



Tobacco Smoking Among Physicians and Medical Students

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Abstract

Tobacco smoking is a mental and behavioral disease. It causes significant pathology and premature death in more than seven million individuals a year around the globe. Because smoking is such an important public health issue, the general public will benefit from targeted preventive strategies. Medical doctors have a vital role in smoking cessation of their patients. Non-smokers are more successful in this role than chronic smokers. Governmental regulation on smoking, as well as strict no-smoke policy in hospitals and university campuses will help not only medical students, other health workers and the general public to quit smoking and contribute to the general good health of this population. The aim of this comment is to analyse the current smoking habits of physicians and medical students and presents policies and other help to the medical students to stop tobacco smoking.

Key words: Tobacco smoking; Nicotine; Smoking cessation; E-cigarettes; Tobacco module; Nicotine replacement therapy.

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Introduction

Tobacco smoking is classified (Classification of Diseases, ICD-10) as a mental and behavioral disease. Smoking poses a major public health problem, because among the more than a billion smokers around the globe, it causes significant pathology and premature death in more than seven million individuals a year.¹ Moreover, the prevalence of smoking has increased dramatically within the 20th century and continues to increase in many underdeveloped countries.² Despite the association of tobacco smoking with numerous diseases and adverse effects, the habit continues, especially among young people. In addition to the health risks caused by smoking, there is generally a negative perception of smokers within an educated society. Nonetheless, many medical professionals continue to smoke. By the middle of the last century in many countries, including the former Yugoslav republics, approximately half of

all physicians smoked. Now that number has decreased again by half, to approximately 25 %.

Main aim of this article is to analyse the current smoking habits of physicians and medical students. Because smoking is such an important public health issue, the general public will benefit from targeted preventive strategies, along with physicians and their patients, as well.

Smoking prevalence of physicians and medical students

Data recently obtained from 246 studies worldwide,³ show a 21 % smoking prevalence among all physicians. Prevalence of smoking was 25 %

for medical students, 24 % among general practitioners, 18 % among surgical specialties, 17 % for psychiatrists, 16 % in internal medicine specialties, 11 % in anesthesiologists, 9 % in radiologists and 8 % in pediatricians. Male physician populations include a higher prevalence of smokers and age did not influence that number.³

The educational status and medical specialty can influence the degree of stress. Medical students are exposed to the stress of difficult academic studies and they often exposed to gatherings where most participants smoke. One subgroup of physicians, general (family) practitioners often experience heavy workloads, which combines increased stress with inadequate working conditions. These factors may lead to depression and drug use. In addition, those who practice in a specialty such as surgery, may face legal issues related to their work. Altogether these contributing factors constitute traumatic experiences and thus increased stress.

On the other hand, pediatricians probably smoke less because they deal most frequently with common and curable diseases. The prevalence of smoking for medical students varies significantly in various countries. At the Tbilisi medical school the prevalence for medical students is 49 %, in Bologna 37 %, Spain 42 %, Greece 41 %, India 7 %, China 4-6 %, Australia 3 % and 2-3 % in American medical schools.^{4,5} Due to specific social habits, male physicians in almost all countries smoke more than their female counterparts. Sixty years ago, over 40 percent of the population in the former Yugoslavia smoked. Since then, the number of smokers has gradually declined. In addition to a prominent tobacco culture, two opposing factors also influenced smoking prevalence in every country examined: tobacco marketing and tobacco control. Tobacco marketing tends to target more poor countries, but it still remains a great public health problem in both developing and developed countries. Nowadays, the prevalence of cigarette smoking in Slovenia is about 23 %, Serbia 34 %, Croatia 36 %, Montenegro 36 %, Bosnia and Herzegovina 36 %, Northern Macedonia 37 % and among 12 European countries in 2018, the prevalence of tobacco smoking ranged from 19 % in Italy to 37 % in Bulgaria and Greece.⁶

A survey performed in Serbia 2013 shows that 23 % physicians and 39 % nurses were smokers. Physicians in average smoked for 29.3 years and nurses 18.9; physicians daily used 17.5 cig-

arettes, nurses 16.2. Five years later, the prevalence of smoking among primary care physicians in Serbia has not improved.⁸

Tobacco, nicotine and e-cigarettes

Tobacco leaves have been cultivated by native American tribes around Peru and Ecuador, who traditionally smoked socially and ceremoniously.⁹ Among many species of tobacco, *Nicotiana tabacum* is the main commercial product. Cigarettes contain about 600 chemicals, but smoke has more than 7,000. At least 69 of these chemicals are toxic and can cause cancer. Nicotine is a very toxic compound, but its content in a cigarette is small (10 to 12 mg). A smoker inhales about 1.0 - 1.8 mg of nicotine from each cigarette. Among other biological effects, nicotine is now known to be addictive. In addition, the manufacturers of cigarettes have added various chemicals to enhance the taste and absorption of nicotine.

