Patterns of smoking in Bulgaria

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Abstract

***Background*—Although the rate of smoking-related deaths in Bulgaria is still relatively low, in international terms, it has been rising rapidly. This is likely to become worse in the future as Bulgaria faces growing pressure from transnational tobacco companies. There is, however, little information on patterns of smoking, which is necessary for development of effective policies to tackle tobacco consumption.**

***Objective*—To describe the pattern of smoking in Bulgaria and its relationship with sociodemographic factors.**

***Design*—Multivariate analysis of data on patterns of tobacco consumption from a multi-stage nationwide survey of 1550 adults.**

***Setting*—Bulgaria, in 1997.**

***Main outcome measure*—Prevalence of current cigarette smoking.**

***Results*—38.4% of men and 16.7% of women smoke. Smoking rates are strongly associated with age, with 58% of men and 30% of women aged 30–39 smoking whereas only 5% of men aged 70 years and older and almost no women of this age smoke. Smoking is more common in cities, among those who are widowed or divorced, or who do not own their home. There is no clear association with household income or, for men, with education, although there is a suggestion that smoking may be more common among more highly educated women.**

***Conclusions*—The observed pattern of smoking indicates the need for a robust policy to tackle smoking in Bulgaria, especially among the young in large cities, informed by a better understanding of why smoking rates vary among different groups.**

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Introduction

As with other former socialist countries of eastern Europe, Bulgaria faces powerful pressure from transnational tobacco companies. Although smoking-attributable mortality is still relatively low in international terms,[1] it has been rising rapidly[2] and, in the absence of an effective policy response, can be expected to add substantially to the burden of disease in the next century.

Such a policy response requires knowledge of who is smoking and how this is changing in the country concerned. Although, presumably, the transnational tobacco companies have gathered a considerable amount of data to aid marketing, there is little information in the public domain. For example, the 1997 global status report *Tobacco or health* cites only a 1989 survey, with figures only for smoking prevalence by broad age bands among adults (49% among males, 17% among females).[3] The World Health Organisation's *Health for all* database gives the same figures, with, in addition, figures for 1995 that are very similar and for 1996 that show a slight drop, to 41% in men and 16.7% in women.[4] There are, however, no details of the samples used.

We describe the results of a representative, nationwide survey undertaken to determine the prevalence of current smoking in Bulgaria and its relation to a range of socioeconomic factors.

Methods

Data were collected in a household survey conducted in May 1997 and designed to be representative of the population of Bulgaria aged 18 years and older (table 1). A two-stage random sampling procedure was used. Using administrative divisions stratified by region and size as the first sampling frame, 200 out of a total of 13 111 units were selected, with a probability of selection proportional to their size. In the second stage, 11 respondents were randomly selected from electoral registers in each unit, among whom eight respondents were to be interviewed. Electoral registers are the most complete sampling frame available in Bulgaria and are considered to be comprehensive, with the exception of a possible small under-representation of the Roma population.

The planned sample consisted of 1600 main respondents (eight respondents in 200 clusters) with 600 respondents in reserve. The final sample was 96.9% of the planned sample size. As records were not kept on how many persons refused the interview, exact response rate cannot be calculated. However, the response rate was at least 70% (1550 persons

Table 1 Characteristics of the sample and of the Bulgarian population

Characteristic	*Sample (%)*	*Population (%)*
Male (⩾18 years)	42.7	48.2 (1996)
Female (⩾18 years)	57.3	51.8 (1996)
Age (years)		
20–39	32.4	35.2
40–59	34.3	33.7
⩾60	31.1	27.5
Marital status		
Married	68.5	73.9 (1992)
Divorced/separated/widowed	18.1	15.1 (1992)
Single	13.3	11.0 (1992)
Pensioners	37.1	29.3 (1994)
Urban population (1993)	69.4	68
Rural population (1993)	30.6	32
Ethnic Turks/Bulgaro-Muslims	7.4	9–10
Roma population	3.2	3–5

Sources: *Statistical reference book, Bulgaria* 1997, Central Statistical Office, Sofia; *Statistical yearbook, Bulgaria* 1997, Central Statistical Office, Sofia.

