Original Article

Smoking habits, attitudes and training among medical students of the Democritus University of Thrace

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SUMMARY. INTRODUCTION Tobacco use continues to be the leading global cause of preventable death, contributing to the death of nearly 6 million people each year. Medical students, who are future doctors, have an important role to play in smoking cessation and prevention. The objective of this study was to estimate the prevalence of tobacco use among medical students of the Democritus University of Thrace Medical School, and to evaluate their smoking-related attitudes and the training in tobacco issues they receive during their studies at the University. **METHODOLOGY** This study was conducted from March to May 2011. The students were asked to complete a modified version of the Global Health Professional Students' Survey (GHPSS) questionnaire. The final study population consisted of 233 randomly selected students in the 1st-6th years of medical studies. **RESULTS** Of the 233 students invited to participate, 229 submitted adequately completed questionnaires. Of this sample, 24% were smokers, 38.2% of whom had experimented with smoking at the age of 11-15 years. The banning of smoking in all enclosed public places was considered useful by 88.6%, with a statistically significant difference between smokers and non-smokers (65.5% vs. 96%, $p<0.001$). Of the participants, 31% believed that slim/light and hand-rolled cigarettes are less harmful, and only 8.1% had been taught cessation techniques and 17.8% the reasons why people smoke. **CONCLUSIONS** The study shows that the prevalence of smoking among medical students in northern Greece is high compared with other countries. It is evident that the issue of tobacco use is not covered adequately and systematically by the Medical School curriculum. ***Pneumon 2012, 25(2):208-218.***

INTRODUCTION

Tobacco use continues to be the leading global cause of preventable

death. It kills nearly 6 million people and is responsible for hundreds of billions of dollars of economic damage worldwide each year. Most of the deaths occur in low- and middle-income countries, and this disparity is expected to widen further over the next several decades. If current trends continue, by 2030 tobacco will kill more than 8 million people worldwide each year, and over the course of the 21st century, tobacco use could kill approximately a billion people unless urgent action is taken.[1]

Obviously, physicians should play an important role in the reduction of the prevalence of smoking, providing their patients with smoking cessation counselling. A number of studies[2-7] have found that smoking cessation rates increase after even brief or simple counselling by physicians. These studies have shown that physicians are willing to provide counselling and that patients who smoke are receptive to such counselling, but in many cases the counselling is not repeated at subsequent visits, nor is there any follow up. In addition, barriers have been identified that reduce the willingness of physicians to provide patient counselling, including time constraints during the consultation and physicians' lack of confidence in their ability to provide effective advice, while the high prevalence of tobacco use among physicians themselves in many countries, including Greece[8], constitutes a major problem.

Article 12 of the WHO Framework Convention on Tobacco Control (WHO FCTC) calls on parties to implement effective and appropriate training on tobacco control to health professionals.[9] The WHO notes that "managing tobacco dependence is primarily the responsibility of a country's health-care system" while it identifies "counselling by health professionals during regular medical care" as a primary intervention in smoking cessation.[10]

Medical students, who are the future doctors, have an important role to play in the cessation and prevention of tobacco use. In spite of this, a vast body of evidence shows that the prevalence of tobacco smoking is fairly high among medical students, and that they are lacking in adequate knowledge about smoking related diseases and tobacco cessation techniques.[11] Some studies recommend that medical students should be adequately trained to be able to provide counselling on smoking cessation in their future careers[12-14], but a worldwide survey on teaching about tobacco reports that tobacco smoking issues are usually taught only occasionally, as and when the topic arises.[15,16]

Based the above documentation, the objectives of this study were to: 1) estimate the prevalence of tobacco use among medical students, their exposure to environmental smoke and their smoking cessation efforts, 2) evaluate their smoking-related attitudes, and 3) evaluate the training in tobacco issues provided by the medical school curriculum.

METHODOLOGY

Material

This study was conducted from March to May 2011. The study population consisted of 233 students of the Medical School of the Democritus University of Thrace (DUTH) in the 1st-6th years of their studies. The students were randomly selected, during their academic lessons, and were asked to complete the questionnaire anonymously. Four questionnaires were excluded because of mistakes in completion, giving a final sample of 229.

