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Original Article

Tobacco use and cessation among medical students in Croatia – results of the Global Health Professionals Pilot Survey (GHPS) in Croatia, 2005

Hrvoje Vrazic[1], Divo Ljubicic[2] and Nick Kai Schneider[3]

[1] *Department of Internal medicine, University Hospital Dubrava, Zagreb, Croatia*
[2] *Medical School, University of Zagreb, Zagreb, Croatia*
[3] *Center for Tobacco Control Research and Education, University of California, San Francisco, USA*

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Summary

Objectives: To collect information from third year medical students attending Croatian medical schools on prevalence of cigarette smoking and other tobacco use, exposure to second-hand smoke, desire to quit using tobacco, attitudes and training concerning counselling patients on tobacco cessation.
Methods: Global Health Professionals Survey (GHPS) was conducted in 2005 in all four Croatian medical schools with a census of third year medical students (404 out of 409, response rate 98.5 %) using an anonymous, confidential and self-reported questionnaire.
Results: More than two thirds (67.4 %) of medical students in Croatia have ever smoked cigarettes, and over one third (36.6 %) are smoking cigarettes currently. Half of the medical students (50.4 %) report exposure to second hand smoke at home. Less than a third of current smokers (30.9 %) have received cessation assistance when they tried to quit.
Conclusions: Our findings indicate significant tobacco use among medical students in Croatia. There is an urgent need to reduce this harmful behaviour through more comprehensive public health initiatives, provision of support for cessation among health professionals who smoke and provision of training to health professionals to assist their patients with cessation.

Keywords: Health profession – Medical students – Smoking – Tobacco – Tobacco-use cessation.

Today, every tenth death among adults in the world is attributable to tobacco use, and smoking tobacco is the single largest preventable cause of disease and premature death in developed countries [1].
Health professionals serve as role models for healthy behaviour to the public. During routine visits, health professionals can counsel patients on dangers of smoking and the importance of quitting; several studies show that such counselling is one of the most cost-effective methods of reducing smoking [2–5].
A wide range of prevalence and gender difference concerning tobacco use among health professionals has been reported throughout the world [6–11]. Health professionals who ignore epidemiological evidence and continue to use a substance that is harmful to health send an inconsistent message to patients they counsel to quit smoking. It has been documented that health professionals who smoke are less likely to acknowledge tobacco as a serious health threat [12], less willing to provide cessation assistance to patients [13] and more likely to practice other unhealthy behaviours than non-smoking health professionals [14–16]. When health professionals smoke, their ability to convey strong anti-tobacco messages may be diminished.
Unfortunately, cigarette smoking (and tobacco use in general) is one of the most socially accepted health-damaging behaviours in Croatia. Two studies performed on general population in Croatia by 2005 support this claim: one in 1995–1997 performed on 5,840 participants reporting 34.1 % of male and 26.6 % of female population being regular smokers [17] and in 2003 the Croatian Adult Health Survey performed on 9,070 participants described an adult prevalence of daily smokers ranging from 25–33 % (males) and from 10–22 % (females) [18]. This extensive tobacco use has considerable and serious

health outcomes, as approximately 14,000 estimated deaths occur due to tobacco-related diseases in Croatia every year which constitutes considerable proportion of premature mortality in Croatia [19].

Further four studies have been found examining the use of tobacco among health professionals in Croatia; first two investigating the use of addictive substances among third year medical students entering the pharmacology course at Zagreb Medical School (the survey was performed on a total of 464 third year medical students in three consecutive years: in 1996 on 139 students, in 1997 on 176 students and in 1998 on 149 students; showing smoking prevalence of 25–31 %), finding that the use of tobacco among medical students did not change significantly between 1989 and 1998 (N of students surveyed in 1989 was 986) [10] and between 1989 (31 %, N of surveyed medical and non-medical students was 986) and 2000 (29 %, N of surveyed medical and non-medical students was 775) [11]; then one study performed by the Croatian Medical Association among medical doctors, suggesting that 13 % of surveyed doctors were current smokers, 28 % were former smokers and 59 % had never smoked (however, an important limiting factor in use of the results from this study is the response rate which was mere 25 % of the surveyed population, as out of 6,805 questionnaires sent by mail a total of 1,687 were filled out and sent back to the investigators) [20] and finally a study performed on 311 health professionals (119 physicians and 192 nurses) in Split (Croatia) that showed that the usage of transdermal nicotine system patch was effective in smoking cessation, but the effects were not permanent and smoking relapse rates were high [21].

