

## Environmental tobacco smoke of youngsters in Czech Republic, Hungary, Poland and Slovakia – Findings from the Global Youth Tobacco Survey (GYTS)

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### Summary

**Objectives:** To present data on Environmental Tobacco Smoke (ETS), Global Youth Tobacco Survey (GYTS), Czech Republic, Hungary, Poland and Slovakia.

**Methods:** A questionnaire survey of a representative sample of 16 918 schoolchildren aged 13–15 years (2002–2003).

**Results:** Exposure to ETS was reported more frequently in public places than in homes and more frequently from current smokers (CS) than from never smokers (NS). ETS in homes was lower in Czech (57.6 % in CS, 24.7 % in NS) than in other countries (the highest in Poland: 93.0 % in CS, 80.9 % in NS). ETS in public places was highest in Hungary (96.9 % in CS, 89.2 % in NS), lowest in Czech (90.1 % in CS, 57.3 % in NS). Most students considered ETS as harmful and presented positive attitudes towards smoking ban.

**Discussion:** ETS in studied countries, save the Czech Republic, exceeded the global prevalence, while the situation is better than in numerous other Eastern European countries.

**Keywords:** Environmental tobacco smoke – Epidemiology – Adolescent

Environmental tobacco smoke (ETS), known also as passive smoking, represents one of the most important issues of tobacco control. Passive smoking is known to have adverse health effects, particularly on young people. It has

also psychological influence on young people's behaviour and smoking of adults plays an important role in initiation and development of tobacco use in children (Andersen et al. 2002; Ellickson et al. 2001). Beside these negative effects, prevalence and some epidemiological characteristics of ETS can be also considered as a marker of social tolerance towards tobacco use in the given community. Therefore, an important part of the Global Youth Tobacco Survey (GYTS) surveillance system has been focused also on the ETS.

This paper uses GYTS data from Czech Republic, Hungary, Poland and Slovakia – known as the Visegrad Four (V4) – to analyse selected aspects of ETS: exposure to cigarette smoke both in homes and in public places as well as knowledge on harmfulness of the cigarette smoke to passive smokers. These issues have been evaluated also separately in never smokers and current smokers. Moreover, attitude towards ban on smoking in public places is analysed.

V4 forms a geographical whole spreading over the major part of the Central Europe, which is linked together through a common history as well as close social and economic relations. Comparison of GYTS data on ETS across the region may help to identify important factors in designing and implementing effective tobacco control programs common and unique to the V4.

### Material and methods

The GYTS uses a two-stage cluster sample survey design that produces representative samples of students in grades associated with ages 13–15. Data are obtained through uni-

	Sample size	School response rate	Student response rate	Overall response rate*
<i>Czech Republic</i>	4,149	100.0% (n = 50)	88.0%	88.0%
<i>Hungary</i>	4,484	98.5% (n = 66)	87.2%	85.9%
<i>Poland</i>	3,691	92.2% (n = 117)	78.5%	72.4%
<i>Slovakia</i>	4,594	98.3% (n = 59)	87.4%	85.9%

**Table 1** Sample sizes and response rates

\* Overall = School \* Student

a) Exposed to smoke in their home	Never smokers		Current smokers	
	boys	girls	boys	girls
<i>Czech Republic</i>	27.1 ± 4.7	22.7 ± 2.9	58.5 ± 4.3	56.3 ± 3.7
<i>Hungary</i>	72.0 ± 4.8	79.1 ± 3.2	92.2 ± 1.9	91.5 ± 2.5
<i>Poland</i>	77.5 ± 4.4	83.5 ± 4.2	92.5 ± 2.7	93.6 ± 3.8
<i>Slovakia</i>	65.8 ± 3.5	70.3 ± 4.0	89.4 ± 2.8	92.5 ± 2.2
b) Exposed to smoke from others in public places	Never smokers		Current smokers	
	boys	girls	boys	girls
<i>Czech Republic</i>	59.2 ± 5.0	55.6 ± 5.1	89.0 ± 2.1	91.4 ± 2.1
<i>Hungary</i>	88.9 ± 3.5	89.6 ± 3.7	96.7 ± 1.8	97.8 ± 1.6
<i>Poland</i>	88.0 ± 3.0	86.7 ± 3.1	95.4 ± 2.2	96.9 ± 1.8
<i>Slovakia</i>	76.9 ± 2.9	77.7 ± 2.7	90.3 ± 2.7	92.4 ± 2.3
c) Definitely think smoke from others is harmful to them	Never smokers		Current smokers	
	boys	girls	boys	Girls
<i>Czech Republic</i>	71.9 ± 3.9	69.0 ± 4.7	51.8 ± 2.9	51.1 ± 5.3
<i>Hungary</i>	65.1 ± 5.1	69.4 ± 4.5	53.0 ± 4.3	54.2 ± 5.6
<i>Poland</i>	67.2 ± 4.4	78.0 ± 4.3	53.4 ± 7.5	49.5 ± 8.1
<i>Slovakia</i>	76.4 ± 3.4	77.0 ± 4.6	55.7 ± 5.1	51.6 ± 7.1

