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Evaluation of the impact of smoke-free policies in Member States on exposure to second-hand smoke and tobacco consumption

Summary report of the IMPASHS project

(contract number 2007313)

Executive Agency for Health and Consumers

Introduction

Despite a great progress has been made in reduction of involuntary exposure to second-hand smoke (SHS) in Europe, the variation between countries is still large and exposure to SHS remains high in most of these countries. Observance of policies largely varies between countries, yet no systematic and comparable evaluation measurements have been done or proposed. In this context, IMPASHS project was launched to analyze the existing policies on smoking control in European countries and their impact on SHS exposure and tobacco consumption, and to develop a system of indicators to evaluate and monitor them.

IMPASHS project was arranged and submitted to funding by European Commission by partners of 8 European countries (Austria, France, Ireland, Italy, Poland, Portugal, Spain, Slovac Republic) involved in tobacco control activities from different perspectives (university, public administration, NGO). Most of the partners had previously collaborated in other smoking prevention projects at European level.

The project was developed and implemented during a 3 years period, from April 2008 to March 2011. During this period 4 plenary meetings took place to review and discuss the progress and difficulties. At the end, we achieved the expected results, mainly an overall analysis of the smoking control policy, a study of the concentration of secondhand smoke in open spaces of hospitality venues, and a review of smoking prevalence trends in relation with smoking policies. Here we present a brief summary of the main project outcomes.

IMPASHS Workpackage 1: **Policy Analysis**

In the European Council's recommendation on smoke-free environments (30th of November 2009), the Council acknowledges that second-hand tobacco smoke exposure is a widespread source of mortality, morbidity and disability in the European Union. It commits to supporting and complementing the efforts of Member States (MS) in creating smoke-free workplaces. In addition, it identifies the need for strengthened cooperation between Member States to facilitate the exchange of best practice and to develop a standardized EU monitoring system. While all EU Member States have enacted some form of regulations aimed at limiting exposure to second-hand tobacco smoke, the scope of these regulations vary widely and many countries have failed to enact Framework Convention on Tobacco Control (FCTC) compliant, comprehensive legislation creating smoke-free workplaces and indoor public places.

This IMPASHS workpackage surveyed selected EU MS on the specificities of their smoke-free legislation to assess FCTC compliance and examine best practice in implementation, enforcement, and monitoring. Evaluating the impact of policies is crucial to both justifying the action taken and building evidence for future actions. This IMPASHS workpackage also critically appraised existing guidelines for the evaluation of smoke-free legislation.

Main results

Based on review of existing evaluation guidance, guidelines were developed which outline the indicators that can be measured to assess the effectiveness of smoke-free policies, how they can be measured, when they should be measured, the purpose of measuring each indicator and any special considerations (Table 1). It provides references for European studies, which have measured these indicators as part of their evaluation strategy. The guide also suggests who should be responsible for measuring each

indicator and the level of importance of measuring each indicator. Assessment of the level of importance was determined based on discussion and consensus among the project team with considerable collective expertise in evaluating smoke-free policies within their respective countries.

For a smoke-free law to effectively protect people from second-hand smoke exposure, it must be carefully drafted and comprehensive in its coverage with few exemptions and there must be compliance with the law. This table suggests that, at a minimum, the legislation should be rigorously reviewed before implementation and shortly after it comes into effect. Compliance should be monitored by survey to assess reported smoking in public places and by observational inspections. In addition, exposure in workplaces with high levels of second-hand smoke exposure prior to the introduction of smoke-free legislation, such as hospitality venues, should be monitored using self-reported measures.

The effectiveness of a carefully drafted and strategically implemented smokefree law can only be realized with adequate enforcement.

Any evaluation strategy should utilize routinely collected health behaviour and economic data, as well as data from research projects employing a before and after study design.

Where resources are available the following are also desirable (Table 2): 1) monitoring compliance through the frequency of complaints, infractions and litigation; 2) measuring SHS exposure using bio- and/or air-markers; 3) assessing the health impact by assessing lung function, self-reported respiratory symptoms and monitoring tobacco-related disease rates; 4) tracking the impact on smoking prevalence, cessation and consumption; 5) assessing changes in attitudes and support for smoke-free policies; and 6) assessing the economic impact on the hospitality sector using government statistics on sales and employment.