The importance of Global Health Professionals Pilot Survey lies in the following: it is unique among similar studies performed in Croatia examining tobacco use among health professionals as the response rate was very high (98.5 % of eligible medical students participated), making the results of this study indeed representative for the surveyed population (none of the other studies performed in Croatia on health professionals had such a high response rate); the questionnaire used was identical to questionnaires used in other countries, therefore making comparisons of data between various countries that participated possible (again, none of the other studies performed in Croatia yielded data completely comparable to other countries, as the questionnaires used were not identical, but similar at best); and finally this survey was performed at a time when no new data on tobacco use among health professionals had been available for several years (out of four other studies the "newest" one collected data from 2000) and at a time less than a year after Croatia became one of the signatories of Framework Convention on Tobacco Control (ratification of which is still pending).

Global Health Professionals Pilot Survey (GHPS) was conducted by the European Medical Students' Association (EMSA) in 2005 in Croatia. GHPS was developed by the World Health Organization (WHO), U.S. Centers for Disease Control and Prevention (CDC), Canadian Public Health Association (CPHA) and the American Cancer Society (ACS) in 2004. The GHPS is part of the Global Tobacco Surveillance System (GTSS) under the Framework Convention on Tobacco Control (FCTC) [22].

This paper will specifically focus on the prevalence of tobacco use, use of tobacco on school premises, exposure to second-hand smoke and cessation attitudes and attempts among current and former tobacco users.

Methods

Sample

The data published is part of the 2005 Croatia Global Health Professionals Survey, a school-based survey with a census of third year medical students in Croatia. All medical students enrolled in third year of curriculum of all four medical schools in Croatia (Zagreb, Rijeka, Osijek, Split) in the academic year 2004/2005, either for first or repeated times, were eligible for participation in the Global Health Professionals Survey. The response rate was 98.5 %; 404 of 409 eligible medical students participated in the survey.

Questionnaire

The questionnaire used consists of 83 items that covered 6 major areas, including prevalence of cigarette and other tobacco use, environmental tobacco smoke exposure, cessation, knowledge and attitudes about tobacco, tobacco-related curriculum in professional training and school policies regarding tobacco use. The questionnaire was translated from English into Croatian, independently back-translated into English for accuracy and pre-tested on a focus group of non-third year medical students at the University of Zagreb.

Data collection and processing

Data collection was performed in the classrooms using an anonymous, confidential and self-reported questionnaire. As stated in the Introduction, GHPS in Croatia was conducted by the European Medical Students' Association (EMSA), represented by Hrvoje Vrazic and Divo Ljubicic who were responsible for data collection in Croatia. The collected data was computer scanned and compiled by the CDC.

Statistical analysis

The SAS/SUDAAN statistical software package was used for calculation of prevalence estimates, standard errors, and

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a finite population correction factor. The 2005 Croatia GHPS was conducted as a census of third year medical students and the research team obtained interviews from a large proportion of the entire population. Prevalence and other statistics are described in this report along with 95 % confidence intervals (CI) for the estimates. Statistically significant differences are determined by non-overlapping confidence intervals and are described in the results section.

The used methodology has proven to be successful in the 146 countries that have completed the Global Youth Tobacco Survey (GYTS) and in 40 countries that have completed the Global School Personnel Survey (GSPS).

Results

The sample was characterized by high age homogeneity (95.5 % of the surveyed medical students were 20–24 years old). The gender distribution showed that 68.5 % of medical students were female and 31.5 % were male medical students.

There was a high proportion of surveyed medical students (20.0 %, 95 % CI 17.1 %–23.2 %) who started smoking prior to age 16 with early tobacco initiation being higher among male students (25.4 %, 95 % CI 19.9 %–31.8 % for males and 17.6 %, 95 % CI 14.4 %–21.3 % for females, respectively, ever tried a cigarette by the age of 15, but the difference was not statistically significant).

