CHANGES IN TOBACCO USE AMONG 13–15-YEAR-OLDS IN THE CZECH REPUBLIC – 2002 AND 2007

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SUMMARY

Background. The Czech Republic is a member of the European Union (EU) and the World Health Organization (WHO). The EU has made tobacco use prevention a primary health issue and WHO European Region has adopted the European Strategy for Tobacco Control. The aim of the current study is to evaluate the status of tobacco use among adolescents in the Czech Republic and relate these findings to the tobacco control programme efforts supported by the EU and WHO.

Methods. Global Youth Tobacco Survey (GYTS) data were collected from representative samples of students in grades associated with ages 13–15 in the Czech Republic in 2002 and 2007.

Results. Current cigarette smoking decreased from 35% to 31% overall. Exposure to second-hand smoke (SHS) in public places remained unchanged over time (75% in 2007). Almost half of respondents reported having a parent who smokes and about one third had best friends who smoked. There were significant decreases in exposure to pro-tobacco advertisements on billboards in magazines.

Conclusions. Efforts to reduce the current and projected harm caused by tobacco use in the Czech Republic are urgently needed. The Czech Republic needs to expand its national comprehensive tobacco prevention and control programmes and enforce those laws already passed. Without this effort little reduction can be expected in the burden of chronic diseases and tobacco-related mortality.

What this paper adds. Results from the GYTS conducted in the Czech Republic indicate a number of serious challenges to prevent and control tobacco use in the region despite a range of ongoing tobacco control activities. GYTS data can enhance countries' capacity to monitor tobacco use among youth; guide development, implementation, and evaluation of their national tobacco prevention and control programme; and allow comparison of tobacco-related data at the national, regional, and global levels.

Key words: tobacco, smoking, youth, survey, Czech Republic

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INTRODUCTION

Tobacco use is one of the major preventable causes of premature death and disease in the world (1). The World Health Organization (WHO) attributes more than five million deaths a year to tobacco use; a total expected to exceed eight million a year by 2030 (2). Over 650,000 European citizens are killed each year due to smoking-related diseases and 13 million more suffer from a chronic disease as a result of smoking (3). The Czech Republic is a member of the European Union (EU) and the EU has made tobacco use prevention a primary health issue; most recently beginning a media campaign 'Help – for a life without tobacco' (4). The campaign will promote tobacco-free lifestyles, highlight the dangers of passive smoking, and encourage Member States to pass laws supporting tobacco-free public places.

The Czech Republic is also a member of the WHO European Region (EUR). The WHO Regional Committee for Europe adopted the European Strategy for Tobacco Control (ESTC) in 2002 (5). The ESTC followed three earlier EUR "Action Plans for a Tobacco-Free Europe." The first Action Plan (1987) called for comprehensive tobacco control, including "restrictions on the production, distribution and promotion of tobacco; pricing policies; protection for non-smokers; health promotion and health education programmes; smoking cessation training for professionals; and practical help with giving up smoking."(6). The second Action Plan (1992) focused on the "promotion of smoke-free environment, non-smoking behaviour among young people, and cessation activities."(7). The third Action Plan (1996) focused on "pricing, availability and advertising of tobacco, control of smuggling, product regulation, smoke-free environments, support for smoking cessation, and pubic education and information" (8). The ESTC built on the previous Action Plans by aiming to "promote and facilitate the adoption at country level of comprehensive and multisectoral evidence-based policies to reduce the demand for and supply of tobacco products and to cut down the prevalence of tobacco use in all population groups"(5).

The Czech Republic has not yet ratified the WHO Framework Convention on Tobacco Control (WHO FCTC) (9); the world's first public health treaty on tobacco control; however, the EU has and along with WHO EUR is encouraging all Members to follow the guidelines of the Treaty even if they have not ratified. The WHO FCTC urges countries to develop tobacco control action plans for public policies, such as bans on direct and indirect tobacco advertising, tobacco tax and price increases, promoting smoke-free public places and workplaces, and placing health messages on tobacco packaging.

