

Slow Progress in Controlling Second-Hand Smoking

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Passive smoking is defined as involuntary exposure to environmental tobacco smoke (ETS) by non-smokers at home, at work or in public places in general. Data from population surveys indicate a drop in tobacco use in Spain in men and women (39.2% among men and 24.7% among women in 2001 vs 31.6% and 21.5%, respectively, in the Spanish National Health Survey [NHS] of 2006).¹ Smoking has changed from being behavior considered socially acceptable to one that causes a public health problem not only for smokers, but also for the innocent bystander who becomes a passive smoker.

In many cases, active smoking is the only cardiovascular risk factor found in patients with myocardial infarction under 45 years, and affects 76%-91% of this population.² It is also clear, and demonstrated by a case-control study, that quitting smoking reduces coronary mortality and continuing to smoke after a first infarction increases the risk of suffering a new coronary event that is 3 times greater than that among those who quit smoking. When the patient succeeds in quitting smoking after following a secondary prevention program, risk becomes equal to that of non-smokers before the first infarction.³ These data have strengthened secondary prevention programs which are currently one of the main pillars of clinical cardiology.⁴ Achieving less exposure to ETS in coronary patients who formerly smoked would fulfill 2 aims: first, abstinence would be maintained by there being more environments that were free from smoke and its temptation; and second, the impact on the cardiovascular system due to such involuntary exposure would be reduced.

According to the International Agency for Research on Cancer (IARC) from the World Health Organization (WHO) and the United States Environmental Protection Agency, tobacco smoke is a class A carcinogen, which

means, there is no safe exposure level. In developed countries, involuntary exposure to ETS constitutes the third most important avoidable cause of death, after active smoking and alcoholism, and in Spain it causes nearly 3000 deaths per year, above all due to ischemic heart disease and lung cancer.

In the European Union, 7.5 million people are exposed to ETS in their workplace, and in Spain it has been estimated that 70% of the nonsmoking population are exposed to ETS some time during the day, either at home, at work or in leisure places.

The first references to the detrimental effects of passive smoking date back to the 1970s, where they were described in document 578 by the WHO Expert Committee on Tobacco (1974) and in a report by the United States National Institute of Health (1972). In the 1980s, an interesting study was published on lung cancer in nonsmoking women exposed to their husband's tobacco smoke,⁵ which proposed protection against ETS as a gender and human rights issue that should be guaranteed. In 1986, the General Surgeon's report associated exposure to ETS with the risk of lung cancer in non-smokers, and in 2002, the IARC⁶ confirmed the causal role of ETS in the incidence of lung cancer in non-smokers. All this evidence motivated the WHO to create the framework convention on tobacco control that currently requires the more than 130 countries that have already ratified it to adopt effective legislative, governmental, administrative, and other measures to protect people from second-hand smoke in enclosed workplaces, in public transport, and inside other public spaces.

In Spain, for decades, legislation has been as abundant as compliance with it has been lax, and thus the General Health Law 14/1986 established, among other points, the duty of public health authorities to promote health and prevent disease, and to control activities and products that, directly or indirectly, can have a negative impact on the health of the citizens. Other Spanish laws aimed at protection against ETS include the following: Law 31/1995 (prevention of risks in the workplace), Royal Decree 39/1997 (risk prevention services in the workplace), Royal Decree 655/1997 (the protection of workers against risks associated to exposure to carcinogenic agents in the workplace), etc. In 2005, after ratifying the WHO framework convention on tobacco, Spain passed Law 28/2005 (December 26) on health

SEE ARTICLE ON PAGES 687-94

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measures against smoking and regulated the sale, supply, consumption, and advertising of tobacco products, and possibly represents one of the most important public health laws in recent years.

In view of all this, it gives us great pleasure to see the article “Secondhand smoke exposure in Spanish adult non-smokers following the introduction of an anti-smoking law” by Lushchenkova et al⁷ published in the *Revista Española de Cardiología*. It is a topic of immense interest, yet has not generated many articles in the context of cardiology, hence its importance.