More than two thirds (67.4 %) of medical students in Croatia have ever smoked cigarettes (Tab. 1). Almost half of the medical students (45.3 %) ever used chewing tobacco, snuff, cigars or pipes. While there was no statistically significant difference between males and females with respect to ever smoking cigarettes, males were significantly more likely to have ever used other tobacco products (58.1 % and 39.6 % for males and females, respectively). Over one third of medical students (36.6 %) are smoking cigarettes currently. Every third current cigarette smoker (31.0 %) feels the desire for a cigarette within 30 minutes of awaking in the morning, indicating strong nicotine dependence. One in ten medical students (10.7 %) are currently using tobacco in another form than cigarettes, with males being significantly more likely to be using those forms than females (20.3 % and 6.3 % for males and females, respectively).

Almost half of ever cigarette smokers (45.8 %) reported smoking on school premises/property during the past year, with males being significantly more likely to exhibit such behaviour than females (58.2 % and 40.6 % for males and females, respectively) (Tab. 2). Two in ten ever cigarette smokers (19.8 %) smoked in school buildings during the past year, with males again being significantly more likely to exhibit such behaviour than females (32.9 % and 14.4 % for males and females, respectively). Only 12.9 % of ever users of other tobacco products report having used other tobacco products on school premises/property during the past year, and even less of them (7.4 %) report having used other tobacco products in school buildings during the past year. Males were significantly more likely to do this than females (11.6 % and 4.5 % for males and females, respectively). Half of the medical students (50.4 %) report exposure to second hand smoke at home. Current cigarette smokers are significantly more likely than never smokers to be exposed to second hand smoke at home (68.5 % and 37.6 %, respectively). Over 95 % of medical students are exposed to smoke in public, with no significant difference in exposure by gender. Current cigarette smokers are significantly more likely than never smokers to be exposed to second hand smoke in public (98.5 % and 92.2 %, respectively).

Over half of medical students who currently smoke (55.2 %)

Table 1 Lifetime and Current Prevalence of Tobacco Use – 3rd Year Medical Students, Croatia, GHPS, 2005

	Medical Students % (95 % CI)[a]					
	Lifetime Use			Current Use (daily or occasionally)		
	Cigarettes	Other Tobacco Products	Smokers who initiated daily cigarette smoking before age 15	Cigarettes	Other Tobacco Products	Cigarette smokers who desire a cigarette within 30 minutes of awaking in the morning
Total	67.4 (64.9–69.8)	45.3 (42.8–47.9)	20.0 (17.1–23.2)	36.6 (34.1–39.2)	10.7 (9.2–12.4)	31.0 (26.2–36.3)
Male	67.0 (62.6–71.2)	58.1 (53.6–62.6)	25.4 (19.9–31.8)	35.9 (31.5–40.4)	20.2 (16.8–24.2)	28.5 (20.7–38.0)
Female	67.8 (64.8–70.7)	39.6 (36.6–42.7)	17.6 (14.4–21.3)	37.1 (34.1–40.3)	6.3 (5.0–8.0)	32.2 (26.3–38.7)

[a] CI – confidence interval.

Table 2 Tobacco Use on School Premises/Property and Exposure to Second Hand Smoke – 3rd Year Medical Students, Croatia, GHPS, 2005

	Tobacco Use on School Premises/Property % (95 % CI)[a]				Exposure to Second Hand Smoke % (95 % CI)[a]							
	Ever Cigarette Smokers		Ever Users of Other Tobacco Products		Exposure to smoke at home, during the past week			Exposure to smoke in public places, during the past week				
	Smoked on school premises/ property during the past year	Smoked in school buildings during the past year	Used other tobacco products on school premises/ property during the past year	Used other tobacco products in school buildings during the past year	Total	Never Cigarette Smokers	Current Cigarette Smokers	Total	Never Cigarette Smokers	Current Cigarette Smokers
Total	45.8 (42.6–49.1)	19.8 (17.4–22.6)	12.9 (10.3–16.0)	7.4 (5.5–9.9)	50.4 (47.9–53.0)	37.6 (33.3–42.0)	68.5 (64.3–72.4)	95.2 (93.9–96.2)	92.2 (89.4–94.3)	98.5 (97.0–99.3)		
Male	58.2 (52.3–63.9)	32.9 (27.6–38.8)	16.5 (12.2–22.0)	11.6 (8.0–16.5)	46.8 (42.3–51.4)	31.7 (24.8–39.6)	69.8 (62.2–76.4)	96.7 (94.7–98.0)	90.2 (84.4–94.0)	100.0		
Female	40.6 (36.9–44.5)	14.4 (11.8–17.3)	10.4 (7.5–14.2)	4.5 (2.7–7.3)	51.9 (48.8–55.0)	39.6 (34.4–45.1)	67.8 (62.7–72.6)	94.4 (92.8–95.7)	93.0 (89.6–95.4)	97.9 (95.8–99.0)		