The WHO FCTC also calls on countries to establish surveillance programmes of "the magnitude, patterns, determinants, and

consequences of tobacco consumption and exposure to tobacco smoke." (9). WHO, the U.S. Centers for Disease Control and Prevention, and the Canadian Public Health Association developed the Global Tobacco Surveillance System (GTSS) to assist WHO Member States in establishing continuous tobacco control surveillance and monitoring (10). The GTSS includes collection of data through four surveys: the Global Youth Tobacco Survey (GYTS) for youth, the Global School Personnel Survey, the Global Health Professions Student Survey, and the Global Adult Tobacco Survey for adults. The GYTS provides systematic global surveillance of youth tobacco use. Countries can use GYTS data to enhance their capacity to monitor tobacco use among youth; guide development, implementation, and evaluation of their national tobacco prevention and control programme; and allow comparison of tobacco-related data at the national, regional, and global levels.

The purpose of this report is to use data from the 2002 and 2007 Czech Republic GYTS to describe changes in tobacco use and factors that influence tobacco use. Results from the GYTS can be used as one source of data to access the status of comprehensive tobacco control programmes in the Czech Republic.

METHODS

The GYTS uses a standardized methodology for constructing sampling frames, selecting schools and classes, preparing questionnaires, carrying out field procedures, and processing data (10).

Sample Design

The GYTS is a school-based survey that collects data from students aged 13–15 years using a standardized methodology for constructing the sample frame, selecting schools and classes, and processing data. The GYTS uses a two-stage cluster sample design that produces representative samples of students in grades associated with ages 13–15 years (10). In the Czech Republic, this age range is covered in grades 7–9 and the GYTS sampling frame included all schools containing these grades. At the first sampling stage, school selection was proportional to the number of students enrolled in grades 7–9. At the second sampling stage, classes within the selected schools were randomly selected. All students attending school in the selected classes on the day the survey was administered were eligible to participate. In 2002, 3,678 students aged 13–15 years completed the GYTS; and 3,191 in 2007. The school response rate was 100% in 2002 and 2007; the student response rate was 88.0% in 2002 and 84.7% in 2007; and the overall response rate (calculated as the school response rate multiplied by the student response rate) was 88.0% and 84.7%, respectively.

Data Analysis

SUDAAN, a software package for statistical analysis of correlated data, was used to compute standard errors of the estimates, and produced 95% confidence intervals (11). Differences in proportions were considered statistically significant at the $p<0.05$ level.

Instrument

This report describes several important indicators of tobacco use: lifetime cigarette smoking, age of initiation of cigarette smoking, current cigarette smoking, current use of other tobacco products, susceptibility[1] of never smokers to initiation of smoking, exposure to second-hand smoke (SHS) in public places, exposure to direct and in-direct pro-tobacco advertising and promotion, cessation efforts, access to tobacco by minors, and tobacco education. The final version of the questionnaire was translated into Czech language as needed and back-translated to check for accuracy. Focus groups of students aged 13–15 were conducted to further test the accuracy of the translation and student understanding of the questions.

Limitations

The findings in this report are subject to at least three limitations. First, because the GYTS was limited to youths attending school, they may not be representative of all 13–15-year-olds in the Czech Republic. However, the school attendance is obligatory in the Czech Republic up to 16 years of age, and the number of students, who are out of this system is negligible. Second, these data apply only to youths who were in school the day the survey was administered and completed the survey. Student response was quite high, 88.0% in 2002 and 84.7% in 2007, suggesting bias due to absence or non-response is small. Third, data are based on self reports of students, who may under- or over-report their use of tobacco. The extent of this bias can not be determined in the Czech Republic data; however responses to tobacco questions on surveys similar to GYTS have shown good test-retest reliability (13).