**Table 2** Environmental tobacco smoke – prevalence and attitudes (% ± C 195 %)

form self-administered anonymous questionnaires containing 89 questions. The sampling frame includes all schools containing any of the identified grades, i.e. 13–15 years old students. At the first stage, the probability of schools being selected was proportional to the number of students that had enrolled in the specified grades. At the second sampling stage, classes within the selected schools were randomly selected. All students attending the school the day the survey was administered in selected classes were eligible to participate. A weighting factor was applied to each student record to adjust for non-responses and variation in the probability of selection at the school, class, and student levels. SUDAAN, a software package for statistical analysis of correlated data, was used to compute 95% confidence intervals (Shah et al. 1997). Differences between prevalence estimates were considered statistically significant if the 95% confidence intervals did not overlap.

The fieldwork was performed in 2002 and 2003. Details of the methodology are included in previous publications on GYTS (GYTS Collaborating Group 2003; GYTS Collaborative Group 2002).

Measure of ETS in homes was constructed from the questions asking how often respondents see smoking father, mother, brother/sister, best friend and other people in their home. Those who answered “About every day” or “Sometimes” to at least one of these questions were considered as exposed to smoke in their home. ETS in public places was measured from the question “How often do people smoke in your presence, in places other than in your home”. Students were also asked if they think the smoke from other people’s cigarettes is harmful to them and if they think smoking in public places should be banned.

As current smokers were defined those who smoked cigarettes on one or more days during the past month. Never smo-

kers were those who never tried to smoke or experiment with cigarettes, if only one, two puffs/pulls.

The GYTS sampling methodology assured that the chosen sample included all socio-economic and geographic subgroups as well as girls/boys ratio in the same proportions as in the general population. Moreover, the GYTS is designed to allow direct cross-country analysis by a standard methodology as well as the uniform questionnaire.

In total, samples included 16 918 pupils. The school response rates were over 90 % for all four countries (Table 1). The student response rates ranged from 88.0 % in the Czech Republic to 78.5 % in Poland. The overall response were all over 70 %; thus yielding highly representative samples from each of the four countries (Table 1).

## Results

In general, exposition to ETS in public places was significantly more frequently reported than ETS in homes. This difference held for all subgroups (current and never smokers, boys and girls) in all analysed countries. Also current smokers in all countries consistently reported more frequently ETS than never smokers. On the other hand, no significant gender differences have been found in ETS exposition.

### *ETS in homes* (Table 2a)

More than half of never smokers and nine of ten current smokers reported ETS in their home in Hungary, Poland and Slovakia. In the Czech Republic, the prevalence was significantly lower (24.7 % of never smokers and 57.6 % of current smokers).

### *ETS in public places* (Table 2b)

In Hungary and Poland almost nine of ten never smokers and almost all of current smokers (96.9 % in Hungary and 96.1 % in Poland) reported ETS in public places. A relatively lower prevalence was found in Slovakia and particularly in the Czech Republic, where the proportion of never smokers exposed to ETS in public places was significantly the lowest (57.3 %).

### *Knowledge and attitudes towards ETS* (Table 2c, Table 3)

A majority of students in all surveyed countries think that smoke from others is harmful to them. Slightly above half of current smokers and approximately 7 of 10 never smokers presented this opinion. In Poland among never smokers significantly more girls (78.0 %) than boys (67.2 %) are aware of harmfulness of passive smoking.

Similarly, an unequivocal majority of students in all countries

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**Table 3** Attitude towards restrictive legislative measures (% ± C 195 %)

Think smoking should be banned from public places	All students
<i>Czech Republic</i>	67.8 ± 2.1
<i>Hungary</i>	65.7 ± 2.9
<i>Poland</i>	71.0 ± 2.1
<i>Slovakia</i>	76.8 ± 1.9

presented positive attitude towards ban on smoking in public places, while in Slovakia the percentage (76.8 %) significantly exceeded other three countries.