Method

A modified version of the Global Health Professional Students' Survey (GHPSS) questionnaire translated into Greek was used. The questionnaire (appendix) included 31 questions, divided into 6 units regarding respectively the students' smoking habits, attitudes toward tobacco control activities, the training received with regard to smoking, and demographic characteristics.

Statistical analysis

The results are presented as n/total (%). Analysis for qualitative variables was carried out with the use of x^2 tests, with $p<0.05$ considered as statistically significant. The statistical analysis was performed with the statistical package SPSS 19 (SPSS Inc, IL, USA).

RESULTS

Smoking Habits and Attitudes

The final study sample consisted of 229 medical students. Among the total population, 105 (45.9%) were males and 124 (54.1%) were females. The majority of the students were aged 18-23 years (87.3%), while only 1.3% were <18 years and 11.4% ≥24 years. For the objectives of this study, smokers were defined as those who had smoked in the last month. Regarding the students' smoking habits, 174/229 (76%) were non smokers and 55 (24%) smokers, with a statistically significant difference between male and female smokers (30.5% vs. 18.5%). The distribution of the students and smokers in each year of

studies is shown in Table 1.

Experimenting with smoking in the past was reported by 150/229 (65.5%) students, with no statistically significant difference between males and females (p=0.083). Among those who had experimented with smoking, 55 (36.7%) reported being current smokers. Table 2 shows the age at which the students experimented with smoking for the first time. There was a statistically significant association (p=0.025) between experimentation age and smoking habits, with a particularly strong relationship between experimentation at the age of 11-15 years and current smoking habits (38.2% smokers vs. 17.9% non-smokers, p=0.006).

Table 3 shows the types of cigarettes used by smokers. Female smokers appear to use more slim and light cigarettes. Among the total study population, 71/229 (31%) and 72/229 (31.4%) believe that slim/light cigarettes and hand-rolled cigarettes, respectively, are less harmful than regular cigarettes. A statistically significant difference was shown between smokers and non-smokers in their beliefs about hand-rolled cigarettes (24.1% vs. 54.5%, p<0.001). Smoking on medical school premises during the past year was reported by 36/229 (65.5%) smokers. Among the total

TABLE 1. Study sample of medical students: Students' and Smokers' year of studies.

Year of Studies	Students % (n)	Smokers % (n)
1st	18.8 (43)	25.5 (14)
2nd	22.3 (51)	23.6 (13)
3rd	12.7 (29)	14.5 (8)
4th	15.7 (36)	9.1 (5)
5th	16.6 (38)	12.7 (7)
6th	14.0 (32)	14.5 (8)
Total	100.0 (229)	100.0 (55)

TABLE 2. Age (years) at experimentation with tobacco of medical students.

Age	%	N
<10	4.0	6
11-15	25.3	38
16-17	33.3	50
18-19	25.3	38
20-24	12.0	18
Total	100.0	150

TABLE 3. Type of cigarettes students smoked by medical students

Type of cigarette	%	N
Regular	21.8	12
Light	23.6	13
Slim	10.9	6
Hand-rolled	43.6	24
Total	100.0	55

TABLE 4. Medical students' attitudes towards tobacco control and smoking cessation, according to their smoking status

	Total % (n)	Non-smokers % (n)	Smokers % (n)	p
Should tobacco sales to minors be banned? (Yes)	87.8 (201)	89.7 (156)	81.8 (45)	0.122
Should there be a complete ban of the advertising of tobacco products? (Yes)	74.2 (170)	74.9 (129)	74.5 (41)	0.952
Do you consider useful the banning of smoking in all enclosed public places? (Yes)	88.6 (203)	96.0 (167)	65.5 (36)	<0.001
Do health professionals have a role in giving advice or information about smoking cessation to patients? (Yes)	98.7 (226)	98.9 (172)	98.2 (54)	0.704
Should medical students get specific training on cessation techniques? (Yes)	92.1 (211)	93.1 (162)	89.1 (49)	0.335
Do health professionals serve as role models for their patients and the public? (Yes)	64.6 (148)	69.0 (120)	50.9 (28)	0.015
Should health professionals routinely advise their patients who smoke to quit smoking? (Yes)	94.3 (216)	94.8 (165)	92.7 (51)	0.557
Are patient's chances of quitting smoking increased if a health professional advises him or her to quit? (Yes)	80.8 (185)	82.8 (144)	74.5 (41)	0.178