Smoking tobacco increased globally when tobacco was manufactured as cigarettes, especially during the First World War. In the 1880s, a rolling machine was invented and the new tobacco product was prepared using the milder sorts of tobacco, which enabled smokers to inhale and consequentially, smoking rates increased dramatically and the premature deaths of smokers significantly increased.

In the nineteenth century many physicians believed that smoking could be harmful, but there was no proof, as yet, to substantiate such a claim. Nevertheless, the opinion was expressed in the current artistic literature. In 1886, A.P. Chekhov published an one-act play entitled "On the damaging effects of tobacco".¹⁰

The first epidemiological studies done in Germany before the Second World War showed an association between smoking and lung cancer. This observations stimulated a number of vigorous antismoking campaigns in this country.¹¹ However, the German results were overlooked by the victors and the world waited more than 30 years to rediscover the relationship between tobacco smoking causes most lung cancers. Nearly 9 of 10 lung cancer deaths are caused by smoking.

Ronald A. Fischer, father of the modern statistics, who smoked a pipe, did not believe that smoking causes lung carcinoma. In 1957, Fisher published a letter about it in the *British Medical Journal*.¹² Oddly enough, the German epidemiologists had used his statistical methods and established a causal relationship. In 1990, the US Surgeon General concluded that smoking is the most extensively documented cause of various diseases, but governments worldwide have been ambivalent and slow to try to reduce smoking. It was not until the that this view changed and then it was mainly only in culturally advanced countries.

In 2003, the first commercially successful electronic cigarette was created in Beijing by Hon Lik, a 52 year old pharmacist, an inventor and also a smoker. He created this device after his father, also a heavy smoker, died of lung cancer. The device uses a nicotine and other constituents, such propylene glycol and flavoring, which are aerosolised with electronic battery-operated processes and inhaled. The terms “e-cigarettes” or “vaping”, are used synonymously. E-cigarettes do not burn liquids like tobacco in cigarettes or any other combustible tobacco product, eg cigars, pipe tobacco, roll-your-own and any other product that burns tobacco for human consumption. Combustible tobacco is a process that yields about several thousand chemicals, including about 70 carcinogens. For that reason, smokers should cease combustible tobacco use. Non-combustible smoking has minimal risks,¹³ but benefits of e-cigarettes should be only used as a cessation option.

Figure 2: The postal stamp released on 31 January 1990. It was a recognition of yearly antismoking campaign in whole country led by medical students from Tuzla and Banja Luka. The campaign started in 1980.



Many countries employ various ways to help people quit their tobacco use: the World No Tobacco Day, 31 May; *Nacionalni dan bez cigarete*, January 31st in the former Yugoslavia (Figure 1), *Nacionalni dan bez duvanskog dima Srbije i Bosne i Hercegovine*, 31 January, (started in 2000) and *Hrvatski dan nepušenja* (Ash Wednesday, started in 2019).

Physicians' role in smoking cessation

Physicians see a large number of smokers for medical reasons and thus can play an important role in helping them to quit smoking. Even a brief intervention can make a strong impact on adult smokers. Because a tobacco smoker has an increased risk of peri- and postoperative complications, eg a higher incidence of airway and respiratory and cardiovascular events and impaired wound healing, imposition of preoperative smoking abstinence is indicated. A patient scheduled for surgery, or giving birth, or one who participates in competitive sports, presents an opportunity for permanent smoking cessation. The primary care physicians, anesthesiologists, surgeons and other medical specialists should be thus able to offer an intensive smoking cessation intervention¹⁴ that would be helpful to a person who has decided to quit.

Table 1: Drug treatment for smoking cessation

Drug and method of administration	Main contraindication*
Nicotine (replacement therapy)*	Uncontrolled blood pressure
- Nicotine patch, transdermal	
- Gum, chewing	
- Lozenge, sublingual	
- E-cigarettes, smoking	
Bupropion (Zyban) tablets	Convulsions, alcoholism
Cytisine (Tabex) tablets	Vascular disease
Varenicline (Chantix) tablets	Mental disorders

* During pregnancy nicotine replacement therapy (NRT) could be used if it will help a woman stop smoking, in the case that she is unable to stop without it. It is not recommended that she use the stop smoking tablets such as bupropion, cytisine or varenicline. If a woman lives with someone who smokes, they should discuss recommendations to quit together. If a woman is not pregnant yet, she should choose a quit date before conception.

