Knowledge, attitude, and practice of medical students regarding smoking and substance abuse, Cairo University, Egypt

Silvia Farouk Shalaby¹ and Mona Adel Soliman²

Abstract

Background: Involving medical personnel in all aspects of smoking control in the community is indispensable. In a trial to enhance the participation of healthcare professionals in smoking cessation activities, this study was conducted to evaluate knowledge, behavior, and attitude of medical school students regarding smoking and substance abuse. Perception of their future role “as physicians” in combating smoking and substance abuse was also explored.

Subjects and Methods: A cross-sectional descriptive study was conducted. A self-administered questionnaire based on standardized questionnaires prepared by the World Health Organization covering sections about knowledge, beliefs, and practices of the students regarding smoking and substance abuse was submitted to 296 students enrolled in the Faculty of Medicine of Cairo University, during the academic year 2014–2015.

Results: Most of the participants had correct knowledge about health hazards of smoking, where 83.4–93.6% correctly selected the answers, but still stated that they are in need for courses about this issue. Positive attitudes were also expressed towards smoking legislations and tobacco control policies. Cigarette and shisha smoking, bango, and addictive medications abuse were low among the studied group (13.5, 15.2, 2, 3–6.4%, respectively).

Conclusion and Recommendations: The prevalence of smoking and substance abuse was relatively low among Cairo University medical students who had generally correct knowledge about the hazards of these practices and positive attitude towards their future role in helping their patients to quit. It may be appropriate to train students about stress management skills through organizing regular “stress coping strategies” sessions to assist them to cope with various stressors and consider implementing counseling programs to support students, especially medical students and the future doctors, who have a leading role in combating smoking and substance abuse in the community.

Keywords: Smoking, Substance abuse, Faculty students

1 Introduction

Tobacco smoking is one of the leading avoidable causes of premature death, illness, and disability all over the world [1]. Tobacco use has shown to be the sixth of eight leading causes of death worldwide [2]. An estimated 4.9 million deaths occurring every year can be linked to tobacco use. This is subjective to be increased by 10 million by the year 2020, if the current tobacco use epidemic goes on and even more than two-thirds of these deaths are expected to happen in developing countries [3]. A study conducted in Delta Region, Egypt, where 1715 medical students were questioned about knowledge and awareness about smoking and substance abuse, showed that 5.6 and 1.2% of the students reported being smokers and ex-smokers, respectively, with a higher prevalence among 6th year students, and 40% of them reported to be involved with substance abuse [4].

Medical students who are the coming physicians play an essential role in smoking prevention and control measures. Unfortunately, a lot of evidence reveals that prevalence of smoking tobacco is fairly elevated among medical students. As shown by a study, one out of every three medical students in their last year of medical school, who currently smoke, started after entering
medical school. The smoking habits of medical students are subject to the same phenomena that affect those of the general population of this age group [5].

Experts have suggested that undergraduates at medical schools have to be armed with information and skills to enhance smoking quitting behaviors among their patients in the future [6–8]. A study conducted in Australia reported that although progress has been made to address the teaching of tobacco in medical schools worldwide, there is a great deal more effort required so that education on tobacco becomes an ongoing part of medical curricula. [9].

Physicians are generally viewed as individuals from whom advice on smoking would be most accepted by both smokers and non-smokers. There is an urgent requirement to reduce this harmful habit through more comprehensive public health initiatives, provision of support for cessation among health professionals who smoke, and providing them with training to allow them to be able to help their patients with cessation. [10].

Thus, among the strategies to reduce smoking-related morbidity and mortality is to promote the involvement of health professionals in tobacco-use prevention and quitting counseling [11]. Medical personnel who smoke are more likely to reveal attitudes that render them away from providing their patients with antismoking advice [12].

Drug abuse has social, physical, psychological, and economic serious impacts that in addition to personal damage, it imposes heavy costs on individuals, families, and society [13], implying a great need for health professionals to identify and treat substance abusing or addiction. The role of hospitals and other medical institutions is crucial in promoting healthy behavior in the community. Health professionals themselves play a particularly important role in tobacco control [14].

This study aimed to explore knowledge, attitude, and behavior of medical students in Cairo University about smoking and substance abuse.