Table 1. Minimum requirements for the evaluation and monitoring of a smoke-free law

Variables	What can you measure? (Indicators)	How can you measure it?	When should you measure it?			Purpose and Considerations	Examples
			Before the ban	0-3 months	1+ years		
Policy variables							
Scope	Locations specified as smokefree Exemptions and loopholes	Policy review	X	X	X	Ensure FCTC compliance and identify potential loopholes or areas for improvement Ongoing review (3 to 5 years)	(Framework Convention Alliance, 2006a, 2006b)
Compliance	Reported smoking in public places	Self-report questionnaires	X	X	X	Should measure among general population Ongoing annually	**General population:** (Gorini, Gasparrini, et al., 2008; Hyland, et al., 2009) **Hospitality workers:** (Lund, Lund, Rise, Aaro, & Hetland, 2006)
	Observed smoking in public places Visible smoke Odour of smoke Presence of ashtrays Presence of cigarette butts Appropriate signage posted	Observational Inspections	X	X	X	Compliance inspections Identify loopholes in the legislation and areas for increased education or enforcement efforts	**Hospitality venues:** (Binkin, et al., 2007; McCaffrey, Goodman, Kelleher, & Clancy, 2005)
Exposure variables							
SHS Exposure	Self reported exposure	Questionnaires	X	X	X	Should be measured according to defined protocols +Needed for monitoring purposes +Cost effective, easy to conduct -Subjective measure -indicates prevalence or duration of exposure rather than intensity	**Hospitality workers:** (Allwright, et al., 2005; Ayres, et al., 2009; Fernandez, et al., 2009; Goodman, Agnew, McCaffrey, Paul, & Clancy, 2007; Gorini, Gasparrini, et al., 2008; Lund, et al., 2006; Semple, et al., 2007) **General Population** (Galan, et al., 2007; Hyland, et al., 2009) **Children (homes/cars)** (Kabir, Manning, Holohan, Goodman, & Clancy, 2010; Kabir, et al., 2009) **Adults (public and private places)** (Haw & Gruer, 2007)

Table 2. Ideal characteristics of smoking policy evaluation (when resources available)

- Monitoring compliance through the frequency of complaints, infractions and litigation
- Measuring SHS exposure using bio- and/or air-markers
- Assessing the health impact by assessing lung function, self-reported respiratory symptoms and monitoring tobacco-related disease rates
- Tracking the impact on smoking prevalence, cessation and consumption
- Assessing changes in attitudes and support for smoke-free policies
- Assessing the economic impact on the hospitality sector using government statistics on sales and employment

IMPASHS Workpackage 2: **SHS exposure assessment in hospitality venues** (including outdoor areas)

During the last decade, numerous countries have implemented smoking control laws aiming to reduce secondhand smoke (SHS) exposure and its health effects, such as respiratory symptoms, heart diseases and lung cancer. The smoking control laws enacted so far across Europe cover a wide range of restrictions, from total bans to partial restrictions allowing smoking areas in selected venues. However, most European smoking laws have in common that are mainly focused on indoor areas.

SHS exposure in outdoor environments has recently begun to be empirically investigated. Outdoor SHS concentrations are more variable than indoor concentrations, because SHS does not readily accumulate in outdoor environments and can be very sensitive to wind conditions. However, some early findings seem to indicate that outdoor SHS levels could be comparable to indoor levels under specific conditions. For this reason, the main objective of one of the workpackages of the IMPASHS project was to assess the level of SHS exposure in terraces and outdoor areas of hospitality venues of 8 European countries.

Nicotine and PM2.5 concentrations were measured in hospitality venues of major cities from the 8 European countries involved in the project: Austria, France, Ireland, Italy, Poland, Portugal, Slovak Republic and Spain. The fieldwork was carried out between March 2009 and March 2011. Hospitality venues of the study included night bars, restaurants and bars. The venues selected had to follow three inclusion criteria: 1) Venues without open kitchen (or other important sources of combustion), 2) Minimum 5 people at the venue at the moment of the measurement, 3) Measurements had to be carried out in "hours of activity" (in night bars after dinner and in restaurants either at lunch or dinner time).