* Nicotine replacement therapy should only be used for craving relief.

To this end, medical schools could introduce a module on tobacco smoking for students within the first year, to be followed by another during the clinical years.¹⁵ A student should learn that

the most important family practitioners' role related to tobacco use is to establish and record the status of a smoker. The doctor should ask a smoker when he/ she lights the first cigarette after getting up in the morning and how many cigarettes smokes a day in order to determine if a smoker belong to a group of smokers that have psychological dependance ('light smokers') or both psychological and physiological ('heavy smokers'). Light smokers can easily quit smoking because they are only mentally dependent on smoking, while heavy smokers have to overcome both psychological and physical dependance.¹⁶ They often need more help during cessation, including prescription of antismoking medications (Table 1). E-cigarettes are more effective for smoking cessation than nicotine-replacement therapy, when both products were accompanied by behavioral support.¹⁷

Help to the medical students to quit smoking

Encouraging medical students to quit smoking requires a special effort, one that is not just for their own health, but also for overall reduction of physicians-smokers. Despite medical students' knowledge of the damaging effects of smoking tobacco, they often smoke more during their stressful education and some formerly light users may become heavy smokers.

Tobacco-free policies are necessary to create a satisfactory milieu for smoking cessation support.¹⁸ The first step is to develop motivation to quit smoking. Tobacco free policies will help to achieve smoke-free hospitals and university campuses. For many of those who are physically addicted, counseling and use of anti smoking medication may be required. The place to locate such a unit is most appropriately located within the university students health service.

Table 2: Policies and other help to the medical students to stop tobacco smoking

Institution	Method
Hospitals	"No-Smoke" policy*
Medical school	One or two modules on tobacco
University	Campus 'No-Smoke' policy* and campus health service

* "No-Smoke" policy means that smoking is only permitted at certain locations outside the buildings and all closed spaces; penalty for violations include smoking (cigarettes, e-cigarettes or other 'vapor' products).

The best timing for a smoker to start quitting would be as soon as possible after the tobacco module in the first year of study. Strict enforcement and clear penalties must be established to ensure compliance.¹⁸ It is much easier to quit before a student enrolls in medical school. Educational messages posted on social media platforms will create awareness of a potent no-smoking policy during medical study.

Long term abstinence rates for nicotine cessation are pretty low, regardless of whether both counseling and medication during the follow-up period were applied.^{19, 20} However, physical exercise during the smoking cessation, for eliminating or reducing nicotine withdrawal symptoms and craving, may be effective. This includes Yoga and should be applied during the follow-up period.²¹

The mechanism of the effect of exercise on the withdrawal symptoms and craving includes exercise-induced β -endorphin production by isotonic exercises, while isometric exercises may not change the level of β -endorphin.²² It is observed that isometric exercises in persons who are in geriatric age also produced β -endorphin and improved the mood.^{23, 24} In addition to the useful effects of physical exercise at nicotine addiction, physical exercise can promote general health of the ex-smokers. These observations suggest that the students-smokers should rather use isotonic then isometric physical exercises during the smoking cessation.

Conclusion

All smokers should quit combustible tobacco use to avoid harmful effects.²⁵ For smoking cessation, smokers may use e-cigarettes; they heat, but do not burn liquids that contain nicotine and other additives. In comparison to the risks of combustible tobacco smoking, electronic nicotine delivery systems are less harmful and they may be effectively used for smoking cessation. Long lasting dual use of combustibles and e-cigarettes may deter smoking cessation and avoid benefits in achieving permanent abstinence.

Medical doctors have a vital role in smoking cessation of their patients. Non-smokers are

more successful in this role than chronic smokers.²⁶ Therefore, a doctor who smokes should make every effort to commit to smoking cessation, even though it may take two, three or more trials. In anticipation of the increased stress involved, any young person should strive to quit smoking, even before applying to medical school. Governmental regulation on smoking, as well as strict no-smoke policy in hospitals and university campuses will help not only medical students, other health workers and the general public to quit smoking and contribute to the general good health of this population.

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Conflict of interest

None.

Provenance

Commissioned.

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