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Original Research

Tobacco use among medical students in Europe: Results of a multicentre study using the Global Health Professions Student Survey

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SUMMARY

Objective: To examine smoking prevalence, knowledge and attitudes, and tobacco cessation training among university students attending European medical schools using the Global Health Professional Students Survey approach.

Methods: A cross-country, cross-sectional study was performed among 12 medical schools in four countries in Europe (Germany, Italy, Poland and Spain). The survey was performed during the second semester of the third year of study from March to May 2009.

Results: In total, 2249 subjects entered the study (overall response rate 92%). The overall prevalence of smoking among medical students was 29.3% (95% confidence interval 28.1–34.7), with percentages ranging from 28% in Germany to 31.3% in Italy. This study found that more than two-thirds of medical students believe that health professionals are role models for patients, with different beliefs in Poland (89.6%) and Germany (77.7%) vs Italy and Spain (57.2% and 54.4%, respectively) ($P < 0.001$). Smoking cessation training at medical school was only reported by 16.5% of students (lowest proportion in Italy, 3.5%) ($P < 0.001$). In terms of smoking cessation methods, the vast majority (89.8%) of medical students were aware of nicotine patches and gum (highest prevalence in Spain, 96.3%), and 24.4% were aware of the use of antidepressants (highest prevalence in Germany, 33.6%).

Conclusion: This European survey found that the prevalence of smoking was higher among medical students than the general population. There is a strong need to provide medical students with training in smoking cessation techniques.

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Introduction

Cigarette smoking is considered to be one of the most important preventable risk factors for the development of chronic diseases[1] including cardiovascular and respiratory diseases,[2] several types of cancer[3,4] and non-tumoural pathologies.[5]

Paradoxically, health professionals, while recognizing smoking as the leading preventable cause of death and disability, are not aware of their fundamental role to help people quit smoking,[6,7] and in some countries, the prevalence of smoking is higher among health professionals than the general population.[8,9]

It is well recognized that helping patients to stop smoking is cost-effective. Unfortunately, research shows that only one in five patients receive advice and assistance to quit smoking, and a very low percentage receive pharmacotherapy.[10] One of the reasons for this could be the lack of comprehensive training in smoking cessation techniques in medical curricula, while there is evidence that introducing tobacco knowledge to the curriculum is effective in reducing the prevalence of smoking among medical students.[11]

In Europe, several studies have been conducted on knowledge, attitudes and behaviours of students towards tobacco smoking.[12–20] However, the main weakness in many surveys of tobacco use has been the lack of a standard definition for smoking status, or the use of different sampling methods, questionnaires and data collection procedures.[21]

In order to overcome these limitations, the World Health Organization (WHO), US Centers for Disease Control and Prevention (CDC) and the Canadian Public Health Association developed and implemented the Global Health Professions Student Survey (GHPSS).[22]

The aim of this study was to conduct preliminary research to examine smoking prevalence, knowledge and attitudes, and tobacco cessation training among university students attending medical schools in four European countries using the GHPSS approach.

Methods

Study design and population

A cross-country, cross-sectional study was carried out among medical schools in four European countries (Germany, Italy, Poland and Spain). As this survey was a preliminary step for a larger survey, a convenience sample was chosen, enrolling third-year medical students in each country (the standard approach in the GHPSS). The survey was carried out with students in the selected schools during the second semester of the third year of study in March to May 2009 at the medical schools of the following universities: Dresden (Germany); Chieti, Palermo, Rome Sapienza, Rome Catholic and Turin (Italy); Kracow, Lodz, Poznan and Warsaw (Poland); and Navarra and Salamanca (Spain). The study was made possible by the school councils of each university.

The questionnaires

The self-administered questionnaires were administered during regular class sessions in an anonymous, voluntary manner, in accordance with the protocol developed by WHO-Europe and the US CDC.[23]

The tool used in this cross-sectional study was the GHPSS questionnaire, which is an important part of the Global Tobacco Surveillance System developed in 1999.[24] The original version of the GHPSS questionnaire was translated into Italian, Spanish and Polish, while the English version was used in Germany. The translated versions were tested and Cronbach's alpha was calculated to assess internal consistency of the questionnaire.

The questionnaire is composed by 42 questions split into six sections, covering:

- prevalence of tobacco use (Questions 1–9);
- exposure to environmental tobacco smoke (i.e. time spent with people who smoke in places other than home) (Questions 10–13);
- attitudes (i.e. opinions about no-smoking policies and laws, and about the role of healthcare professionals in smoking cessation) (Questions 14–24);
- behaviour/cessation (i.e. smoking habit, willingness to stop, opinions about healthcare professionals who used to smoke) (Questions 25–32);
- Curriculum/training [i.e. formal training in smoking cessation techniques on the medical curriculum and knowledge about methods (pharmacological or counselling techniques) for help to quit] (Questions 33–39); and
- Demographics (age, gender, course year) (Questions 40–42).

Outcome measure

In this survey, the outcome variable concerning smoking habits was 'to be a current smoker' (i.e. smoked cigarettes on at least 1 day during the 30 days before the survey).

