

Smoking prevalence and illicit cigarettes trade in 18 European countries

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Abstract

In Europe, limited adequate data on tobacco, allowing for between-country comparisons, are available. Moreover, scanty information, other than those provided by the tobacco industry, is available on the quantitative extent of illicit cigarette trade. The Pricing Policies And Control of Tobacco in Europe (PPACTE) project aims to provide a comprehensive analysis of the efficacy of fiscal policies to control tobacco. The objective of the present research is to provide updated data on smoking prevalence and to estimate the size of illicit trade in Europe, validating self-reported data with objective information. Within the PPACTE project, a face-to-face survey on smoking has been conducted in 18 European countries (Albania, Austria, Bulgaria, Czech Republic, Croatia, England, Finland, France, Greece, Hungary, Ireland, Italy, Latvia, Poland, Portugal, Romania, Spain and Sweden) in 2010 on a total sample of 18,056 individuals. The survey was representative, in each country, of the population aged 15 years or over in terms of sex, age, geographic area and socio-economic characteristics. Information on smoking habits and on the latest purchased cigarette pack was collected. A measure called Identification of an Illicit Pack was built in order to validate self-reported information on illicit cigarettes with objective data. In Europe, the prevalence of current smokers was 27.2% (30.6% of men and 24.1% of women), ranging between 16.3% in Sweden and 40.9% in Bulgaria. The proportion of illicit packs was 6.5% overall, with peaks in Latvia (37.8%) and Sweden (18.8%). Illicit cigarettes were more frequent among less educated smokers and in countries bordering with Ukraine, Russia, Moldova and Belarus, which are major suppliers of illicit cigarettes. Our study indicates that there are large differences across European countries in terms of smoking prevalence and extent of illicit trade. The supply of illicit tobacco, rather than its price, is a key factor contributing to tax evasion.

1 Introduction

According to the World Health Organization (WHO) Framework Convention on Tobacco Control (FCTC), population-based data, collected at national or international level, are essential in order to plan efficient strategies to reduce tobacco use. Despite this, less than a half of the European Union Member States measure smoking prevalence on an annual or biennial basis. Information on smoking, such as smoking prevalence, male-to-female prevalence ratio and current-to-ex smoking prevalence ratio, is important to identify the stage of the tobacco epidemic and consequently to choose the most efficient tobacco control strategy to be implemented in each country. The increasing of cigarette price/taxation is considered among the most efficient strategies to control tobacco (IARC, 2011). Tobacco tax avoidance and tax evasion are legal or illegal activities, respectively, which result in paying less or no taxes on the cigarette pack. These activities undermine therefore the efficacy of tobacco fiscal policies. Transparent public data on tax evasion, published independently from the tobacco industry, are limited and, in many countries, nonexistent. Moreover, it is difficult to measure the size of the illicit trade of cigarettes because, for example, law enforcement agencies prefer not to publicise the scope of their activity for security reason (IARC, 2011).

2 Objectives

The main objectives of the present research are: i) to provide updated data on smoking prevalence, allowing for cross-national comparisons in 18 European countries, and ii) to estimate the size of illicit trade in Europe, validating self-reported data with objective information.

3 Materials and methods

The Pricing Policies And Control of Tobacco in Europe (PPACTE) project aims to provide a comprehensive analysis of the efficacy of fiscal policies to control tobacco. Within the PPACTE project, a face-to-face survey was conducted in 18 European countries between January and July 2010 (Gallus & La Vecchia, 2012; Gallus et al., 2012; Joossens et al., 2012). The 18 countries were Albania, Austria, Bulgaria, Czech Republic, Croatia, England, Finland, France, Greece, Hungary, Ireland, Italy, Latvia, Poland, Portugal, Romania, Spain and Sweden. Information on socio-demographic characteristics and smoking habits and behaviours were collected on 18,056 individuals, who were representative, in each country, of the general population aged 15 years or more, according to sex, age, geographic area and socio-economic characteristics. Statistical weights were used to assure representativeness of the sample for the various country population.

Current smokers were defined as individuals who had smoked 100 or more cigarettes (manufactured or hand-rolled) in their lifetime, and smoked at the moment the survey took place; ex-smokers were defined as those who had smoked at least 100 cigarettes in their lifetime, but did not smoke at the time the survey took place.

Interviewers were shown by current smokers the latest pack of manufactured or hand-rolled cigarettes bought, and collected information on its provenance, health warnings, tax stamp and price. Using those data, we validated self-reported direct questions on illicit packs building a comprehensive measure called Identification of an Illicit Pack (IIP), in order to give an objective estimate of the size of the illicit trade in Europe. A cigarette pack or an hand-rolled pouch was defined as illicit if it had at least one of the following characteristics: i) pack bought from an illicit source (according to self-reported information given by the interviewee); ii) pack without the appropriate health warning (i.e., a pack with health warnings in a foreign language or without health warnings, unless the pack had been bought over the internet, in another country or in duty-free shops); iii) pack without the appropriate tax stamp (i.e., a pack with a foreign stamp or absent tax stamp, unless the pack had been bought over the internet, in another country or in duty-free shops); or iv) pack with an extremely low price (i.e., a price lower than the 70% of the lowest price of cigarettes in the respective country in 2010, according to country profiles of WHO; Joossens et al., 2012).