Indirect and direct methods are used to assess the degree to which a given population is exposed to ETS. Indirect methods are used to determine exposure by measuring one or more tobacco compounds in specific rooms over several hours or days.⁸ Generally, nicotine and airborne particle concentrations are measured or detailed surveys employed that very reliably correlate the responses with the degree of exposure, as in the article published in this issue. Direct methods measure the compounds absorbed by exposed people, especially the biomarkers of tobacco smoke, such as cotinine, which is one of the main metabolites of nicotine, in serum, urine, or saliva. Cotinine has a half-life between 15 h and 40 h in adults, whereas in children this ranges between 37 h and 160 h. In practice, measuring the concentration of cotinine in urine is the best method to study passive inhalation of tobacco smoke in enclosed environments.

Studies were conducted in Spain that measured ETS before Law 28/2005 was implemented. López et al⁹ employed indirect measurements, using vapor-phase nicotine as an air marker in different environments and institutions. In all the environments studied, ETS was found in more than 90% of the samples, with the exception of hospitals and primary care centers. The degree of exposure was lower in health and educational centers (<1 µg/m³) and higher in the public transport areas studied, especially airports. In restaurants and discotheques, where concentrations were very high (12.36 µg/m³ and 130.65 µg/m³, respectively), 8 h of exposure to ETS in restaurants and discotheques was equivalent to smoking 1.5 cigarettes and 16 cigarettes, respectively. This datum confirmed the need for regulations governing exposure in leisure sites and catering establishments. By measuring cotinine in saliva and conducting surveys on non-smokers' perception of exposure, the results of a study conducted in Barcelona, Spain, in 2004-2005 showed that nearly 60% of participants perceived themselves as being exposed in some environment, especially during leisure time, and that these periods coincided with the highest cotinine concentrations in saliva.¹⁰ It should be pointed out that 64% of those not perceiving themselves as exposed presented quantifiable amounts of cotinine; this could call into question the value of surveys regarding real exposure to ETS. Other studies prior to Law 28/2005 measured exposure to ETS indirectly through surveys on the perception of exposure to ETS.^{11,12} All of them

identified high rates of perceived exposure in non-smokers, ranging around 60%-70%, with leisure sites followed by the workplace as the places where exposure was at its highest. Furthermore, they showed that exposure to ETS was high among young populations of both sexes (the exposure rates in the age band 15-24 years indicated an alarming 94% in men and 98% in women).¹¹ The same authors show that the passive smoker rate in Spain would double that of the United States according to the NHANES study of 1991, prior to the implementation of the American regulatory law of June 1995.¹³

The study published in this issue is the first to include a representative Spanish sample after the implementation of the law on health measures against smoking. It assessed the perception of exposure to ETS in non-smokers by means of a telephone survey and indicated the exposure rates in various environments, including transportation in open and enclosed places. In general, the data show prevalences of 72.2% for total exposure, mainly in leisure sites (56%), followed by transportation (45% among women and 37% among men), and then by the workplace or educational centers (39% among men and 30% among women). These figures, like those in other studies, show a reduction in exposure rates proportional to age^{11,12} and are similar to those in studies conducted prior to the implementation of the law on health measures against smoking.¹⁰⁻¹² Although the period since the legal measures came into effect is short and the methods used to quantify perceived exposure are not the same, it is striking that the results are far worse than those expected after consumption was restricted in workplaces, as well as in the leisure sites covered by the new law.

If we compare the data on exposure to ETS at work reported in the study in question with those of the NHS conducted in 2006 (carried out in the same period, June-July 2006), and we take into account that this was the first time that data on passive smoking were collected—although only in public places and leisure sites—the total prevalence of exposure was 40% in people >16 years, a value that is somewhat lower than that reported during leisure time by the authors of the present article (56.2%). These differences could be explained by the method used, although the subjectivity of perception could have been influenced by the greater awareness of former smokers to perceiving exposure to ETS (forming 20% of the participants in the NHS 2006 study in contrast to 36% of the men and 19% of the women in the sample studied by Lushchenkova et al⁷). Following this line, it would have been interesting to know the exposure rates perceived in the subgroup of former smokers in the sample in their study. In relation to the method used in both studies, a recent work has questioned the value of population surveys that quantify the perception of exposure to ETS and compared these to the direct measurement of cotinine.¹⁴