sample, 77/229 (33.6%) reported being passive smokers in their home and 201/229 (87.8%) passive smokers in places other than those where they live. Of these, 14/229 (18.2%) and 62/229 (30.8%) respectively reported being passive smokers on a daily basis. Table 4 summarizes the students' attitudes towards smoking control.

Cessation

Table 5 shows how soon after waking students who smoke light up their first cigarette. Among the smokers, 29/55 (52.7%) reported that they do not want to stop smoking and 31/229 (56.4%) that they have not tried to quit during the past year. Among the total sample, 132/229 (57.6%) believe that health professionals who smoke are less likely to advise patients to stop smoking, with a statistically significant difference between smokers and non-smokers (45.5% vs. 61.5%, p=0.036).

Curriculum and Training

In this unit the subsample includes medical students in the 3rd – 6th years (n=135), who have received clinical training. The main areas of inadequate training identified in the questionnaire include the reasons for which people start smoking (only 17.8% of the sample had ever discussed this issue during their studies), smoking cessation techniques (only 8.1% had received such training), the supply of educational materials to patients (27.4% reported knowing of its importance) and the use of antidepressants in smoking cessation (34.8%). Detailed information regarding the students' beliefs on the training they received on smoking related issues is depicted in Table 6.

TABLE 5. Time after waking that smokers light their first cigarette

Time	%	N
<10 min	16.4	9
10-30 min	23.6	13
31-60 min	21.8	12
>60 min	38.2	21
Total	100.0	55

DISCUSSION

The main findings of this study are the high prevalence of smoking among the students of the DUTH Medical School and the lack of education they have received on tobacco control and cessation, which demonstrate the need for enrichment of the relevant curriculum during their undergraduate education.

The prevalence of smoking appears to be lower than that in other medical schools in Greece. In the University of Athens Medical School it is reported that 28% and 32% of students are regular and occasional smokers, respectively[17]. In the University of Crete Medical School, 33.2% of male and 28.4% of female students are reported to be smokers[18] and in the Aristotle University of Thessaloniki Medical School 40.7% of the students smoke (41.4% of the males and 39.6% of the females)[19]. Compared with medical schools in other countries, smoking among medical students in Greece is higher than in countries such as the U.S.A. (7%), Australia (4-6%), India (7%) and China (6%

TABLE 6. Medical students' educational background on smoking and smoking cessation, according to smoking status

During your medical school training…	Total % (n)	Non-smokers % (n)	Smokers % (n)	P
…were you taught in any of your classes about dangers of smoking? (Yes)	80.7 (109)	79.4 (85)	85.7 (24)	0.453
…did you discuss in any of your classes the reason why people smoke? (Yes)	17.8 (24)	20.6 (22)	7.1 (2)	0.098
…did you learn that it is important to record tobacco use history as part of a patient's general medical history? (Yes)	88.9 (120)	89.7 (96)	85.7 (24)	0.548
…have you ever received any formal training in smoking cessation approaches to use with patients? (Yes)	8.1 (11)	10.3 (11)	0.0 (0)	0.077
…did you learn that it is important to provide educational materials to support smoking cessation to patient who want to quit smoking? (Yes)	27.4 (37)	27.1 (29)	28.6 (8)	0.877
…have you ever heard of using NRTs in tobacco cessation programmes? (Yes)	94.1 (127)	92.5 (99)	100.0 (28)	0.136
…have you ever heard of using antidepressants in tobacco cessation programmes? (Yes)	34.8 (47)	37.4 (40)	25.0 (7)	0.221