RESULTS

Prevalence

Lifetime cigarette use among students in the Czech Republic was over 70% in both 2002 and 2007; and there was no difference in use between boys and girls (Table 1). Approximately, 1 in 4 ever smokers initiated smoking before age 10; with boys significantly more likely than girls to initiate smoking early in 2002. For boys and girls, approximately 1 in 3 students (34.6%) were current cigarette smokers, with no difference in levels of smoking between boys and girls or over time. Figure 1 (*a* and *b*) shows the trend in current cigarette smoking for boys and girls by single year of age. Current cigarette smoking among 15-year-old boys declined significantly while the trend for boys age 13 and 14 was flat. For girls the trend showed a slight, non-significant, decline for 13- and 14-year-olds; but no change for 15-year-olds.

Current use of other tobacco products significantly increased between 2002 and 2007, for boys and girls. Boys were significantly more likely than girls to use other tobacco products in 2002;

[1] Not susceptible never smokers defined as: "Definitely not likely to initiate smoking in the next year" and "Definitely would not smoke a cigarette if offered one by their best friend." The Teenage Attitudes and Practices Survey determined that youths defined as susceptible to initiating smoking were two to three times more likely to initiate smoking than non-susceptible youths (12).

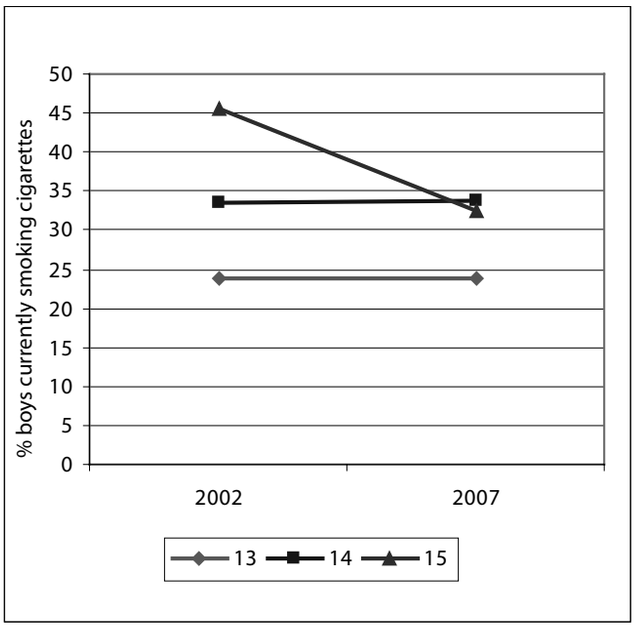

Fig. 1a. *Current smoking among boys in 2002 vs 2007.*

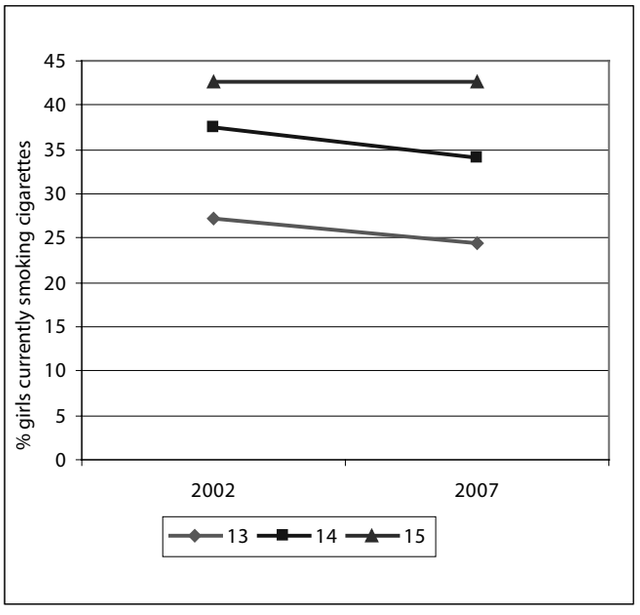

Fig. 1b. *Current smoking among girls in 2002 vs 2007.*

but there was no gender difference in 2007. Figure 1 (*c* and *d*) shows the trend in current other tobacco use for boys and girls by single year of age. For both boys and girls, other tobacco use significantly increased for each age.

