

Regional Pattern of Smoking in Croatia

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ABSTRACT

The aim of this paper was to investigate the regional smoking pattern in Croatia. The data from the Croatian Adult Health Survey from 2003 were used for the study (N=9,070). The results of this study suggest that the prevalence of smoking among men was the highest in the Eastern parts of the country, followed by the Mountainous region. In contrast, the prevalence of smoking among women was the highest in City of Zagreb. The results support the strong regional pattern, with more pronounced differences in women (those from the City of Zagreb had more than twice higher prevalence than those from the Northern parts of the country). Smoking is still relatively highly prevalent in Croatian adult population (24–33% in men, and between 10 and 21% in women, depend on region). This suggesting that preventive actions and public health interventions are needed to reduce the smoking prevalence and thus improve the population health.

Key words: regional pattern, smoking, risk factor, addiction, Croatian Adult Health Survey

Introduction

Smoking is one of the most important public health problems today, mainly due to the fact that it is strongly associated with cardiovascular diseases that are the leading cause of death rate among smokers¹. Smoking doubles the risk of death caused by cardiovascular diseases, and 30–40% of all deaths caused by coronary diseases are attributed to smoking¹. Smoking is the main risk factor in developing malignant diseases^{2–10}.

Previous studies had shown certain levels of regional pattern of smoking, as well as the difference between genders and various ethnic groups^{11–13}. The prevalence of smoking is higher in more urbanized areas¹⁴. Smoking also shows diversity across Europe, with higher prevalence of women smokers in the Northern parts of Europe^{15,16}.

According to the previous data, every third Croatian citizen was a smoker¹⁷. Disease burden of smoking is quite high in Croatia – roughly 10,000 deaths annually are associated with smoking, and every fifth death is caused by the smoking induced diseases¹⁷. In Croatia, in the year 2000 the consumption of cigarettes was 7,609 million in total, or 1,995 per citizen¹⁸. The existing tax structure makes cigarette-retailing prices higher than in

the neighboring countries and it develops illicit trade. In 2006 the industrial production of cigarettes in Croatia was 14,457 million pieces¹⁹. Tobacco industry makes up 2.7% of the gross value added in the Croatian manufacturing industry¹⁹. This data shows the importance of the tobacco industry and implicates government interest in tobacco industry. In some regions of Croatia the government stimulates cultivation of tobacco plant. On the other hand present legislation against smoking is generally declarative. The promotion programs and campaign actions²⁰ don't have adequate support by the government. A follow-up study from 1972 to 1982 in Croatia showed that there were differences between smoking prevalence by sex, and a higher prevalence of smokers in the continental region than in the coastal region²¹. These results are explained by authors as a result of rural or urban areas, unfit life and work conditions, and different diet structure. The frequency of men smokers has declined while the frequency of female smokers has grown in Croatia in the period between 1970 and 1997^{22,23}. The aim of this paper is to show if there is a regional pattern of smoking in Croatia and if there's a difference in prevalence of smoking by gender.

Material and Methods

Data on smoking, use of preventive health care services, and employment status were taken from the 2003 Croatia Adult Health Survey (CAHS), which covered a wide range of health-related variables many of them presented in other papers of this special issue^{24,25}. CAHS is a cross-sectional survey which provided the basis for the calculation of representative estimates for a number of health related risk factors, presented more in detail earlier²⁵. A multistage stratified sample design was used to draw a representative sample of general adult population. The survey targeted persons aged ≥18 years living in private households in the Republic of Croatia. Persons living in non-conventional households and institutions, full-time serving members of the Croatian Armed Forces, and the residents of certain remote regions were excluded from the survey. The 2001 Croatian Census was used to select a representative sample of households to be included in this survey²⁶. The Croatian Bureau of Statistics provided the health survey team with 11,345 randomly selected household addresses from 6 officially defined regions of Croatia (i.e. Northern, Eastern, Central, Mountainous, Coastal and the City of Zagreb). No other individual data were used for the sample definition. In total, 10,766 households were selected to participate in the 2003 CAHS. Response was obtained from 9,070 individuals, which gave the overall response rate of 84.3%. The questionnaire was administered by trained public health nurses in face-to-face interviews²⁵. Data were collected over three months, from April to June 2003. Survey results were representative of the regional, sex, and age structure of the Croatian adult population i.e., three age groups of 18–39, 40–64, ≥65 years of both men and women were represented.

In Survey, smoking was assessed by eleven questions regarding smoking habits of participant and his/her social environment. We are focusing here on present smokers, so data from single question on present smoking: »Do you smoke at the present time (cigarettes, cigars, pipe)?« were analyzed and presented in this paper.