In the present study we estimated smoking prevalence and the extent of illicit trade overall and by selected individual-level (sex, age and level of education), and country-specific characteristics. Among the latter characteristics, we considered per capita Gross Domestic Product (GDP) adjusted for Purchasing Power Parity (PPP) and Tobacco Control Scale (TCS) score (Joossens et al., 2010), in order to categorize countries on the basis of their wealth and implementation of tobacco control activities, respectively. Moreover, we categorized countries according to the 2010 price of one pack of Marlboro standardized by GDP adjusted for PPP, to take into account the real purchasing power in different countries. We also considered countries sharing a land or sea border with Ukraine, Russia, Moldova or Belarus (i.e., Bulgaria, Finland, Hungary, Latvia, Poland, Romania and Sweden).

Odds ratios (OR) for current smokers and for IIP, and corresponding 95% confidence intervals (CI), were estimated using generalized linear mixed model for binary

outcome variables. The study country-effects were considered as random intercepts and adjusting variables, considered as fixed effects, were sex, age and level of education. OR for illicit trade were further adjusted by smoking intensity.

In addition to sample specific statistical weights, we applied an additional weighting factor to estimate findings for the overall sample, with each country contributing in proportion to its population aged 15 years or over.

4 Results

Among 18,056 European subjects, 56.8% (49.5% of men and 63.6% of women) reported to be never smokers, 16.0% (19.9% of men and 12.3% of women) ex-smokers and 27.2% (30.6% of men and 24.1% of women) current smokers. The countries where the prevalence of current smokers was highest were Bulgaria (40.9%) and Greece (38.9%), while the lowest prevalence was observed in England (24.9%), Italy (22.0%) and Sweden (16.3%). Smoking prevalence for men ranged between 15.7% (Sweden) and 44.3% (Bulgaria), and for women between 11.6% (Albania) and 38.1% (Ireland). A significant inverse trend was found between smoking prevalence and level of education (adjusted OR for low vs. high level of education was 1.50, 95% CI: 1.35-1.66), consistent in both sexes. Smoking prevalence was also highest in countries with a relatively low per capita GDP adjusted by PPP (OR=1.08, 95% CI: 1.00-1.16) and with low tobacco control activities (OR=1.27, 95% CI: 1.18-1.37). Male-to-female smoking prevalence ratios ranged from 0.85 in Spain to 3.47 in Albania, and current-to-ex prevalence ratios from 0.68 in Sweden to 4.28 in Albania.

The overall proportion of IIPs in the 18 European countries was 6.5%. The highest prevalence of IIPs was observed in Latvia (37.8%), followed by Sweden (18.8%) and Bulgaria (18.3%). On the other hand, a low prevalence of IIPs was observed in Greece (1.0%), Austria (0.8%) and Portugal (0.0%). No significant differences were found according to sex, age and cigarette consumption. Tax evaders were more frequently current smokers with a lower level of education (as compared to more educated smokers, ORs were 1.60, 95% CI: 1.03-2.50 for intermediate and 2.57, 95% CI: 1.64-4.02 for less educated subjects; p per trend <0.001) and those buying hand-rolled tobacco pouches instead of manufactured cigarette packs (OR=2.67, 95% CI: 1.86-3.84). The frequency of IIP was highest in countries with a lower price of a pack of Marlboro, although in the multi-level analysis ORs did not reach a statistical significance (OR for low vs. high price was 3.27; 95% CI: 0.92-11.6). No specific association was found between IIP and the price of a cigarette pack standardised by GDP (OR for low vs. high price was 0.96; 95% CI: 0.20-4.52). Illicit packs were significantly more frequent in countries with a land or sea border with Ukraine, Russia, Moldova and Belarus (adjusted OR=4.22; 95% CI: 1.58-11.3).

5 Discussion

In the present survey, we found substantial differences in terms of smoking characteristics across European countries. We observed that the level of education, used as a proxy of socio-economic status, is inversely related to smoking prevalence, suggesting that less educated individuals should be a key-target population for interventions aiming to prevent addiction to smoking. Moreover, we found that lower income countries and those with less strict tobacco control activities, mainly from Eastern Europe, had less favourable smoking patterns.

The definition of a quantitative measure of the illicit trade of cigarettes is difficult for different reasons, and transparent public data on the issue are limited. Despite some limitations of our methodology, IIP represents the most accurate available measure of the

extent of tobacco tax evasion, since it is ad-hoc measure built using objective information. Moreover, it is important to collect data on illicit trade independently from the tobacco industry, which systematically recommends governments not to increase cigarettes price/taxation, arguing that this would increase the level of illicit trade (Joossens et al., 1998). In disagreement, our data suggest that illicit trade is not directly related to tobacco price. Factors other than price influence illicit trade. In particular, our study shows that illicit trade is more frequent in countries with a land or sea border with Russia, Ukraine, Moldova or Belarus, which are major suppliers of illicit cigarettes (Joossens et al., 2012). Our findings suggest therefore that the supply of illicit cigarettes is an important factor, which contributes to tax evasion. Illicit trade is not limited to manufactured cigarettes, as a high proportion of illicit packs has been observed among hand-rolled tobacco pouches.

In conclusion, our data represent an important and reliable tool to define future efficient intervention strategies to control tobacco and their target sub-populations in various European countries. Moreover, this is the first independently financed study providing estimates on illicit trade of cigarettes in 18 European countries, using for the first time an objective measure to evaluate the extent of tobacco tax evasion in multiple European countries. Our findings underline the need for an independent monitoring of the illicit trade of cigarettes on a regular basis, using a clearly defined methodology and publicly available results.

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