Current smoking was significantly higher than current use of other tobacco products overall and by gender in 2002 and 2007. In 2002 and 2007, approximately 1 in 4 students who had never smoked cigarettes indicated they were "likely to initiate smoking in the next 12 months." The likely initiation of smoking was unchanged for boys between 2002 and 2007, however, the rate for girls increased, though not significantly.

Factors Influencing Prevalence

Exposure to second-hand smoke (SHS). Almost half of students in both 2002 and 2007 indicated that their parents smoke; and approximately 3 in 10 report that all or most of their best friends smoke (Table 2). Exposure to SHS in public places remained unchanged over time (74.5% in 2002 and 75.2% in 2007). Support for a ban on smoking in public places did not change significantly between 2002 (68.0%) and 2007 (70.1%).

Media and advertising. The percentage of students exposed to direct pro-tobacco advertisements on billboards (86.0% to 75.7%) and in newspapers and magazines (82.5% and 68. 8%) significantly decreased between 2002 and 2007 (Table 2). For

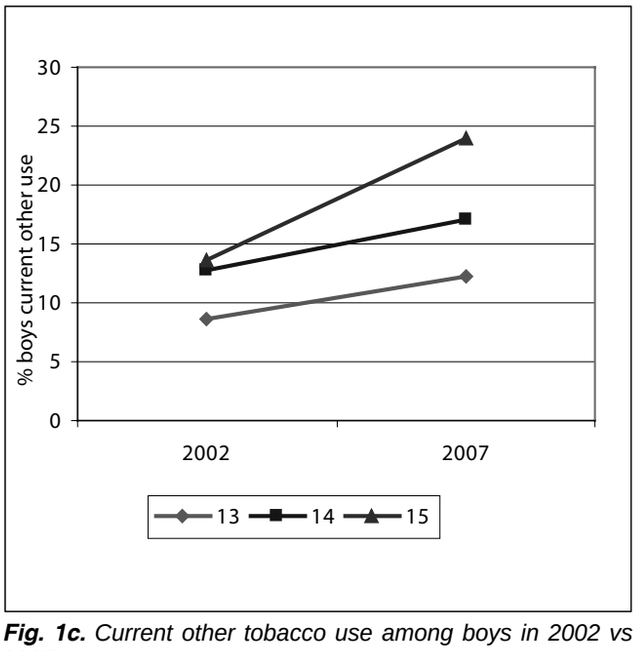

Fig. 1c. *Current other tobacco use among boys in 2002 vs 2007.*

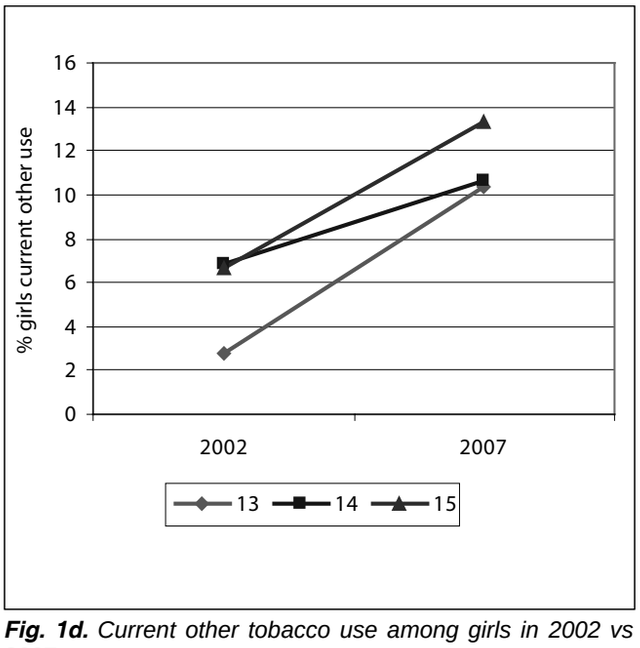

Fig. 1d. *Current other tobacco use among girls in 2002 vs 2007.*

Table 1. *Prevalence – Czech Republic 2002 and 2007 (13–15 years)*

Prevalence	2002			2007		
	Total	Boy	Girl	Total	Boy	Girl
Ever smoked cigarettes	73.5 (71.0–75.9)	75.1 (71.8–78.1)	72.1 (68.9–75.0)	71.2 (66.9–75.1)	72.2 (67.4–76.4)	70.0 (65.4–74.3)
Ever smokers, first smoked cigarettes before age 10	26.1 (23.9–28.4)	32.8 (30.2–35.6)	19.3 (16.7–22.1)	23.6 (20.4–27.0)	28.0 (24.8–31.5)	18.2 (14.3–22.8)
Current cigarette smoker	34.6 (31.2–38.1)	34.0 (29.7–38.5)	35.1 (30.8–39.6)	31.1 (27.2–35.3)	29.8 (25.1–35.0)	32.7 (27.6–38.1)
Current user of other tobacco products	8.5 (7.1–10.1)	11.6 (9.6–14.1)	5.3 (3.9–7.1)	14.5 (12.0–17.3)	17.2 (14.3–20.7)	11.2 (8.4–15.0)