SHS exposure was measured outdoor and indoor in all hospitality venues included in the study. Vapour phase

nicotine and PM2.5 were measured as airborne markers. Nicotine was measured using SHS samplers containing a filter treated with sodium bisulphate. Active samples were taken for periods of 30 minutes, that were analyzed at Laboratory of the Public Health Agency of Barcelona, by gas chromatography/mass spectrometry (GC/MS) method. Simultaneously, PM2.5 were measured using a TSI SidePak AM510 Personal Aerosol Monitor. The SidePak continuously measured the particle concentration and recorded into memory the average level every one second. The recorded measurements were downloaded to a PC for analysis.

Indoor SHS concentration found in hospitality venues where smoking was allowed was much higher than the concentration found where smoking was not allowed.

Therefore, legislation banning smoking in hospitality venues should be implemented in all the European countries.

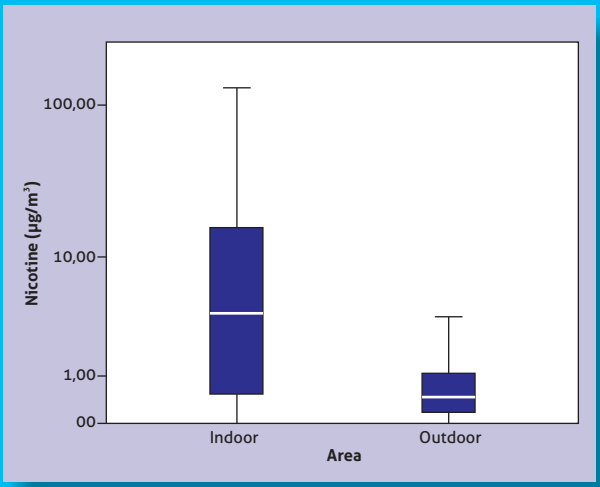
Main results

A total of 176 samples of nicotine and 152 samples of PM2.5 were collected during the study. 88 nicotine samples and 68 PM samples belong to outdoor areas.

The data obtained as a result of the fieldwork showed that indoor SHS concentration found in hospitality venues where smoking was allowed was much higher than the concentration found where smoking was not allowed. However, the outdoor SHS concentration found in those venues where smoking was banned indoors was very high, reaching levels higher than 2.5 $\mu g/m^3$ of nicotine in some hospitality venues like night bars (Figures 1 & 2). In conclusion, our study show that, even if smoking was banned indoors, hospitality workers can be still exposed to high levels of SHS. Therefore, current restricting legislation indoors does not seem to be sufficient to protect hospitality workers -and clients- from SHS exposure. Further research is needed on this topic, but tobacco-free policies should take into account these results and consider restrictions in terraces of hospitality venues under some circumstances as a requirement to an effective protection.

Outdoor SHS concentration in venues where smoking was banned indoors is considerably high, reaching levels higher than 2.5 µg/m3 of nicotine in night bars.

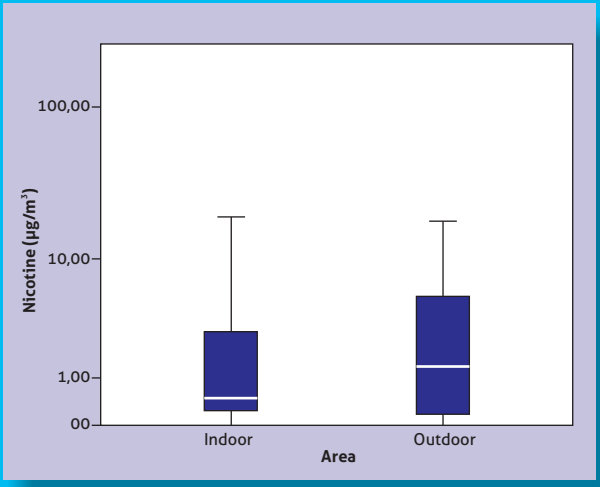
Figure 1. Nicotine concentration in indoor and outdoor areas of European hospitality venues where smoking is allowed indoors



Current restricting legislation indoors could not be sufficient to protect hospitality workers -and clients- from SHS exposure.

