although only a small proportion of eligible females who refused participation also provided demographic information, refusers appeared to be generally younger than participants, and were more frequently employed as technical workers or as skilled workers.

A limitation of the study was data collection by telephone survey, leaving us unable to independently verify the statements of participants. We had chosen this data collection approach to be able to reach a large sample of females in each country. Results from previous studies indicate self-reported data on active and passive smoking are fairly reliable [35, 36]. Additionally, mobile phone users were not included in the phone lists from which we drew the numbers. Despite this, the stratified sampling approach allowed the study to include a proportionally representative sample of younger females. Nonetheless, there may be unknown differences between users of mobile phones and home phones which may affect study results.

In conclusion, we observed differences across the five European countries in uptake of home smoking bans and factors related to their use. While nonsmokers' choice to have a home smoking ban was associated with beliefs and personal preferences, smokers were more often influenced by their tobacco dependence and regularity of cigarette use. The higher rates of home smoking bans among younger age groups were likely in part due to having young children in the home, but may also signal a demographic change in the acceptance of smoking bans. With regards to work bans, there were disparities evident by job classification and age. More widespread implementation of workplace bans may lessen these class disparities in secondhand smoke exposure.

SUPPORT STATEMENT

This study was a part of the Women in Europe Against Lung Cancer and Smoking (WELAS) project, which received funding from the European Union, in the framework of the Public Health Programme.

STATEMENT OF INTEREST

None declared.

ACKNOWLEDGEMENTS

The authors would like to thank M. Leon-Roux (International Agency for Research on Cancer, Lyon, France), D. Vallone and J. Allen (both American Legacy Foundation, Washington DC, WA, USA) for their assistance.

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