Never smokers likely to initiate smoking in the next year	24.0 (20.1–28.4)	18.4 (13.9–24.0)	29.1 (23.7–35.1)	26.8 (23.0–31.0)	18.4 (14.3–23.4)	35.9 (30.1–42.2)

Table 2. *Factors influencing tobacco use – Czech Republic 2002 and 2007 (13–15 years)*

Factors	2002			2007		
	Total	Boy	Girl	Total	Boy	Girl
EXPOSURE TO SMOKE One or more parents smoke	53.7 (50.9–56.5)	52.6 (48.4–56.7)	54.8 (51.7–57.8)	50.7 (46.1–55.4)	49.0 (43.4–54.7)	52.7 (48.2–57.2)
All or most best friends smoke	32.9 (29.2–36.8)	30.1 (26.1–34.4)	35.8 (31.2–40.6)	28.8 (24.1–34.0)	25.5 (20.8–31.0)	32.6 (27.1–38.7)
Exposed to smoke in public places	74.5 (72.1–76.7)	74.4 (71.1–77.4)	74.7 (71.9–77.3)	75.2 (73.2–77.2)	71.6 (68.6–74.3)	79.5 (76.7–82.1)
In favour of banning smoking in public places	68.0 (65.9–70.1)	69.8 (66.9–72.6)	66.3 (63.7–68.8)	70.1 (67.0–72.9)	72.6 (70.0–75.0)	67.1 (62.5–71.5)
SCHOOL During this school year, were taught in any classes about the dangers of smoking	64.6 (60.6–68.5)	63.4 (58.5–68.2)	65.9 (61.7–69.8)	55.3 (49.8–60.6)	54.8 (49.2–60.3)	55.8 (48.5–62.8)
MEDIA/ADVERTISING During the past month saw any anti-smoking media messages	77.3 (75.5–79.1)	76.3 (74.3–78.2)	78.3 (75.8 - 80.6)	80.7 (77.8–83.4)	82.3 (79.6–84.7)	78.9 (74.9–82.4)
During the past month saw any advertisement for cigarettes on billboards	86.0 (83.2 - 88.4)	86.7 (83.8 - 89.2)	85.3 (82.4 - 87.8)	75.7 (72.8 - 78.4)	78.3 (75.4–81.0)	72.7 (68.8–76.4)
During the past month saw any advertisements or promotions for cigarettes in newspapers or magazines	82.5 (80.9–84.1)	81.0 (78.9–82.9)	84.0 (81.8–86.1)	68.8 (66.6 – 71.0)	70.0 (66.4–73.4)	67.5 (64.7–70.2)
Have an object (t-shirt, pen, backpack, etc) with a cigarette brand logo on it	24.8 (23.0–26.6)	27.5 (25.6–29.5)	22.0 (19.3–25.1)	16.9 (14.3–19.8)	17.1 (14.3–20.4)	16.6 (12.7–21.3)
CESSATION Current smokers who want to stop smoking now	49.1 (44.9–53.3)	50.1 (45.0–55.2)	48.0 (41.7–54.5)	52.6 (47.7–57.5)	57.3 (49.5–64.8)	48.4 (41.7–55.1)
Current smokers who always feel like having a cigarette first thing in the morning	14.4 (12.0–17.3)	15.5 (12.1–19.5)	13.4 (9.4–18.6)	11.5 (7.5–17.2)	11.0 (6.4–18.3)	11.9 (7.1–19.2)