Table 2 Percentages, age-adjusted odds ratios (OR), and 95% confidence intervals (CI) for current smoking among Bulgarian adults by a range of socioeconomic variables

		Men (unadjusted rates)		*Men (age adjusted)*		*Men (fully adjusted*)*		*Women (unadjusted rates)*		*Women (age adjusted)*		*Women (fully adjusted*)*	
Variable	*Category*	*%*	*95% CI*	*OR*	*95% CI*	*OR*	*95% CI*	*%*	*95% CI*	*OR*	*95% CI*	*OR*	*95% CI*
Age	<30	48.4	39.8–57.1	1		1		37.1	29.8–44.5	1		1	
	30–39	58.2	49.0–67.4	1.48	0.89–2.48	1.59	0.85–2.99	30.2	22.1–38.2	0.74	0.45–1.2	0. 73	0.37–1.17
	40–49	52.4	43.6–61.2	1.17	0.72–1.92	0.99	0.52–1.91	20.6	14.3–27.0	0.44	0.27–0.73	0.44	0.2–0.69
	50–59	40.8	31.1–50.5	0.73	0.43–1.25	0.62	0.3–1.24	9.1	4.6–13.6	0.17	0.09–0.32	0.17	0.07–0.31
	60–69	15.5	8.5–22.5	0.20	0.10–0.37	0.17	0.07–0.39	1.5	−0.5–3.5	0.03	0.01–0.1	0.03	0–0.07
	⩾70	6.2	1.4–11.0	0.07	0.03–0.17	0.06	0.02–0.16	0.0		0.00		0.00	
Settlement	Sofia	55.7	44.1–67.4	1		1		25.0	17.7–32.3	1		1	
	Other city	41.8	35.0–48.6	0.43	0.24–0.79	0.49	0.26–0.94	22.8	17.5–28.0	1.04	0.9–2.59	1.04	0.58–1.86
	Town	39.6	32.5–46.7	0.43	0.23–0.79	0.43	0.22–0.85	16.9	12.1–21.6	0.65	0.37–1.13	0.68	0.37–1.26
	Village	28.5	22.4–34.7	0.43	0.23–0.81	0.44	0.21–0.9	6.8	3.7–9.8	0.38	0.2–0.73	0.41	0.19–0.9
Education	Primary	27.8	22.1–33.4	1		1		6.8	4.3–9.4	1		1	
	Secondary	45.1	39.7–50.5	0.92	0.6–1.4	0.85	0.52–1.39	23.9	19.4–28.3	1.62	0.97–2.73	1.57	0.78–3.18
	Higher	43.2	32.8–53.5	0.89	0.5–1.56	0.67	0.34–1.31	23.3	16.9–29.6	1.62	0.9–2.91	1.34	0.6–2.96
Marital status	Married	35.9	31.7–40.2	1		1		14.7	11.8–17.6	1		1	
	Single	49.1	39.6–58.5	0.94	0.3–0.95	0.85	0.46–1.56	37.1	27.5–46.7	1.44	0.84–2.47	1.26	0.69–2.28
	Divorced/ widowed	40.0	28.1–51.9	1.97	1.04–3.73	2.21	1.09–4.48	13.0	8.5–17.5	3.63	2.04–6.45	4.38	2.33–8.23
Income quartile	Lowest	27.5	20.6–34.4	1		1		9.1	5.6–12.6	1		1	
	2	33.1	25.8–40.4	1.24	0.73–2.12	1.47	0.82–2.64	17.3	12.2–22.4	1.2	0.65–2.21	1.07	0.54–2.13
	3	43.5	35.0–52.0	1.19	0.69–2.05	1.31	0.7–2.44	16.9	11.2–22.6	0.87	0.46–1.64	0.74	0.36–1.53
	Highest	47.6	40.9–54.4	1.19	0.72–1.94	1.43	0.78–2.62	24.2	18.9–29.5	1.25	0.71–2.19	1.14	0.58–2.24
Home ownership	Yes	37.4	33.5–41.2	1		1		15.4	12.9–17.9	1		1	
	No	53.6	40.5–66.6	2.06	1.16–3.67	1.81	0.96–3.42	32.4	21.8–43.1	2.05	1.19–3.51	2.34	1.27–4.31
Financial situation	Good	40.0	27.1–52.9	1		1		27.6	16.1–39.1	1		1	
	Average	43.2	36.1–50.4	1.2	0.63–2.31	1.29	0.66–2.54	17.5	12.8–22.1	0.54	0.27–1.11	0.53	0.25–1.12
	Rather poor	40.8	34.2–47.4	1.32	0.69–2.52	1.39	0.7–2.79	15.3	11.2–19.3	0.7	0.34–1.42	0.7	0.32–1.51
	Poor	30.8	24.3–37.2	0.94	0.49–1.84	0.96	0.46–2.03	15.1	10.6–19.6	0.66	0.32–1.36	0.64	0.28–1.44
Religion	Orthodox	38.0	34.1–42.0	1		1		16.8	14.2–19.5	1		1	
	Muslim	45.8	31.7–59.9	1.12	0.59–2.11	1.54	0.74–3.19	15.2	7.3–23.1	0.6	0.3–1.19	0.99	0.42–2.35
	Other	36.8	15.2–58.5	0.72	0.27–1.93	0.55	0.19–1.59	23.5	3.4–43.7	1.69	0.46–6.17	2.02	0.47–8.58
Believer	Yes	36.3	31.1–41.5	1		1		14.8	12.1–17.6	1		1	
	No	40.2	34.9–45.5	0.89	0.63–1.27	0.94	0.65–1.36	21.4	16.3–26.5	1.2	0.8–1.79	1.25	0.8–1.94

