Tobacco use is the single most important preventable health risk in the developed world. Smoking-related mortality is on the rise. Most smoking-associated deaths relate to lung cancer, chronic obstructive pulmonary disease and coronary heart disease. Epidemiological studies suggest that passive smoking is nearly as harmful as active. In the adult population passive smoking can cause coronary heart disease and lung cancer. Smoking ban in public places has been implemented in most countries of the Western World with a high degree of compliance. The results of several trials assessing the effectiveness of this measure in public health are encouraging, as a consistent decrease in the incidence of acute myocardial infarction has been reported for the period after the legislation. A brief overview of these data is herein provided.

Tobacco use is causatively related to a wide range of diseases, including many types of cancer, chronic obstructive pulmonary disease, cardiovascular, cerebrovascular and peripheral vascular disease, and peptic ulcer. It is the second leading risk factor for mortality worldwide, accounting for almost 5 million deaths annually (3.84 million in men and 1 million in women), including 848 000 due to cardiovascular disease. It is estimated that smoking-related mortality will rise worldwide from 3 million annually (1995) to 10 million annually by 2030.

Data from the World Health organization (WHO) confirm that smoking among males older than 15 years old in the Western Pacific Region exceeds 50%, while women smokers prevail in the European Region with their percentage reaching 22%. The rates at which adolescent boys use tobacco average around 18% globally.

Second-hand smoke is the smoke that is inhaled in restaurants, offices, homes or other closed spaces when people use tobacco products. There are more than 4000 chemicals in tobacco smoke, of which >250 are known to be harmful and over 50 are known to cause cancer. There is no safe level of exposure to second-hand tobacco smoke. In adults, passive smoking can cause lung cancer and coronary heart disease. In infants, it causes sudden death. In pregnant women, it causes low birth weight. Passive smoking causes >600 000 premature deaths per year. Epidemiological studies
suggest that passive smoking is nearly as harmful as active, in terms of cardiovascular health parameters and outcome such as platelet and endothelial function, arterial stiffness, atherosclerosis, oxidative stress, inflammation, heart rate variability, energy metabolism, acute coronary syndrome provocation and infarct size. Every individual on the planet should be able to breathe tobacco-smoke-free air. Smoke-free laws protect the health of non-smokers, are or should be popular, do not harm business and encourage smokers to quit. All people should be protected by comprehensive national smoke-free laws that should be implemented and all individuals, groups, businesses and societies need to abide by (http://www.who.int/mediacentre/factsheets/fs339/en/).

CLINICAL STUDIES

Over the last decade significant effort has been made in the western world to change the smoking habits of the population. After the relatively poor results of the anti-smoking campaigns, several states have prohibited smoking in public places. The established deleterious effects of passive smoking have provided a strong moral rationale for this measure which aspires to reduce the morbidity and mortality associated with tobacco use. Several studies have been conducted in recent years to assess the efficacy of the enforcement of smoking banning laws. In a small region in Montana, USA, smoking was prohibited in workplaces and public places for 6 months in the year 2002. The evaluation of the hospital archives for these months during the years 1998-2003 revealed that during the law enforcement period there was a significant decrease in admissions for acute myocardial infarction (AMI) compared to previous and subsequent years. Moreover, in a nearby territory not subject to such a law, no difference in the number of admissions for AMI was noted.

In 2005 smoking was banned in indoor public places in Italy. The discharge records of hospitals in the Piedmont region were examined and the incidence of AMI was compared between a time period during the smoking ban and the same months in the years before it. The rates of admission for AMI were significantly lower during the ban (922 vs 832 cases, sex- and age-adjusted rate ratio, 0.89; 95% confidence interval, 0.81–0.98) for people younger than 60 years old. When the whole study population regardless of age was evaluated, no difference was noted. This was also the case for individuals older than 60 years old.

The same team conducted a larger, country-wide study evaluating the occurrence rate of acute coronary syndromes (ACS) in a period of 5 years, from 2002 to 2006 which included three years preceding and two years following the smoking ban. The population was analyzed with regard to the age (above or below 70 years old) and several variables were included in secondary analysis, such as geographical distribution and fluctuations in all-cause hospital admissions. On a total number of events exceeding 900,000, the rate ratio (RR) for all ages for the ban compared with the pre-ban period was 0.98 (95% confidence interval-CI 0.97–1.00). However, among people under 70 years of age, the RR of ACS for same comparison was 0.96 (95% CI: 0.95–0.98), representing a 4% decrease, regardless of the gender.

Cesaroni et al examined the hospital archives in Rome and the regional register of causes of deaths to evaluate the incidence of ACS in individuals 35–84 years of age from 2000 to 2004 and compare it with 2005 data which represent the post-legislation period. In order to compensate for various confounding factors, information regarding indoor air pollution, influenza epidemics, weather conditions, cigarette sales and smoking habits of the population was taken into account. A statistically significant reduction occurred in acute coronary events after the smoking ban in 35- to 64-year-olds (RR 0.89, 95% CI 0.85 to 0.93) and in 65- to 74-year-olds (RR 0.92, 95% CI 0.88 to 0.97) reaching 12% and 8% respectively. In both age groups, out-of-hospital deaths and hospitalizations also decreased. In the oldest group (75- to 84-year-olds) no difference was detected. The cardiovascular event reduction was more apparent among men in the youngest population and young people living in low socioeconomic areas. According to particulate matter measurements and cigarette sales, the indoor air quality improved and smoking decreased. Thus, both passive and active smoking exposure rates dropped. Assessing the differential effect of these exposure conditions in cardiovascular events, the authors suggest that the benefits reported can be mainly attributed to the reduction of the exposure to passive smoking.

A more extended study using data from four Italian regions showed that admissions for AMI decreased significantly within one year of the non-smoking law enforcement. However, the age and gender analysis revealed that this effect is apparent only in men and in the age classes 45–49 and 50–54 years of age.

In Ireland, smoking ban in all enclosed public areas was introduced in 2004. Cronin et al examined data from a prospective register of all adult patients admitted due to an ACS in the hospitals of South-West Ireland from 2003 until 2007. By the first year of the implementation of the ban, the rate of admissions for ACS reduced by 12% in comparison to the previous year (177,9100,000 from 205,9100,000, 95% confidence interval [CI]: 164.0–185.1; P = 0.002). This result was confined to men and current smokers. A further reduction by 13% was noted during the third year of the smoking prohibition.

However, smoking influence is not confined to cardiovascular system. A study assessing the total (non-trauma) and cause-specific mortality in patients over 35 years old was conducted in Ireland from 2000 until 2007, incorporating 3.75 years of post-ban follow-up. Adjustments for influenza activity, smoking prevalence and seasonality were made. The results were impressive with a 13% decrease in all-cause mortality.
PUBLIC SMOKING BAN

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compliance. Several trials have been conducted to assess the effectiveness of this measure in public health. The results are encouraging, as a consistent decrease in the incidence of cardiovascular episodes has been reported for the period after the legislation. The benefit seems more important in younger patients, in males and in passive smokers, a result that can be expected since the aim of these laws was to reduce secondhand smoke exposure and prevent smoking-related morbidity in non-smokers.

REFERENCES