indirect advertising and promotion, the percentage of students who owned an item with a tobacco logo on it, significantly decreased between 2002 and 2007 (24.8% and 16.9%). The percentage of students who reported receiving free cigarettes from a tobacco company representative decreased, but not significantly, from 2002 (7.9%) to 2007 (7.5%).

Other factors. In 2002 and 2007, approximately half of current smokers indicated they would like to stop smoking. Over 7 in 10 current smokers who purchased their cigarettes in a store reported they had not been refused purchase because of their age. The percent of students who reported having been taught in school during the past school year about the harmful effects of tobacco decreased between 2002 (64.6%) and 2007 (55.3%), but not significantly.

DISCUSSION

GYTS results from the Czech Republic show over 3 in 10 students are current cigarette smokers; almost 3 in 10 never smokers

reported they were likely to initiate smoking in the next year; and over 1 in 10 are current users of other tobacco products. Current cigarette smoking decreased significantly for 15-year-old boys but did not change for 15-year-old girls. For 13–14-year-old boys and girls, current cigarette smoking decreased but not significantly. Similarly, a statistically significant decrease in the prevalence of smoking in the Czech Republic for students aged 15 was found in the Health Behaviour of School-Aged Children Study for the period 2002–2006 (17).

Current other tobacco use significantly increased for boys and girls and for all three ages. We assume that this increase is due to water-pipe smoking, which became popular in the Czech Republic in recent years. This is supported by results of the cross-sectional survey focused on smoking habits in adult Czech population (15+) conducted in 2007. The life-time prevalence of water-pipe smoking exceeds 30% (18) with the highest values for age group 15–25 years.

These findings suggest the tobacco control effort in the Czech Republic must be broad based; including cigarette smoking and other tobacco use, and expand the effort to reduce tobacco use among both boys and girls.

The main goal of a comprehensive tobacco control programme is to improve the health of the population by encouraging smokers to quit, eliminating exposure to SHS, and encouraging people not to initiate tobacco use. Previous studies have shown that demand reduction measures, primarily those that increase the price of tobacco, are effective in significantly reducing initiation of tobacco use and consumption among young people (1). In addition, comprehensive tobacco control programmes often include non-price interventions such as: restrictions on smoking in public places and work places; a complete ban on advertising and promotion by tobacco companies; promotion of quitting among adults and youth; mobilizing community efforts to restrict minors' access to tobacco products; development and implementation of school-based educational programmes in combination with community-based activities; and dissemination of information on the health consequences of smoking, such as having prominent warning labels on cigarette packets (1). The Czech legislation was substantially amended after the accession of the country to the EU in May 2004 in an attempt to harmonize with the EU directives.

The purpose of the following section is to review the tobacco control programme efforts in the Czech Republic relative to the findings from the GYTS.

Taxation. After the accession of the CR to EU tobacco taxes have been modified according to EU rules. From 2005 to 2008 taxes have increased five times, with the increase close to the minimal level (57%) determined by the EC.