*Fully adjusted odds ratios are adjusted for all variables in the table.

interviewed out of 2200 (11 randomly selected persons in 200 primary sampling units)).

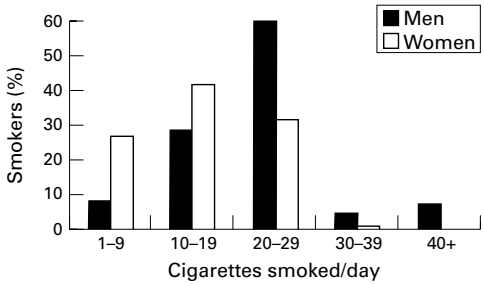
Face-to-face interviews were conducted using a structured questionnaire drawing on existing survey instruments such as the World Bank Living Standard Measurement Study[5] and the Health Survey for England.[6] The questionnaire collected data on a range of variables related to lifestyle, health status, household income, and socioeconomic status, use of health services, total expenditure for health care, including informal payments, and ability and willingness to pay for health care. Concerning smoking, respondents were asked: "Do you smoke", with possible responses being: "Yes, every day"; "Sometimes"; and "No". Those smoking every day were defined as smokers and also asked the average number of cigarettes smoked daily.

Data were analysed using the Statistical Package for the Social Sciences (SPSS). As age and sex were strong determinants of smoking rates, results were analysed separately for men and women and the odds ratios for being a smoker according to a range of variables were calculated, with adjustment only for age and for all of the other variables studied using logistic regression. Significance of the differences in smoking prevalence between groups was assessed using binomial logistic regression in SPSS. Most of the variables are self-explanatory but, drawing on earlier work in Russia that showed a lower rate of smoking among regular church attenders,[7] respondents were asked about their religion and whether they classified themselves as a "believer". The variable "financial situation" refers to a question: "As a whole, how would you assess the financial situation of your household in the last month?".

Results

Responses were obtained from 1550 individuals. The results of the analyses are summarised in table 2. The overall prevalence of smoking was 38.4% among men and 16.7% among women. Smoking was strongly associated with age. For men, the highest rate was in the age group 30–39 whereas for women it was among those under 30. Smoking was also more common in Sofia and, for women, in cities and towns than in villages. Among men, there was no significant association with education. Among women, although just short of statistical significance, smoking was most common among those with secondary or higher education (reaching significance if the two categories are combined). For both sexes, the probability of smoking was much higher if the respondent was widowed or divorced. There was no consistent relationship with household income but home ownership was strongly predictive of not smoking. Although not statistically significant, compared with orthodox Christians, male Muslims were more likely to smoke, whereas female Muslims were less likely.

Few women smoked more than 20 cigarettes per day whereas a significant minority of men did (figure).