2 Participants and methods
A cross-sectional study was conducted among 269 students enrolled in the Faculty of Medicine of Cairo University during the academic year 2014–2015. The sample size was calculated to be 273 according to the statistical website “Raosoft” based on the following parameters: 5% margin of error, 95% level of confidence, and 62% of the students’ perspectives towards physicians’ training to be able to help smokers to quit [15]. An additional 20% was added to compensate for the possible non-response; hence, the sample size is 328. They were selected using a cluster sampling technique from the hospital rounds. Non-response rate is 9.8%.

A self-administered questionnaire in English was developed after studying the current literature and was based on guidelines and standardized questionnaires prepared by the World Health Organization (WHO) [16]. The questionnaire contained questions covering knowledge and attitude about smoking and substance abuse and also data about current and future smoking status and drug abuse. Knowledge and attitudes about the responsibilities of health sector workers in this matter were also inquired.

The questionnaire included as well information about students’ smoking and drug abuse practices (in the study, the prevalence of cigarette smoking is a lifetime use prevalence of cigarette smoking (i.e., those who ever smoked)).

Nicotine dependence was calculated according to the Fagerstrom Test for Nicotine Dependence. The test comprises of six items including how frequent the person smokes in the morning and how earlier he smokes after waking up, number of cigarettes per day, difficulty to refrain from smoking in places where forbidden or despite being ill, and the cigarette that the smoker hate most to give up.

The higher the number of cigarettes per day or in the morning, the earlier the first cigarette after waking up and the more the attachment of the smoker to cigarettes in the morning or in spite of opposing conditions; the higher is the plasma levels of nicotine and cotinine—the major metabolite of nicotine, the more is the withdrawal symptoms and the patient’s nicotine dependence.

The score ranges from 0 to 10, and scoring was done according to the following scale [17]: 1–2 means very low dependence, 3 means low dependence, 4 means moderate dependence, and 5+ means high dependence.

2.1 Statistical analysis
Data was coded, entered, and analyzed using the Statistical Package for Social Sciences (SPSS), version 18 (released in 2009, PASW Statistics for Windows, Version 18.0, SPSS Inc., Chicago). Descriptive analyses were done to summarize information by calculating the number and percent for categorical variables, whereas the mean and standard deviation (SD) was calculated for continuous variables.

3 Results
Nearly equal percentage of male and female participants shared in the study (44.6% males versus 56.4% females), with mean age of 23.5 years.

Table 1 shows knowledge of students regarding health hazards of smoking and addictive effect of different substances. The majority of the participants (80.1–98%) correctly identified the health hazards of smoking. Regarding the harms of hook smoking (shisha smoking) versus harms of cigarette smoking, the majority of the participants (83.1%) stated that it is not less harmful.
As for addictive substances, about 85–92% stated that bango, codeine, and tramadol have an addictive effect, while only 59.1–69.6% of the participants identified tobacco, Xanax, and valium as addictive substances.

Regarding the participant’s attitude towards the effect of smoking, as shown in Table 2, 82.5% of the study participants who have ever smoked believe that smoking is harmful to health. Also about 70 to 87% of the study participants disagreed and strongly disagreed about any assumed benefits for smoking. Regarding the causes of non-smoking or quitting smoking, the main causes were health protection and self-discipline followed by other causes such as causing no harm to their families, setting an example for their patients and society, or saving money.

As for smoking banning legislations, about 80–96% of the participants agreed and strongly agreed about lobbying for different legislations, restrictions, and quitting programs to limit smoking including banning of smoking advertisements. Also, they agreed that smoking-free hospitals provide better quality of healthcare.

The attitudes of students regarding the role of physicians in combating smoking and the sufficiency of their knowledge regarding antismoking activities are shown in Table 3. Positive attitudes of students about their exemplary role in combating smoking were high; upon asking the participants about the activities they believe they should share in as a part of their vocational responsibility, about 92.2% stated that they ought to persuade their patients in every possible opportunity to quit smoking.

Despite that, about three-quarters of the respondents believed that they have sufficient information to persuade patients to stop smoking, yet more than 90% of them agreed that physicians should receive special training courses to be able to help smokers to quit smoking.