Second-hand smoke. The 2008 *WHO Report on the Global Tobacco Epidemic* includes a summary of country bans on SHS exposure in eight specific public places (i.e. health care facilities, education facilities, university facilities, government facilities, indoor offices, restaurants, pubs and bars, and other indoor workplaces) (2). The Czech Republic has complete bans in three of the eight places: education and government facilities and other indoor work places. There are no complete bans in health care facilities, universities, indoor offices, restaurants or pubs and bars. Therefore, it is not surprising that the exposure to SHS reported by students in the GYTS is very high, 75% in both 2002 and 2007, with no change. For bans on SHS exposure to have a important impact on prevalence of tobacco use in the Czech Republic, laws will need to be passed increasing a complete ban on exposure in all indoor workplaces and public places.

Tobacco advertising bans. The 2008 *WHO Report on the Global Tobacco Epidemic* includes whether the countries have national and international bans on TV, radio, newspaper, billboard, and point of sale advertising (2). The expected inverse relationship between having laws banning advertising and students in the GYTS reporting having seen a pro-tobacco advertising was found in the Czech Republic. Data from the GYTS showed exposure to pro-tobacco advertising on billboards and in magazines and newspapers significantly decreased between 2002 and 2007. The law banning direct tobacco advertising with exception those at points of sale was introduced in 2001.

Students reported seeing pro-tobacco advertising on billboards decreased from 86.0% in 2002 to 75.7% in 2007. Also, having seen pro-tobacco advertising in magazines and newspapers decreased from 82.5% in 2002 to 68.8% in 2007.

Promotion. The 2008 *WHO Report on the Global Tobacco Epidemic* includes information on whether the countries have laws banning promotion of free distribution of tobacco products and promotion of non-tobacco products (2). The Czech Republic does have a law banning promotion and the GYTS results show a significant decrease between 2002 (24.8%) and 2007 (16.9%) in the percent of students who have an item with a tobacco company logo on it (e.g., a shirt, cap, back-pack, etc).

Cessation. The 2008 *WHO Report on the Global Tobacco Epidemic* states, "Countries must establish programmes providing low-cost, effective treatment for tobacco users who want to escape their addiction" (2). The Report further shows the Czech Republic has a quitline and NRT and both Zyban and Champix are offered in pharmacies. The GYTS asks students who currently smoke cigarettes if they would like to stop smoking now. Results from the GYTS show over half of the smokers desire to stop. The problem facing the Czech Republic, as well as other countries, is summarized in the report, *Youth Tobacco Cessation: A Guide for Making Informed Decisions*, "…a literature review of 66 published studies on youth tobacco-use cessation and reduction…concluded that most of the studies lacked the quality and consistency of findings to allow conclusive recommendations about effective practices…" (14). More research is needed to evaluate and identify effective youth tobacco cessation programs.

Access and availability. An amendment of law banning sales to minors is effective since 1999 when the legal age for purchasing cigarettes and the tobacco products increased from 16 to 18 years of age. Results from the GYTS show over 70% of smokers who buy their cigarettes in a store are not refused purchase because of their age. These results suggest that the existing regulation is not enforced sufficiently.

School. Results from the GYTS show approximately 6 in 10 students reported that they had been taught in classes the past school year about the dangers of tobacco. Studies of the effectiveness of school-based smoking prevention programmes have been mixed. Studies have found some programmes results in short-term decreases; but other studies have looked at long-term programme results and found no effective programme (15). WHO recognizes school and community tobacco control programme efforts are important but they are most likely to be successful after a favour-

able policy environment has been created, including tax and price policies, 100% smoke-free public places and indoor workplaces, and a comprehensive ban on all tobacco advertising, promotion, and sponsorship (2).

CONCLUSION

The findings in this study suggest that the tobacco control programme effort in the Czech Republic needs to focus on implementation and enforcement of policies already in place as well as expansion into additional programme efforts. The tobacco control effort needs to be comprehensive, broad-based, and focused on boys and girls. If the Czech Republic does not address this issue soon, future morbidity and mortality attributed to tobacco will increase. Conducting initial and repeat GYTS offers the Czech Republic a unique opportunity to develop, implement and evaluate comprehensive tobacco control policies for youth that can be most helpful in decreasing tobacco use and consumption among this age group.

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