- Hong-Kong 0.7%), but lower than in Spain (42%) and other countries in Eastern Europe and the Balkans, such as Albania (43.3%) and the Russian Federation (38.8%)[2,20,21]. Smoking among medical students, however, is much less than that of university students in non-medical schools in Greece (50.2%)[22]. Encouragingly, there has been a reduction in the number of smokers among DUTH medical students compared with the results of a similar survey conducted in 2007, when 31.7% of medical students were reported as smokers.[23] The observed differences are probably due to the fact that the 2007 study was conducted before the application of systematic tobacco control measures, such as adoption of laws to ban smoking in all enclosed public places and providing information to the society about the consequences of smoking.

The statistically significant association between smoking habits and the age of experimentation is noteworthy. It appears that experimenting at the age of 11-15 years carries a high danger of starting long-term tobacco use in the future. This result is consistent with studies conducted both in Greece[23,24] and abroad[25]. This underlines the need for antismoking intervention in these age groups, through special educational protocols directed at discouraging the start of smoking in adolescence.[26,27]

This survey has demonstrated a statistically significant difference between males and females in smoking habits, with a higher rate of smokers among the males. This is confirmed by almost all such surveys that have been conducted.[21] It also reflects the epidemiological stage of the smoking epidemic in Greece, where the number of female smokers is expected to increase in the future.[29] The tendency for female students to prefer smoking slim and light cigarettes has been referred to in other studies.[30]

Apart from the smoking habits of the medical students themselves, it is important to examine their beliefs about tobacco control, which reflect the training they receive. The fact that medical students mostly agree with banning of tobacco sales to minors, banning of advertisement of tobacco products and banning of smoking in all enclosed public places is encouraging. The prevalence of smoking among minors is alarmingly high in Greece, while access to the tobacco market and exposure to tobacco advertising is almost universal.[31] Although laws have been adopted prohibiting tobacco sales to minors, it appears that this has not been sufficient to prevent smoking in the young age groups, but it may help to reduce it.[32,33] The WHO also promotes the banning of advertisement of tobacco products[1,9], while it emphasizes the importantance of promotion of anti-smoking advertisements and the implementation of health education projects with the participation of health professionals[34]. One of the major recommendations of WHO is to ensure smoke-free enclosed public places, in order to protect people from exposure to environmental smoke.[9,35,36] This study shows a statistically significant difference between smokers and non-smokers in their beliefs about banning smoking, with smokers agreeing with the ban in a majority, but in a lower proportion than non-smokers. This finding was also, observed in other studies in the past.[37] One important finding was that about 2 in 3 smokers have smoked inside the buildings of the university, which perhaps reflects the general state of poor implementation of the anti-smoking legislation.

Another alarming finding is that about 1 in 3 medical students believe that the use of slim/light or hand-rolled cigarettes is less harmful than the use of regular cigarettes. Studies have shown that light cigarettes carry no difference in risk of lung cancer[38], deliver high levels of nicotine[39] and do not encourage smoking cessation[40], partly because smokers vary their puffing to regulate nicotine levels by smoking more intensely[41]. Hand-rolled cigarettes are as harmful, or even more harmful, than the regular ones, because they can contain up to two or three times higher the level of tar and nicotine, while they can cause greater dependence.[42] It is noteworthy, therefore, that future doctors, who will be called upon to counsel their patients, do not know the actual harmfulness of such cigarettes. This contributes substantially in the tobacco industry myth that light cigarettes are less harmful.[43,44] These are misconceptions that need to be redressed.

