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Convergence of decreasing male and increasing female incidence rates in major tobacco-related cancers in Europe in 1988–2010

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KEYWORDS

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Abstract Introduction: Smoking prevalence has been declining in men all over Europe, while the trend varies in European regions among women. To study the impact of past smoking prevalence, we present a comprehensive overview of the most recent trends in incidence, during 1988–2010, in 26 countries, of four of the major cancers in the respiratory and upper gastro-intestinal tract associated with tobacco smoking.

Methods: Data from 47 population-based cancer registries for lung, laryngeal, oral cavity and pharyngeal, and oesophageal cancer cases were obtained from the newly developed data repository within the European Cancer Observatory (<http://eco.iarc.fr/>). Truncated age-standardised incidence rates (35–74 years) by calendar year, average annual percentage change in incidence over 1998–2007 were calculated. Smoking prevalence in selected countries was extracted from the Organisation for Economic Co-operation and Development and the World Health Organization databases.

Results: There remained great but changing variation in the incidence rates of tobacco-related cancers by European region. Generally, the high rates among men have been declining, while the lower rates among women are increasing, resulting in convergence of the rates. Female lung

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cancer rates were above male rates in Denmark, Iceland and Sweden (35–64 years). In lung and laryngeal cancers, where smoking is the main risk factor, rates were highest in central and eastern Europe, southern Europe and the Baltic countries. Despite a lowering of female smoking prevalence, female incidence rates of lung, laryngeal and oral cavity cancers increased in most parts of Europe, but were stable in the Baltic countries. Mixed trends emerged in oesophageal cancer, probably explained by differing risk factors for the two main histological subtypes.

Conclusions: This data repository offers the opportunity to show the variety of incidence trends by sex among European countries. The diverse patterns of trends reflect varied exposure to risk factors. Given the heavy cancer burden attributed to tobacco and the fact that tobacco use is entirely preventable, tobacco control remains a top priority in Europe. Prevention efforts should be intensified in central and eastern Europe, southern Europe and the Baltic countries.

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1. Introduction

Tobacco was introduced into Europe by Spanish explorers returning from the Americas in the late fifteenth century. By the late nineteenth century, tobacco

was being widely used by men in Europe [1], first in the forms of pipe-, cigar-smoking and snuff-taking. Then, after mass production became possible at the end of the nineteenth century, cigarettes, strongly promoted by advertising and marketing efforts, became

Table 1

Populations studied by country ($N = 26$), study period, population covered by the registration area and proportion of the national population covered by the 47 national or regional studied registries.

Region	Countries	Years	2007 Population in the studied registries (thousands)	Proportion of the national population covered (%)
Central & eastern Europe				
	Belarus	1988–2007	9,702	100
	Bulgaria	1993–2008	7,660	100
	Czech Republic	1988–2008	10,323	100
	Poland ^a	1988–2008	2,042	5.2
	Russian Federation	1993–2008	142,115	100
	Slovakia	1988–2007	5,398	100
Northern Europe				
	Denmark	1988–2010	5,461	100
	Estonia	1988–2007	1,341	100
	Finland	1988–2010	5,289	100
	Iceland	1988–2010	311	100
	Ireland	1994–2007	4,339	100
	Latvia	1988–2007	2,276	100
	Lithuania	1988–2007	3,376	100
	Norway	1988–2009	4,708	100
	Sweden	1988–2009	9,148	100
	United Kingdom ^a	1988–2007	56,236	88.3
Southern Europe				
	Croatia	1988–2007	4,436	100
	Italy ^a	1988–2007	4,359	6.9
	Malta	1992–2009	409	100
	Slovenia	1988–2007	2,019	100
	Spain ^a	1988–2005	3,502 ^b	7.7
Western Europe				
	Austria	1990–2009	8,301	100
	France ^a	1988–2009	4,388	6.8
	Germany ^a	1998–2007	13,888	16.1
	Switzerland ^a	1988–2008	968	12.3
	The Netherlands	1989–2008	16,382	100
Total			328,376	

^a Regional registries: France (Doubs, Herault, Isere, Haut-Rhin, Somme, Tarn); Germany (Brandenburg, Hamburg, Saxony, Mecklenburg, North Rhine-Westphalia, Saarland); Poland (Kielce, Cracow); Italy (Modena, Parma, Ragusa, Romagna, Torino, Varese); Spain (Granada, Murcia, Navarra, Tarragona); Switzerland (Geneva, St Gall-Appenzell), United Kingdom (England and Scotland).

^b Population data from 2005.

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