Statistical analysis

Descriptive statistics was performed using absolute frequencies and percentages for qualitative variables, and mean and standard deviation (SD), and 95% confidence intervals (95% CI) for quantitative variables. Bivariate analysis was conducted using *t*-tests and Chi-squared tests in order to evaluate differences for quantitative and categorical variables, respectively.

Statistical analysis was performed using Statistical Package for the Social Sciences Version 12.0 (SPSS Inc., Chicago, IL, USA). The level of significance was set at $P \leq 0.05$.

Results

Out of 2443 medical students in the third year of the 12 participating universities, 2249 entered the study (overall response rate 92.0%): 744 (33.2%) from Poland, 655 (29.1%) from Italy, 497 (22.1%) from Germany, and 353 from Spain (15.7%). Females represented 50.4% of the total sample population, with significant differences found between countries ($P < 0.001$). The mean (SD) age of the sample was 21.34 (1.82) years (range 20–44 years).

Behaviour

The global prevalence of smoking among medical students was 29.3% (95% CI 28.1–34.7), with rates ranging from 28.0% in Germany to 31.3% in Italy (without differences between countries, $P = 0.723$) (Table 1).

In Germany, Italy and Spain, male students were more likely to be current smokers than female students, although the difference was only significant in Germany ($P < 0.0001$; Italy $P = 0.309$; Spain $P = 0.134$). The opposite was found in Polish medical students, where the prevalence of smoking was higher in females ($P = 0.002$).

The majority of medical students ($n = 1701$, 75.6%) had tried smoking (at least one or two puffs), and 775 (34.4%) respondents had smoked their first cigarette between 11 and 15 years of age. It is interesting to note that 762 (33.9%) students had tried chewing tobacco, snuff, bidis, cigars or pipes at least once (highest prevalence in Poland, 49.5%; lowest prevalence in Italy, 21.6%).

Twenty-one percent of the respondents declared that they had smoked cigarettes on the school premises/property over the past year, with the highest prevalence in Italy (25.6%) and the lowest prevalence in Poland (14.1%). Cigarette smoking in school buildings was less common, ranging from 8.5% of respondents in Italy to 1.6% of respondents in Spain. More than half of the respondents in Italy (52.7%) believed that the smoking ban is strictly enforced in their school, compared with 94.5% of respondents in Spain ($P < 0.001$).

Attitudes and beliefs

This study found that more than two-thirds of medical students believe that health professionals are role models for patients, with different beliefs in Poland (89.6%) and Germany (77.7%) vs Italy and Spain (57.2% and 54.4%, respectively) ($P < 0.001$). Conversely, students from the Mediterranean countries (Italy 95.3%, Spain 99.1%) are more prone to think that health professionals have a role in giving advice or information about smoking cessation (Poland 90.3%, Germany 85.5%) ($P < 0.001$) (Table 2).

In terms of beliefs about banning smoking, significant differences emerged between the countries (Table 3).

The Spanish and Polish students considered banning the sale of tobacco products to people under 18 years of age to be more important than the Italian and German students. However, the Italian students were most in favour of banning cigarette advertising (77.5%), and banning smoking in restaurants (97.7%), discos, bars and pubs (91.7%), and public places (93.6%).

Training and knowledge

Remarkably, only 16.5% of respondents had received smoking cessation training during their time at medical school, with significant differences between Italy (3.5%) and the other countries ($P < 0.001$) (Table 2). In terms of knowledge of smoking cessation methods, the vast majority (89.8%) of medical students were aware of nicotine patches and gum (highest prevalence in Spain, 96.3%), and 24.4% were aware of the use of antidepressants (highest prevalence in Germany, 33.6%).

Discussion

This European survey found that smoking prevalence among medical students (almost 30%) was higher than that in the general population, with significant differences between countries (highest prevalence in Italy), in line with other GHPSS surveys conducted in other WHO-Europe countries (comparable prevalence in countries such as Republic of Srpska, 32.1%; Croatia, 36.6%; Czech Republic, 21.6%; Lithuania, 27.6%; Republic of Serbia, 34.7%; Slovakia, 30.4%; higher prevalence in Albania, 43.3%; Bosnia and Herzegovina, 47%).[23] These results are of particular interest, even if these prevalence rates are compared with those of the general population at national level (23% in Italy, 31.5% in Spain, 26% in Germany and 28% in Poland).[25,26]

Medical students are the medical practitioners of the future, and need to acquire knowledge about smoking-related diseases and specific skills in smoking cessation techniques. Teaching medical students how to help smokers to quit is an important issue that has to be introduced into the curricula of medical schools.[24,27]

According to Warren *et al.*,[23] health institutions (in this case, medical schools) have a moral duty to help their students quit smoking by providing encouragement and information to students who are considering quitting, and helping those students who are motivated to quit.