Most students believe that doctors who smoke are less likely to advise their patients to quit, but there is a difference between student smokers and non-smokers. Smokers believe that even a doctor who smokes will advise smokers to quit, while non-smokers reject this idea categorically. This phenomenon is confirmed by studies showing that doctors who smoke are less likely to counsel their patients, probably because they feel ill-equipped to help others while they have failed to quit smoking themselves.[45,46]

All of the above data demonstrate the need for more adequate training of medical students about smoking. There is high prevalence of smoking among medical students and they have distorted beliefs that are not suited to their role as future health professionals. Physicians are regarded as the most reliable source of advice and information on health issues and they act as role models for the rest of society[47], as is recognized by the majority

of medical students. Several studies have demonstrated the crucial role of physicians in the promotion of smoking cessation, through counselling[3-7,10,48], a role which is acknowledged by the vast majority of medical students.

Medical students recognize their need to receive training on smoking cessation. Medical schools need to take appropriate action by including approaches to smoking and its cessation in their curriculum.[12] Almost all students believe both that they have a specific role to inform and advise patients about smoking cessation and that they should receive relevant training in order to be able to achieve this. At present, however, there is lack of knowledge among medical students about cessation techniques and treatment of smoking. Relevant studies have shown that medical students are lacking in knowledge about smoking and therefore they do not feel prepared to help their patients to quit.[49-52]

Only 27% of 561 medical schools from 109 countries have a separate course covering the issues of smoking. The training in these schools is usually limited to the theoretical level and is not systematic. There are deficiencies related to the practical aspects of counselling for smoking cessation, as fewer than half of the schools train their students in contact with real patients or through role playing.[15] Even in the medical schools where education about smoking through various methodsis included in the curricula, this topic is not integrated into all the years of studies, and the lessons focus on general population, not taking into account the needs of special groups.[53] It would seem to be important for the tobacco issues to be approached systematically within the curriculum throughout all years of studies, in order that medical students acquire comprehensive knowledge about smoking. As suggested by studies, students could benefit from training that enhances their skills in smoking prevention and cessation.[54] Even first-year medical students who learned motivational interviewing skills to address tobacco cessation subsequently felt greater responsibility for promoting behaviour change in patients, and increased their skill-related knowledge and confidence.[55] At the present time several medical schools have training programmes that are integrated into the curriculum with the aim of teaching intervention for smokers and these include both theoretical and practical training.[11,12,53,56,57]

This study is subject to at least three limitations. First, the survey results should not be extrapolated to account for practising health professionals, because the participants come from all years of studies, each with a different degree of interaction with patients. Second, it does not include students in other health professional schools who also have a role in providing patients with smoking cessation counselling (for example, nurses and psychologists). Third, the data were based on the self-report of students, who might underreport or over-report their behaviour or attitudes. The extent of this bias cannot be determined from these data, but reliability studies in the U.S.A. have indicated good results for similar questions.[58]

Medical schools, public health organizations and education officials in Greece should discourage tobacco use among medical students and all health professionals, and should work together to design and implement in the medical school curricula training in smoking prevention and cessation, utilizing evidence-based strategies. Previous studies have noted problems in preparing medical students for a role in tobacco use control, such as inadequate training[11-16,49-52] and barriers identified by doctors, including lack of time and confidence[2-7]. Despite these barriers, structural and institutional interventions in the healthcare system and medical schools should improve the incorporation of tobacco cessation strategies into standard healthcare delivery.[59] In this way, future doctors will be able to play a key role as models to patients and society and to provide their patients accordingly with effective advice and suppot. Physicians constitute an important population group that may help to reduce the prevalence of smoking.[10] For this reason resources should be invested in the training and preparation of medical students.

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APPENDIX

GHPSS Questionnaire (modified)

Smoking habits

Q1: Have you ever tried smoking, even one or two puffs?
1. Yes
2. No

Q2: How old were you when first tried smoking?
1. I have never smoked
2. Age 10 or younger
3. Age 11-15
4. Age 16-17
5. Age 18-19
6. Age 20-24
7. Older than age 24

Q3: During the past 30 days, on how many days did you smoke?
1. 0 days
2. 1-2 days
3. 3-5 days
4. 6-9 days
5. 10-19 days
6. 20-29 days
7. All 30 days