[a] CI – confidence interval.

would like to quit (Tab. 3). Around six in ten current smokers (60.1 %) have tried to quit in the last year, but failed. Less than a third of current smokers (30.9 %) have received cessation assistance when they tried to quit. One third of former cigarette smokers (33.9 %) stopped smoking 3 or more years ago. Former male smokers are significantly more likely than their female counterparts to have stopped smoking three or more years ago.

Discussion

The main finding of this study is the high both lifetime and current tobacco use among medical students in Croatia, without significant gender difference. Croatian GHPS results (36.6 % of medical students currently smoking cigarettes and almost a third of the smokers desiring a cigarette within 30 minutes of awakening in the morning) are higher than those published in the surveys on third year medical students of the Medical School in Zagreb in 1999 (25–30 % current smokers) [10, 11]. The observed prevalence among medical students was higher than that in the adult Croatian population (36.6 % and 10–33 % respectively) [18]. This doesn't just contribute to excess morbidity and mortality among future health professionals, but also sends a strong and noticeable message to the general population suggesting that the health risks associated with tobacco use are not serious.

The high proportion of medical students who started smoking prior to age 16 confirms that early tobacco initiation continues to be a serious problem in Croatia, despite the ban in November 1999 of tobacco sales to people less than 18 years of age [23]. Although statistically not significant, it is interesting to note in this context that early tobacco initiation is higher among male medical students, while the number of current smokers is nearly equal by the time medical students reach the third year of medical school, suggesting a steeper smoking initiation increase between the age of 16 years and the mid twenties in the female student population.

When comparing the current smokers in Croatian medical students with medical students from other countries that were included in the GHPS Pilot Study [24] the only country that had higher percentage of current smokers among medical students was Albania (43.3 %) and in other countries the percentages varied from 35.5 % (Argentina) to 2.8 % (Uganda).

Although the main focus is put on cigarettes as the main form of tobacco that is used, it is important to note proportions of medical students who have ever used other forms of tobacco such as chewing tobacco, snuff, cigars or pipes and those who currently use other forms of tobacco such as chewing tobacco, snuff, cigars or pipes. In both of these categories male medi-

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Table 3 Cessation Attitudes and Attempts Among Current and Former Tobacco Users – 3rd Year Medical Students, Croatia, GHPS, 2005

	Current Cigarette Smokers % (95 % CI)[a]			Former Cigarette Smokers % (95 % CI)[a]
	Want to quit smoking cigarettes now	Tried to stop smoking cigarettes this year	Ever Received Help/Advice to Stop Smoking Cigarettes	Stopped smoking 3 or more years ago
Total	55.2 (50.0–60.3)	60.1 (55.5–64.6)	30.9 (27.0–35.1)	33.9 (27.7–40.9)
Male	57.8 (48.8–66.2)	68.5 (60.4–75.7)	38.2 (30.9–46.1)	53.0 (40.7–64.9)
Female	53.9 (47.6–60.1)	56.2 (50.5–61.7)	27.6 (23.2–32.6)	24.9 (18.3–33.0)

[a] CI – confidence interval.

cal students use these products significantly more than their female counterparts, showing that they seem to be more likely to experiment with other forms of tobacco. Bearing this in mind, and the fact that the proportions of medical students using these other forms of tobacco are not negligible, this finding could be perceived as an early warning sign for action in this field. Another reason actions in this field should be taken is that the most common misconception concerning use of tobacco is that there are "less harmful" forms of tobacco [25–27].

