

European Code against Cancer, 4th Edition: Tobacco and cancer[☆]

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ABSTRACT

Tobacco use, and in particular cigarette smoking, is the single largest preventable cause of cancer in the European Union (EU). All tobacco products contain a wide range of carcinogens. The main cancer-causing agents in tobacco smoke are polycyclic aromatic hydrocarbons, tobacco-specific *N*-nitrosamines, aromatic amines, aldehydes, and certain volatile organic compounds. Tobacco consumers are also exposed to nicotine, leading to tobacco addiction in many users. Cigarette smoking causes cancer in multiple organs and is the main cause of lung cancer, responsible for approximately 82% of cases. In 2012, about 313,000 new cases of lung cancer and 268,000 lung cancer deaths were reported in the EU; 28% of adults in the EU smoked tobacco, and the overall prevalence of current use of smokeless tobacco products was almost 2%. Smokeless tobacco products, a heterogeneous category, are also carcinogenic but cause a lower burden of cancer deaths than tobacco smoking. One low-nitrosamine product, snus, is associated with much lower cancer risk than other smokeless tobacco products. Smoking generates second-hand smoke (SHS), an established cause of lung cancer, and inhalation of SHS by non-smokers is still common in indoor workplaces as well as indoor public places, and more so in the homes of smokers. Several interventions have proved effective for stopping smoking; the most effective intervention is the use of a combination of pharmacotherapy and behavioural support. Scientific evidence leads to the following two recommendations for individual action on tobacco in the 4th edition of the European Code Against Cancer: (1) "Do not smoke. Do not use any form of tobacco"; (2) "Make your home smoke-free. Support smoke-free policies in your workplace".

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1. Tobacco use and exposure to second-hand smoke in Europe

1.1. Major form of tobacco use: cigarette smoking

Smoking is by far the most common way of using tobacco in Europe, and commercially manufactured cigarettes are the

predominant product used by smokers. Recently, the overall crude prevalence of cigarette smoking in the European Union (EU) has decreased. In 2002, smoking prevalence in the 15 EU Member States was 39%, dropping to 28% in 2012 when the EU comprised 27 Member States (EU-27) [1,2]. However, smoking prevalence is still alarmingly high in some countries, and the potential for further reduction remains huge across the EU. In addition, smoking prevalence remains very high in low-income and disadvantaged groups across Europe, exacerbating smoking-induced health inequalities [3]. A 2010 population-based representative survey of tobacco use involving about 18,000 respondents aged ≥15 years in 18 European countries using the same questionnaire examined these differences (Table 1). The Pricing Policy and Control of Tobacco in Europe (PPACTE) survey revealed smoking prevalence estimates ranging between 15.7% and 44.3% in men (mean, 30.6%) and between 11.6% and 38.1% in women (mean, 24.1%) [4],

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Table 1

Country-specific prevalence of current smoking (%) in the population aged 15 years or over, overall and by gender, male-to-female smoking prevalence ratio (M/F), and current-to-ex-smoking prevalence ratio (C/E) in 18 selected European countries. From Gallus et al. [4].

	N	Smoking prevalence (%)			M/F	C/E
		Total	Men	Women		
Total ^a	18,056	27.2	30.6	24.1	1.27	1.70
Country						
Albania	1000	26.1	40.2	11.6	3.47	4.28
Austria	1001	30.4	37.6	23.9	1.57	1.97
Bulgaria	1027	40.9	44.3	37.7	1.18	2.66
Croatia	948	26.6	31.3	22.5	1.39	1.83
Czech Republic	1000	29.1	35.9	22.6	1.59	2.40
England	1030	24.9	26.5	23.3	1.14	1.03
Finland	962	26.3	33.9	18.8	1.80	0.96
France	1029	27.5	30.9	24.4	1.27	1.34
Greece	965	38.9	43.7	34.0	1.29	3.38
Hungary	1002	35.5	42.7	28.6	1.49	3.87
Ireland	1008	36.0	33.9	38.1	0.89	2.14
Italy	1005	22.0	25.8	18.5	1.39	2.07
Latvia	1061	28.8	42.9	16.3	2.63	2.03
Poland	938	28.0	33.0	23.1	1.43	3.43
Portugal	1000	32.4	35.7	29.4	1.21	2.13
Romania	1080	26.1	34.9	17.7	1.97	2.18
Spain	1000	28.6	26.2	31.0	0.85	1.55
Sweden	1000	16.3	15.7	17.0	0.92	0.68

^a Prevalence estimates for the overall population were computed weighting each country in proportion to the country-specific population aged 15 years or over.

resulting in an overall European prevalence of 27.2%. Male-to-female smoking prevalence ratios showed countries where smoking was more common in men (e.g. ratio: 3.5 in Albania), similar in both sexes (ratio: 1.1 in England) or slightly higher in women (ratio: 0.85 in Spain). The highest smoking prevalence overall in the European countries covered was seen in the age group 25–44 years, in both men and women (39.8% and 32.0%, respectively). Overall, 16.3% and 9.0% of male and female current smokers, respectively, reported smoking ≥ 25 cigarettes per day [5]. Thus, a large number of men and women in Europe in 2010 (PPACTE survey) and in 2012 (Eurobarometer survey) [2] were cigarette smokers, with a sizeable proportion of these reporting high levels of smoking.