Distribution of number of cigarettes smoked per day (men and women).

Discussion

Before discussing the results, the limitations of the survey must be considered. Although the overall sample was relatively large, the small size of certain groups reduced the power to detect significant differences. Furthermore, although a quite close match, the sample was not entirely representative of the Bulgarian population. Ethnic minorities were likely to be under-represented, although this is complicated by what is believed to be under-registration in the census. Women and pensioners were over-represented as were, to a lesser extent, the divorced, although their numbers were likely to have risen since 1992 (table 1).

With these caveats, however, this survey provides information, for the first time, on the socioeconomic determinants of smoking among the Bulgarian population. As we note in the introduction, we have been able to find one other set of figures for smoking prevalence, which gives somewhat different results, but we have not been able to determine the nature of the sample used or its representativeness in that survey. For example, as our results indicate, a survey confined to major cities would have given results broadly similar to those in the earlier one.

There are three possible explanations for the observation that the prevalence of smoking is much higher among the young than the old, all of which are likely to have had some effect. It may be due to: (a) selective mortality among the old, with smokers dying younger; (b) smokers quitting as they grow older; or (c) a higher likelihood of those born in recent years taking up smoking. It is not possible, with the data available, to determine the relative importance of each. However, as the rate of lung cancer has, historically, been low in Bulgaria, and as the patterns of smoking are now similar for both sexes although it is known that female smoking was previously rare, an increase in smoking prevalence seems likely to be particularly important.

The picture is consistent with a scenario in which smoking is relatively infrequent in the more traditional sections of the population, such as older people living in villages, and most common in the cities, where there will have been most exposure to Western influences and, especially, tobacco advertising. Some of the other findings are consistent with what is seen in other countries, such as the higher smoking prevalence among those not owning their own homes or who are widowed or divorced; but the absence of a link with family income or, for men, education, is inconsistent with the current pattern in the West. In our study it was not possible to examine any differences in use of local or imported cigarettes between groups and this should be explored in any subsequent study.

Bulgaria has already enacted wide-ranging legislation against tobacco, including a ban on many forms of advertising, a prohibition on sales near schools, and restrictions on smoking in many public places; however, as in other parts of eastern Europe, the laws are inadequately enforced. On the basis of existing trends in mortality, it has been estimated that the death rate from lung cancer will almost double in Bulgaria in the next 20 years.[8] The high rates of smoking among the young suggest that this is likely to increase further.

An effective and comprehensive anti-smoking policy is urgently needed. As a start, it is important to enforce the legislation that already exists but it will also be necessary to understand better why Bulgarians smoke. This survey has indicated the scale of the problem but, by itself, is insufficient. What is now needed is detailed qualitative research, using techniques such as focus groups, to understand why different groups smoke and which messages would be most effective in persuading them to stop or, preferably, preventing the onset of smoking.

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1 Peto R, Lopez AD, Boreham J, *et* al. Mortality *from smoking in developed countries, 1950–2000*. Oxford: Oxford University Press, 1994.
2 Kubik AK, Parkin DM, Plesko I, *et al.* Patterns of cigarette sales and lung cancer mortality in some central and eastern European countries, 1960–1989. *Cancer* 1995;**75**: 2452–60.
3 World Health Organisation. *Tobacco or health: a global status report*. Geneva: WHO, 1997:287–90.
4 World Health Organisation. *Health for all* database. Copenhagen, Denmark: WHO, 1998.
5 Ainsworth M, Koda G, Lwihula G, *et al. Measuring the impact of fatal adult illness in sub-Saharan Africa. An annotated household questionnaire*. Living Standards Measurement Study, 1992, Working paper No. 90, Washington, DC: World Bank, International Bank for Reconstruction and Development.
6 Bennett N, Dodd T, Flatley *et al. Health Survey for England.* London: Office of Population Censuses and Surveys, Social Surveys Division, 1995.
7 McKee M, Bobak M, Rose R, *et al.* Patterns of smoking in Russia. *Tobacco Control* 1998;7:22–6.
8 Hristova L, Dimova I, Iltcheva M. Projected cancer incidence rates in Bulgaria, 1968–2017. *Int J Epidemiol* 1997;**26**:469–75.