Until now, only 1 Spanish study has compared data on exposure to smoke before and after the new law was implemented, using a representative sample of the Region

of Madrid.¹⁵ It investigated exposure rates to ETS among the general population, including smokers and non-smokers, at home, the workplace and leisure sites in October and November 2005, in order to compare them to those in January to July 2006. It verified that there had been important reductions in exposure rates in the workplace, as follows: 40% prior to the law being implemented versus 9% afterwards (odds ratio [OR] =0.14; 95% confidence interval [CI], 0.11-0.19; $P<.001$). These data are supported by the reduction in the rates of tobacco use among smokers (57.9% before the law vs 10.6% afterwards (estimated OR =0.08; 95% CI, 0.05-0.13; $P<.001$). There have also been reductions in exposure rates in leisure places—including bars and restaurants—that, although reaching statistical significance, are smaller: perception of high exposure in bars, 66% prior to the law vs 45% afterwards, and in restaurants, 27% prior to the law vs 15% afterwards).

It is important to note that the new law, in addition to achieving a reduction in exposure rates to second-hand tobacco smoke, should also involve a reduction in the rates of tobacco use, mainly in the workplace, reported in some works as 4%¹⁶ compared to the 19% reported for the national level.¹⁵

There has clearly been considerable progress in Spain since the “Tobacco Law” came into effect. Men continue to quit smoking and women have reversed the disturbing trend of increased use such that prevalence is now slightly higher than 21%, whereas only a few years ago this was 27.2%. The data published in this issue report the consumption rate as 26.7% in men and 21% in women and these are very similar rates to those reported by the NHS 2006 study. Tobacco use is rare in hospitals and health centers, whereas less than a decade ago it was almost the norm, and more than ever society is aware of the dangers of smoking and the need to control these, whereas such awareness was far lower in the past. Why, then, has there not been more progress, a situation the present work correctly condemns? In our opinion, there are 2 reasons: the law is flawed and vested political interest.

The fear of the potential loss of votes in future elections, the repeated and false message from the tobacco companies regarding loss of individual liberty, and capitulation to the enormous pressure from the hospitality and tobacco farming lobby, has left the law deficient regarding bars, restaurants, and leisure sites. The law was ambiguous and left hospitality workers alone completely bereft of their constitutional right to health protection and to working in a safe environment. The Ministry of Health received immense amounts of documented information from the Comité Nacional para la Prevención del Tabaquismo (National Committee for the Prevention of Smoking) on the positive results of smoking control in countries such as Ireland or Italy, which have adopted far more restrictive legislation, with almost 2 years advance notice, regarding prohibiting

smoking in all public places, including bars and restaurants. The economy of those establishments did not collapse, public freedoms were not restricted—in fact they were more strongly defended—and in the case of Italy, in the first 5 months of 2005, with the law in effect, the number of admissions due to myocardial infarction decreased by 11% compared to same period in 2004, when the law was not yet in effect.¹⁷ The authors indicated that this effect could mainly be due to a reduction in the number of passive smokers, since only a 0.7% reduction in the admission rate would be due to the reduction in the number of smokers.

Other places that have laws prohibiting smoking in all public places, such as Helena (Montana, USA) or Pueblo Colo (Colorado, USA), have managed to reduce the incidence of myocardial infarction by up to 26% (RR =0.73; 95% CI, 0.63-0.85), 1.5 years after laws similar to the Spanish law came into effect.^{18,19} In our hospital, Virgen Macarena de Sevilla, Spain, we have made half-yearly assessments of the number of hospital admissions due to myocardial infarction since Law 28/2005 was put into effect and have observed a slight downward trend which, to date, has not reached statistical significance when adjusted for the various confounding factors that could influence this reduction.

Vested political interests have also been a cause of unequal compliance with the law in different regions, demonstrating that different political parties are more interested in decreasing support for their opponents than in the health of the citizens under their charge.

We hope that our public health system becomes more consistent and that legislation is developed to correct the current and flawed law. The stakes are high. We are talking about health.

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