1.2. Smoking products other than cigarettes and other forms of tobacco used in Europe

Smoking products other than manufactured cigarettes have recently become more popular in Europe. The use of hand-rolled cigarettes has become more common among smokers in some European countries, including England (27.3%), France (16.5%) and Finland (13.6%), with overall about 10.4% of current smokers using predominantly hand-rolled cigarettes in the 18 countries included in the PPACTE survey [6]. The General Household Survey of 2008 in Great Britain indicated that 28% of smokers used hand-rolled cigarettes, confirming the frequent use of this type of cigarette among smokers also in the period before the PPACTE survey [7]. The market segment corresponding to fine-cut tobacco for hand-rolled cigarettes, among all tobacco produced for consumption, increased in most EU countries between 2002 and 2010 but stayed under 10% in more than half of EU countries in 2010 [8], supporting a trend towards greater use of hand-rolled cigarettes while corroborating the dominance of manufactured cigarettes among smokers. This trend has been driven to a great extent by the lower excise tax rate traditionally applied to fine-cut tobacco for hand-rolled cigarettes, which has translated into lower product prices and an incentive towards product substitution after increases in the price of manufactured cigarettes.

Other forms of smoking – such as pipe smoking, smoking of small cigars or cigarillos, and water-pipe smoking – are also used in the EU. Cigar and pipe smoking are relatively uncommon in the EU compared with cigarette smoking. According to the Eurobarometer survey in 2012 1% of smokers reported smoking cigars daily and an equal proportion reported smoking cigars weekly. Percentages for pipe smoking were identical [2]. Results from the Eurobarometer survey in 2012 indicated that 16% of respondents had tried water-pipe smoking at least once, while only 1% used it regularly. Regular or occasional use was highest in the Baltic nations (Latvia, 12%; Lithuania, 9%; Estonia, 8%) [2]. However, there are reports in the literature about water-pipe tobacco smoking recently becoming a trendy way to smoke and spreading rapidly in Europe, especially among young people. In a survey of 2399 high-school students in north-western London in 2011–2012, involving mainly deprived and ethnic minority populations, the prevalence of current water-pipe smoking was more than twice that of cigarette smoking – 7.6% (95% confidence interval (95%CI): 6.6–8.7%) versus 3.4% (2.7–4.2%) – in students aged 12–18 years [9]. The proportion of students (24%; 22.3–25.7%) reporting ever having tried water-pipe smoking was higher than the proportion reporting ever having smoked cigarettes (15.8%; 14.4–17.3%). The tobacco typically used in water-pipe sessions is flavoured with different aromas, and this is believed to be in part responsible for the attractiveness of the product [10].

With the exception of Sweden, smokeless tobacco is rarely used in the EU Member States. The Eurobarometer survey [2] showed a wide range in the proportions of respondents reporting ever having tried smokeless tobacco (snus, chewing tobacco or nasal tobacco), ranging from 44% in Sweden to 17% in Austria, 15% in Denmark and Estonia, 2% in Romania, Hungary, Spain and Bulgaria and 1% in Greece [2]. The PPACTE survey found that 1.1% of the European population sampled (excluding Sweden) reported current use of smokeless tobacco, whereas in Sweden the proportion was 20.7% of men and 3.5% of women [5]. Use in Europe is clustered geographically and is product-specific, as in the case of Sweden and Norway where the predominant product used is snus (moist snuff). A 1989 EU tobacco directive (89/622/EEC) most recently ratified in 2014 reaffirmed the ban on exporting Swedish snus to other EU countries [11]. However, manufacturing and sale of other smokeless tobacco products not intended for mass marketing and including oral (dipping or chewing) and nasal tobacco are allowed within the EU. In certain countries chewing tobacco and other smokeless tobacco products are used by ethnic groups coming from parts of the world where these behaviours are prevalent: for instance, the use of betel quid with tobacco in the United Kingdom (UK) among migrant communities coming from Central, East, South and South-East Asia [12–15]. A comprehensive list of tobacco products used in Europe is given in Table 2.

1.3. Exposure to second-hand smoke (SHS) in Europe

1.3.1. Definition and exposure by country

SHS is defined as the smoke emitted from the burning end of a cigarette or from other combustible tobacco products, usually in combination with smoke exhaled by the smoker [16]. The extent of exposure to SHS in a country is directly related to the prevalence of smoking and the existence, restrictiveness and enforcement of policies banning smoking in public places and workplaces. The EC Council Recommendation of 30 November 2009 on smoke-free environments, based on Article 8 of the World Health Organization Framework Convention on Tobacco Control (WHO FCTC), demanded of EU Member States the implementation of smoke-free environments in indoor public places and workplaces and in public transportation by no later than November 2012. All EU Member States have some form of smoke-free legislation, but the

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