Another interesting point raised by the survey is that most medical students recognized that healthcare professionals play a key role as models for the general population, and were aware that they may receive specific undergraduate training on counselling patients to quit smoking. However, most of the students reported that they had not received such training in a formal way during regular courses. Regarding attitudes towards tobacco use, significant differences were found between the countries, and these differences could be used at national level to design and implement country-specific smoking cessation programmes. In this context, the design and implementation of programmes on smoking cessation counselling techniques are an ethical issue in medical schools in Europe.

Table 1 – Prevalence of current cigarette smoking among third-year medical students, by gender and country.

Country	Total			Male smokers		Female smokers	
	n	%	Smokers (%)	*n*	%	*n*	%
Germany	497	22.1	139 (28.0)	65	42.2	74	21.6
Italy	655	29.1	205 (31.3)	104	34.2	101	28.8
Poland	744	33.1	214 (28.7)	142	25.7	72	37.5
Spain	353	15.7	102 (28.9)	34	32.7	68	27.3

Table 2 – Medical students' attitude towards and training in smoking cessation counselling, by country.

Country	Do health professionals serve as role models for their patients and the public? *n* (%)	Do health professionals have a role in giving advice or information about smoking cessation to patients? *n* (%)	At medical school, have you been taught about the dangers of smoking? *n* (%)	At medical school, have you ever received any formal training in smoking cessation approaches to use with patients? *n* (%)	Have you ever heard of using nicotine patches or gum in tobacco cessation programmes? *n* (%)	Have you ever heard of using antidepressants (such as Bupropion or Zyban) in tobacco cessation programmes? *n* (%)
Germany	386 (77.7)	425 (85.5)	449 (90.3)	96 (19.3)	454 (91.3)	167 (33.6)
Italy	375 (57.2)	624 (95.3)	478 (73.0)	23 (3.5)	573 (87.5)	128 (19.5)
Poland	667 (89.6)	672 (90. 3)	595 (80.0)	183 (24.6)	657 (88.3)	148 (19.8)
Spain	192 (54.4)	350 (99.1)	269 (76.2)	71 (20.1)	340 (96.3)	106 (30.0)
P[a]	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

a Chi-squared test.

Table 3 – Beliefs of medical students about banning smoking, by country.

Country	Should tobacco sales to adolescents (<18 years old) be banned? *n* (%)	Should there be a complete ban of advertising of tobacco products? *n* (%)	Should smoking be banned in restaurants? *n* (%)	Should smoking be banned in discos/bars/pubs? *n* (%)	Should smoking be banned in all enclosed public places? *n* (%)
Germany	393 (79.1)	319 (64.2)	465 (93.6)	371 (74.6)	398 (80.0)
Italy	556 (84.9)	508 (77.5)	640 (97.7)	601 (91.7)	613 (93.6)
Poland	685 (92.1)	466 (62.6)	648 (87.1)	456 (61.3)	554 (74.5)
Spain	344 (97.4)	238(67.4)	272 (77)	181 (51.3)	261 (73.9)
P[a]	<0.001	<0.001	<0.001	<0.001	<0.001

a Chi-squared test.

The present survey has some limitations, firstly due to the study design. The main limitation concerns the time when the research was conducted. One could argue that asking third-year medical students about tobacco cessation training programmes could be unrealistic, as these elements could be covered in subsequent years of their courses. However, partial training (lecture only) was only anticipated at one university.

Secondly, a cross-sectional design was used to collect data on smoking prevalence, and knowledge, attitudes and behaviours towards tobacco, and possible information bias could have occurred. However, a well-established tool was used for data collection.

Moreover, a very strict definition of smoking was used, based on WHO's standard definition for smoking status. Considering the convenience sample used, the results are not fully representative of the countries involved, since, according to the WHO procedure, the GHPSS survey needs to be conducted in approximately 10 schools per country. Nevertheless, the preliminary results from the survey were useful to demonstrate the feasibility of the GHPSS approach in these countries. While several medical schools from Italy, Poland and Spain took part in the study, only one institution in Germany was recruited, which could bias the results. Future studies will need proportional probability of enrolment of third-year students at national level in order to reach representativeness.

Potential bias related to the social undesirability of smoking also needs to be taken into account, as participants may report healthier lifestyles. As far as external validity is concerned, as the survey was performed in selected medical schools in each country, the lack of representativeness could be an issue. Nevertheless, this was the first time such a survey was conducted in these four countries using a standardized methodology. Moreover, data collected on smoking prevalence and knowledge, attitudes and beliefs on this issue can be used to promote public health and national programmes for smoking cessation, particularly to create tobacco control training programmes for healthcare students for their role of future healthcare providers.

In conclusion, this survey demonstrated that 28–31% of third-year students at medical school are active smokers, and only one-sixth of them had received training in smoking cessation during their time at medical school. These results are of particular interest for academic, medical and policy-making communities. There is a need to provide medical students with training in smoking cessation techniques to provide active support to smokers.[28,29]

The European Union Member States and the national medical schools should collaborate to develop and implement tobacco control policies in medical schools. Some research indicates that there is a strong need to strengthen efforts in this area at the European level, but further research is needed.[30]

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Ethical approval

None sought, according to the national laws ethical approval is not needed for cross-sectional designed studies.

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Competing interests

None declared.

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