Tobacco-free policies should consider restrictions in terraces of hospitality venues under some circumstances as a requirement to an effective protection.

Figure 2. Nicotine concentration in indoor and outdoor areas of European hospitality venues where smoking is NOT allowed indoors



IMPASHS Workpackage 3: **Smokefree policies and tobacco consumption**

Work package 3 set out to collect and analyse existing data on smoking prevalence in selected European countries. Laws and policies meant to protect non-smokers from environmental tobacco smoke exposure can be linked to active smoking prevalence in many ways: (a) Policy and smoking prevalence can be influenced by a common third factor. Such a factor could be part of the general culture of the country and common attitudes towards smoking. (b) Policy could be influenced by the smoking prevalence either because politicians in a country with high smoking prevalence are afraid of the opposition of smokers that form a major part of their voters or otherwise could design very strict anti-smoking laws because smoking poses such a great burden to their country. (c) Policies could either make active smokers smoke less or even quit or reduce the number of adolescents who start smoking. Associations between strictness of laws and smoking prevalence nevertheless are of interest even when causality can not be deduced from associations.

Overall, smoking prevalence is declining in Europe among men, while the trend among women is less consistent.

When collecting survey data from project partners there was a huge difference in data availability and quality all over Europe. This indicates that data generation is less a financial issue than an issue of political will. Survey techniques (telephone, letter, face-to-face interview) and phrasing of questions differ between surveys in the very country and between countries. Number and selection criteria (like age range) of respondents also differ considerably. Some mostly former Eastern European countries did not perform so many national surveys, maybe also due to financial restrictions, but participated in a range of international surveys (like the HBSC - Health Behaviour in School Children or the GYTS - Global Youth Tobacco Survey) that allow for a more

comprehensive comparison between countries. Anyway, those international surveys are limited in scope and number of respondents and therefore cannot fully replace thorough national surveys.

Another source of data comes from regular special Eurobarometer (EB) surveys. These have included questions regarding tobacco consumption nearly every year for the last 20 years. The precision of these European data are limited because per country only approximately 1000 respondents were interviewed in each campaign. Furthermore, the questions somehow differed between the campaigns which makes comparisons on a temporal scale difficult. Nevertheless EB data are a valuable source for comparisons between countries. Strikingly EB surveys tend to report higher smoking prevalence than national surveys conducted in the same year (Figure 1).

Smoking prevalence does not seem to differ consistently between countries in relation to legislation. However, it is important to notice that there is a huge difference in data availability and quality of survey data all over Europe.

Countries with stricter anti-smoking legislation turned out to also perform surveys on smoking prevalence more regularly but smoking prevalence did not differ consistently between countries in relation to legislation (Figure 2).