Q4: How many years do you smoke?
1. I don't smoke
2. I am former smoker
3. _____ years / months
4. Q5: How many cigarettes do you smoke daily / weekly?
5. I don't smoke
6. I am former smoker
7. _____ cigarettes daily (if you smoke one or more cigarettes / day)
8. _____ cigarettes weekly (if you smoke less than one cigarette / day)

Q6: What type of cigarettes do you smoke?
1. I don't smoke
2. I am former smoker
3. Regular
4. Light
5. Slim
6. Hand-rolled
7. Other:_____

Q7: In your opinion, are slim / light cigarettes as harmful as regular cigarettes?
1. The same
2. Less
3. More

Q8: In your opinion, are hand-rolled cigarettes as harmful as regular cigarettes?
1. The same
2. Less
3. More

Q9: During the past year, have you smoked cigarettes on school premises / property?
1. I don't smoke
2. Yes
3. No

Exposure to environmental smoke

Q10: During the past 7 days, on how many days people smoked where you live, in your presence?
1. 0 days / No one smoked
2. 1-2 days
3. 3-4 days
4. 5-6 days
5. All 7 days

Q11: During the past 7 days, on how many days people smoked, in your presence, in places other than you live?
1. 0 days / No one smoked
2. 1-2 days
3. 3-4 days
4. 5-6 days
5. All 7 days

Attitudes

Q12: Should tobacco sales to minors be banned?
1. Yes
2. No

Q13: Should there be a complete ban of the advertising of tobacco products?
1. Yes
2. No

Q14: Do you consider useful the banning of smoking in all enclosed public places?
1. Yes
2. No

Q15: Do health professionals have a role in giving advice or information about smoking cessation to patients?
1. Yes
2. No

Q16: Should medical students get specific training on cessation techniques?
1. Yes
2. No

Q17: Do health professionals serve as role models for their patients and the public?
1. Yes
2. No

Q18: Should health professionals routinely advise their patients who smoke to quit smoking?
1. Yes
2. No

Q19: Are patient's chances of quitting smoking increased if a health professional advises him or her to quit?
1. Yes
2. No

Cessation

Q20: How soon after you awake do you smoke?
1. I have never smoked
2. I am former smoker
3. Less than 10 minutes
4. 10-30 minutes
5. 31-60 minutes
6. More than 60 minutes

Q21: Do you want to stop smoking now?
1. I have never smoked
2. I am former smoker
3. Yes
4. No

Q22: During the past year, have you ever tried to stop smoking?
1. I have never smoked
2. I am former smoker
3. Yes
4. No

Q23: How long ago did you stop smoking?
1. I have never smoked
2. I have not stopped smoking
3. Less than 1 month
4. 1-5 months
5. 6-11 months
6. One year
7. 2 years
8. 3 years or longer

Q24: Have you ever received help or advice to help you stop smoking?
1. I have never smoked
2. Yes
3. No

Q25: Are health professionals who smoke less likely to advise patients to stop smoking?

1. Yes
2. No

Education / Training

Q26: During your medical school training…

1. …were you taught in any of your classes about dangers of smoking? Yes No
2. …did you discuss in any of your classes the reasons why people smoke? Yes No
3. …did you learn that it is important to record tobacco use history as part of a patient's general medical history? Yes No
4. …have you ever received any formal training in smoking cessation approaches to use with patients? Yes No
5. …did you learn that it is important to provide educational materials to support smoking cessation to patient who want to quit smoking? Yes No

Q27: Have you ever heard of using nicotine replacement therapy (gum, nicotine patch etc) in tobacco cessation programmes?

1. Yes
2. No

Q28: Have you ever heard of using antidepressants (bupropion or Zyban) in tobacco cessation programmes?

1. Yes
2. No

Demographic characteristics

Q29: How old are you?

1. Less than 18 years
2. 18-19 years
3. 20-21 years
4. 22-23 years
5. 24 years or more

Q30: What is your gender?

1. Male
2. Female

Q31: What is your course year in school?

1. 1st year
2. 2nd year
3. 3rd year
4. 4th year
5. 5th year
6. 6th year