Statistical analysis

For the analytical and hypothesis testing purposes we used as an outcome the share of smokers within the whole sample population. Contingency tables and chi-square test were used in the analysis. All confidence intervals (CI) were calculated with 95% probability levels. Software SAS for Windows (version 8.2, SAS Institute Inc, Cary, NC) was used for the analysis¹⁷.

Results

When analyzed on the weighted data (which provides estimates for the entire population rather than just the sample), the frequency of men smokers was shown to be similar in the East (33.10%, 95% CI=25.30–40.90) and the Mountainous region (32.20% 95% CI=28.79–35.62), followed by the Central region (29.43% 95% CI=24.23–34.62) (Table 1, Figure 1). Among women, the highest

TABLE 1
REGIONAL DISTRIBUTION OF SMOKING IN CROATIA

REGION	Men		Women	
	%	95% CI	%	95% CI
Eastern	33.10	25.30–40.90	16.95	13.98–19.92
Northern	24.07	18.13–30.01	10.54	7.37–13.70
Central	29.43	24.23–34.62	12.53	10.16–14.90
City of Zagreb	24.78	19.37–30.18	21.45	18.08–24.83
Mountainous	32.20	28.79–35.62	16.92	7.19–26.65
Coastal	26.39	21.58–31.20	19.12	16.73–21.50



Fig. 1. Prevalence of smoking among men in Croatia.

frequency of smokers was recorded in the City of Zagreb (21.45% 95% CI=18.08–24.83), followed by the Coastal region (19.12% 95% CI=16.73–21.50) (Table 1, Figure 2). Notably, the lowest frequency of smokers in both genders



Fig. 2. Prevalence of smoking among women in Croatia.

was recorded in the Northern region (men 24.07%; women 10.54%).

Discussion

The consumption of cigarettes in Croatia is around eight billion pieces annually¹⁸, and an average Croatian consumer spends a considerable part of his/her income on tobacco. There are more than one million smokers in the country of only about four million residents. In comparison to 1997 there has been a reduction in the frequency of smokers among both genders^{25,27}.

The smoking prevalence is significantly higher among men than among women. That gender pattern is visible in all the observed regions. Research up to now has shown a certain regionalism of smoking habits, as well as a difference between genders and ethnic groups^{11–13}. The strongest gender differences were recorded in the City of Zagreb, with strong women predominance pattern. This could be related to the modifying effects of the level of urbanization associated with the weakening the conservative and traditional opinions and lifestyle patterns. On the other hand, this could be a result of the growing equality among genders and the more profound global influences. Previous studies have reported that the prevalence of smoking was higher in more urbanized areas¹⁴, and that the differences between the urban and the rural environment depend on education and gender²⁸. The smallest number of smokers in both genders in this study was recorded in the Northern region. Interestingly, this is the region of Croatia where cultivation of tobacco in agriculture is traditional activity. Despite this, the preva-

lence of smoking in this region is not as high as in others. Higher prevalence of smokers in the continental parts of the country could be explained as the result of social and cultural differences which are reflected on the lifestyles and smoking as well. This study suggests that smoking is important public health issue in Croatia. In order to be more effective future public health plans and interventions should target regional specificity.

Conclusion

The data about smoking habit, which are burst out of CASH, is the first time describing this public health problem in the entire Croatian population.

This paper shows differences in smoking habits between regions in Croatia. Future research should show influence of other risk factors connected with smoking habits (e.g. age, education level, income, migrations, marital status, and some other aspects).

While planning interventions in the population, we must consider all of these characteristics and influences, including regional differences. The smoking cessation efforts should engage all segments of society, and requires stronger activity of the national health-care system.

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REGIONALNA RASPODJELA PUŠENJA U HRVATSKOJ

SAŽETAK

Cilj rada je bio istražiti regionalnu raspodjelu navike pušenja u Hrvatskoj. Koristili smo podatke dobivene Hrvatskom zdravstvenom anketom 2003 (N=9,070). Rezultati su pokazali da je prevalencija pušenja u muškaraca najviša u istočnom dijelu zemlje, a potom u gorskoj regiji. Za razliku od toga, u žena je prevalencija pušenja najviša u Zagrebu. Utvrđen je regionalni obrazac navike pušenja koji je izraženiji za žene kod kojih je prevalencija u gradu Zagrebu dvostruko i više veća od prevalencije u sjevernoj regiji. Pušenje je još uvijek visoko prisutno u Hrvatskoj populaciji (24–33% u muškaraca i između 10 i 21% u žena, ovisno o regiji), što ukazuje na potrebu preventivnih aktivnosti i javnozdravstvenih intervencija kako bi se smanjila prevalencija pušenja i poboljšalo zdravlje populacije.