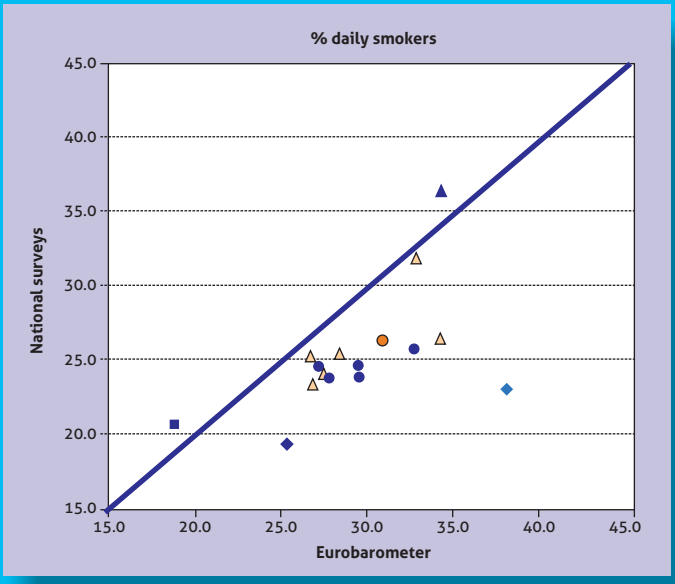
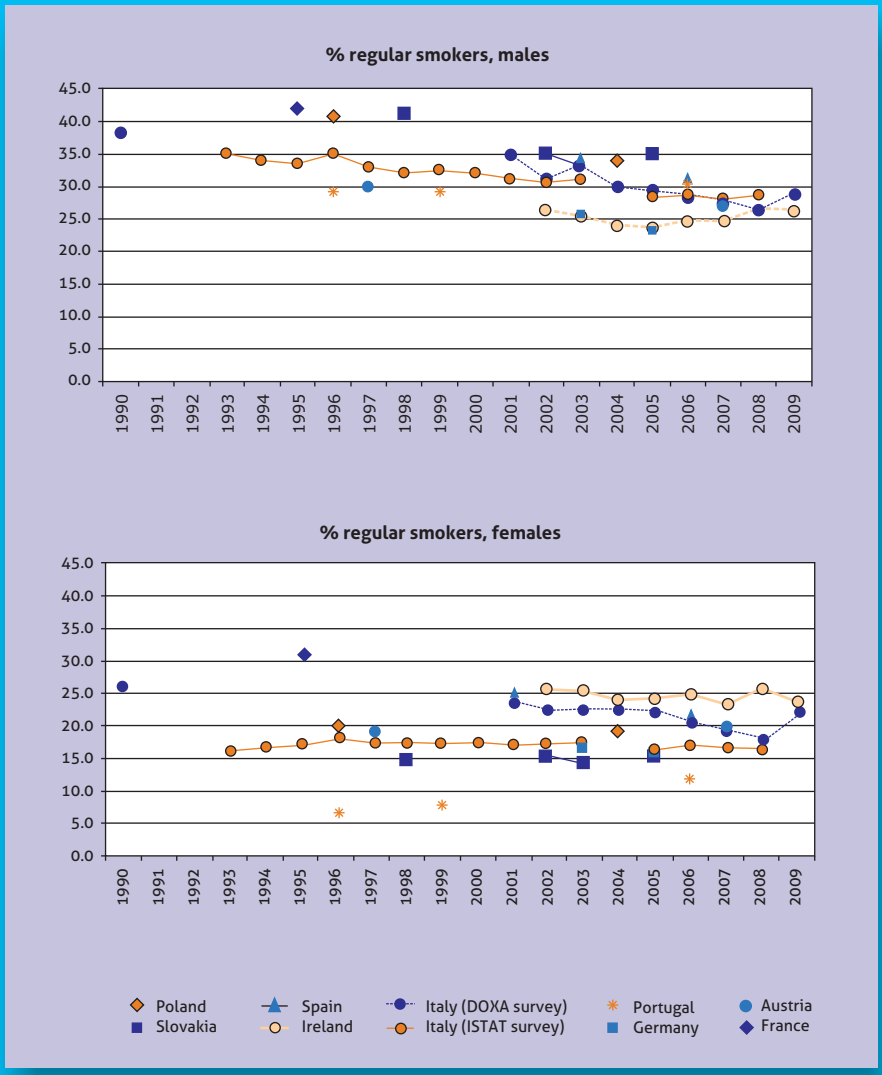


Figure 1. Comparison of the results from EB and national surveys. Any national survey that was performed in the same year as an Eurobarometer (EB) survey was compared for the outcome in the respective country. Line indicates equity. Points to the right and below the line indicate higher smoking rates according to EB

Reference:

Smokefree Partnership: http://www.smokefreepartnership.eu/Smoke-free-legislation-in-the-EU. Smokefree legislation in Europe as of February 2009

Figure 2. Trends in smoking prevalence by gender (a: males, b: females) according to national surveys



Recommendations

Following the project results, some general recommendations, that will need to be adapted to every context, can be drawn. First, in those countries where smoking is still allowed in some indoor public venues (mainly hospitality sector), there is a clear recommendation to establish a firm and specific total ban, and to devote the necessary efforts to enforce the law. In addition, a clear set of indicators, ranging from routine data to specific air-borne or biomarkers, should be defined to monitor immediate and long term commitment to the restrictions, and, when possible, at least a short term evaluation should be performed. Furthermore, special attention should be devoted to the side-effects of indoor smoking bans, i.e., the increase in SHS concentration in outdoor hospitality areas like public terraces.

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