Croatian GHPS reveals data that make it clear that Croatia's tobacco control plan should be strengthened and expanded if negative trends are to be slowed down and hopefully stopped. Currently the annual Croatian Tobacco Control plan is created by the Anti-smoking Campaign Agency (9 members, where 3–5 of 9 are health professionals); the House of Representatives of the Croatian State Parliament passed the law on the restricted use of tobacco products in 1999 with modification in legislation on September 21st 2004 [23] which prohibits promotion of tobacco products in media, public places, on buildings, in books, magazines, calendars, clothing etc.; with educational institutions being obliged to educate children and young people about harmful effects on health if using tobacco products in all curriculum areas of regular education; at the same time imposing supervision and fines system for violation of the points laid out in it. One would expect that an increase in taxation of tobacco products in Croatia (the most recent in July 2004) would decrease the smoking prevalence, and this would be in accordance with strong evidence on the negative correlation of pricing and tobacco use [28–31] but our findings suggest a completely different development: smoking prevalence among male and female medical students is rising despite increases in taxation. The reasons for that are not clear at all, either the cigarette prices are still not high enough, or, what would be a cause for even greater concern, the tobacco use is increasing at such a pace that the effects of the measures combating tobacco use only reduce the incidence but not the prevalence. Furthermore, the majority of surveyed medical students reported second hand smoke exposure at home and in public. This represents another cause for concern, as this exposure directly impacts their health [32–34] and can be reduced by expanding smoke free areas and enforcing restrictions currently in place. If we look at restrictions currently in place, besides the national legal framework [23] there is no specific official tobacco policy in all medical schools, what could explain the high proportion of medical students reporting to have used tobacco on school premises/property during the past year.

The data on cessation attitudes and attempts among current and former tobacco users among surveyed third year medical students (Tab. 3) should be interpreted bearing in mind that the overall knowledge about tobacco risks was very high (unpublished data), however GHPS did not include any questions on specific cessation strategies or techniques, reasons why surveyed medical students tried to quit, number of times they have attempted to quit, type of cessation assistance offered or perceptions on why they were unsuccessful at quitting. We hope that further studies performed in this field will answer those questions, as they would yield information that will further assist in guiding the design of future programs and policy interventions. From the gathered data, it can be said that although medical students who smoke in Croatia were highly motivated to quit, not even a third of them are currently receiving assistance needed to achieve their goals. The majority of smokers expressed a desire to quit smoking, but many failed to quit in the past year. The fact that more medical students failed to quit smoking, also suggests that 5 %–10 % of those who tried quitting in the last year at this moment lost the motivation to quit smoking. These findings suggest that cessation programs are either not available to medical students or, if available, neither sufficient nor effective. Current programs should be revised and possibly expanded to help smokers trying to quit and persuade medical students who are not yet willing to quit smoking to do so.

This study's findings indicate significant tobacco use among medical students in Croatia. There is an urgent need to reduce this harmful behaviour to prevent tobacco related morbidity

and mortality among these individuals. In addition to the personal harm tobacco use can cause, continued use of tobacco products may reduce health professionals' ability to advise patients effectively.

To reduce prevalence among health professionals, more comprehensive public health initiatives are needed. The focus of these efforts should be on providing support for cessation among health professionals who smoke and providing training to health professionals to assist their patients with cessation. Programs with proven effectiveness are needed for dissemination at the national level.

To achieve the above mentioned goals as well as to improve and effectively implement the existing plans and strategies for anti-tobacco actions in Croatia, the following actions are suggested: further strengthen economic measures, especially taxation (price increases for tobacco have been shown to have a positive and complementary impact on tobacco consumption prevention and cessation); develop and promote effective cessation programs to reduce tobacco use among health professionals (majority of current smokers intend to quit and many have already tried unsuccessfully); design effective school-specific policies and bans on smoking in common areas and further improve enforcement of these rules in collaboration with school officials and tobacco control experts; introduce and strengthen prevention campaigns focusing on the specific needs of future health professionals in Croatia, addressing the probable gender difference regarding the age of first use of tobacco products; establish regional and/or local professional counselling facilities, assuring confidentiality and privacy, as those may be helpful for health professionals trying to quit smoking.

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Address for correspondence

Hrvoje Vrazic, MD
Department of Internal Medicine
University Hospital Dubrava
Avenija Gojka Suska 6
10000 Zagreb, Croatia
e-mail: hvrazic@kbd.hr