## Discussion

The formulations of questions on ETS used in GYTS reflect perception of passive smoking by schoolchildren rather than absolute levels of air contamination. Apart from direct biologic effects of passive smoking, such an approach is more suited to evaluate its negative psychological effect. Moreover, the formulation “How often do people smoke in your presence, in places other than in your home” directly concerns respondent’s experience and not his/her general opinion on the occurrence of ETS in a given community. On the other hand, one should understand that formulations used in GYTS, beside public places themselves, also includes many situations such as neighbouring households, private parties etc. This should be retained for the interpretation of results as well as in comparing with other data, directly referring to public places (e. g. in relation to restrictive measures etc.).

ETS occurrence in Hungary, Poland and Slovakia clearly exceeded the global prevalence, i.e. in countries where GYTS has been implemented (ETS in homes 48.9 %; ETS in public places 60.9 %) (GYTS Collaborative Group 2002; CDC 2006). Czech Republic represents an exception in this aspect, since the situation seems relatively more favourable and prevalence is comparable with the global one. Considering European countries, GYTS revealed dramatic differences within the studied populations and communities (CDC 2006). Some countries, particularly in Eastern Europe, have shown very high prevalence of ETS in homes, reaching almost 100 % (e. g., Serbia 97.4 %, Bosnia and Herzegovina 96.7 %). However, ETS in public places in Hungary and Poland almost reaches the highest percentages in Europe (Republika Srpska 91.4 %, Serbia 91.3 %, Bosnia and Herzegovina 89.8 %). Unfortunately, as GYTS has not yet been carried out in Western European countries, we could not validly evaluate the overall situation in Europe. Instead, we should rather speak about Central and Eastern Europe (CEE). Data from Western Europe, published in the last 10 years also showed a rather wide range of the occurrence of ETS in the

households in several countries (Lund & Helgason 2005; Jurado et al. 2004; Scherer et al. 2004; Lund et al. 1998; Barbier et al. 2000; Callais et al. 2003; Delpisheh et al. 2006; Thaqi et al. 2005), while in general it was considerably lower than in CEE. However, results from Western Europe have been obtained through methods different from GYTS (mainly reports of parents or direct measurement of cotinine) in various target populations so their comparison with our data have only limited value.

If we look at GYTS data, the V4 situation is better than in numerous Eastern European countries, but in Hungary, Poland and Slovakia it is still very different from e. g. the USA (ETS in homes 42.1 %, ETS outside 69.7 %) (CDC 2006). Negative effect of ETS can be underlined by the fact that ETS occurrence noticeably exceeds the prevalence of adult smoking in the given countries.

A strong association between smoking of students and ETS has been found, when current smokers consistently reported more frequent ETS both in homes and outside in each V4 country. This underlies a negative importance of ETS in initiation and development of tobacco use in youngsters.

Although the majority of students are aware of the negative effects of ETS, still a relatively high proportion of students have an insufficient knowledge in this field (Table 2c). There is great potential for tobacco control efforts in our studied area if we compare it to some other countries, e. g. in the USA as much as 90.8 % students think that smoking from others is harmful for them (CDC 2006).

Although ETS in homes and outside have similar biological, psychological and social effects on the community, from the point of view of public health they represent quite different issues: ETS outside of homes can be effectively controlled by restrictive legislative measures, particularly smoking ban in public places. GYTS results evidence that such measures are positively perceived by a majority of the young population (Table 3). On the other hand, ETS in homes seems to be more problematic. It cannot be influenced by legislative policies and the only possible way is to increase the level of knowledge on adverse effects of passive smoking, changing the attitudes towards smoking and the development of social environment not tolerating smoking among non-smokers, i. e. denormalisation of tobacco use (Bal et al. 2001) However, besides activities focused on knowledge and attitudes, legislative restrictive measures play an important role in prevention of ETS as well (McMillen et al. 2004). According to the results of another survey carried out in Slovakia, attention should be paid particularly to women, who reported smoking in the presence of their children more frequently than men (Rimska 2005). Although it is a rather difficult process, there is some evidence of effectiveness of such an approach (Lund & Hel-

gason 2005; Roseby et al. 2003). Some of these programs also have already been implemented in V4 countries (Kavcová et al. 2004; Kralikova 2005; Szilagyi 2004; Zatonski 2003) and repeated surveys using standardised methods could show us the future trend and a clearer picture of the situation, namely in the context of enlarged Europe.

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