Table 4 shows the patterns and frequency of smoking among participants: The percent of study participants who have ever smoked cigarette was 13.5%. Out of the 40 smokers, 30 were males and 10 were females. The mean age for starting smoking was 18.1 years old (SD ± 3.1). About two-thirds of the smokers stated that they have started smoking after being enrolled at the Faculty of Medicine. When asked about their willingness to quit smoking, 67.5% stated that they want to stop smoking while 75% of them said they had previous serious attempts to stop smoking.
Table 2: Attitudes of students regarding the effect of smoking, causes of non-smoking, and legislations for banning it, Cairo University, academic year 2014–2015

| Attitude                                      | Strongly agree |  |  |  |  |  |
|-----------------------------------------------|----------------|--|--|--|--|--|
|                                               | N   | %  | N | %  | N | %  | N | %  |
| Smoking is harmful                            | 30  | 75 | 3 | 7.5| 6 | 15 | 1 | 2.5 |
| Assumed benefits of smoking                   |     |    |   |    |    |    |    |    |
| Relief stress                                 | 25  | 8.4| 65 | 22.0| 109 | 36.8| 97 | 32.8 |
| Give self-confidence                          | 11  | 3.7| 46 | 15.5| 108 | 36.5| 131 | 44.3 |
| Increase concentration                        | 13  | 4.4| 51 | 17.2| 111 | 37.5| 121 | 40.9 |
| Social benefits                               | 7   | 2.4| 32 | 10.8| 92  | 31.1| 165 | 55.7 |
| Causes of non-smoking                         |     |    |   |    |    |    |    |    |
| Health protection                             | 206 | 82.1| 39 | 15.5| 2  | 0.8 | 4  | 1.6 |
| Self-discipline                               | 177 | 70.5| 61 | 24.3| 6  | 2.4 | 7  | 2.8 |
| Symptoms related to smoking                   | 157 | 62.5| 67 | 26.7| 18 | 7.2 | 9  | 3.6 |
| Avoid discomfort to others                    | 144 | 57.4| 74 | 29.5| 24 | 9.6 | 9  | 3.6 |
| To save money                                 | 128 | 51.0| 69 | 27.5| 40 | 15.9| 14 | 5.6 |
| Example for children                          | 147 | 58.6| 71 | 28.3| 20 | 8.0 | 13 | 5.2 |
| Example for patients                          | 148 | 59.0| 67 | 26.7| 22 | 8.8 | 14 | 5.6 |
| Example socially                              | 148 | 59.0| 69 | 27.5| 22 | 8.8 | 12 | 4.8 |
| Not to harm the family                        | 157 | 62.5| 58 | 23.1| 23 | 9.2 | 13 | 5.2 |
| Pressure from colleagues                      | 89  | 35.5| 46 | 18.3| 78 | 31.1| 38 | 15.1 |
| Example to health workers                     | 129 | 51.4| 62 | 24.7| 40 | 15.9| 20 | 8.0 |
| Pressure from the family                      | 94  | 37.5| 47 | 18.7| 74 | 29.5| 36 | 14.3 |
| Legislations for banning smoking              |     |    |   |    |    |    |    |    |
| Smoking in closed public places should be prohibited or restricted to certain area. | 212 | 71.6| 68 | 23.0| 9  | 3.0 | 7  | 2.4 |
| The selling price of tobacco products should increase sharply. | 162 | 54.7| 74 | 25.0| 40 | 13.5| 20 | 6.8 |
| Smoking in hospitals should be restricted to special smoking areas. | 182 | 61.4| 65 | 22.0| 26 | 8.8 | 23 | 7.8 |
| Smoking in hospitals should be totally banned. | 213 | 72.0| 54 | 18.2| 21 | 7.1 | 8  | 2.7 |
| Smoking-free hospitals provides better quality health services. | 191 | 64.5| 59 | 19.9| 24 | 8.1 | 22 | 7.4 |
| There should be programs to help healthcare workers to quit. | 187 | 63.2| 96 | 32.4| 6  | 2.0 | 7  | 2.4 |
| The faculty should adopt programs that help medical students to quit smoking. | 189 | 63.8| 87 | 29.4| 15 | 5.1 | 5  | 1.7 |
| Smoking of doctors could affect the behavior of others. | 173 | 58.4| 99 | 33.4| 18 | 6.2 | 6  | 2.0 |
| Smoking in movies and series should be restricted. | 151 | 51.0| 93 | 31.4| 39 | 13.2| 13 | 4.4 |

Table 3: Attitudes of students regarding the role of physicians in combating smoking and the sufficiency of their knowledge regarding antismoking activities, Cairo University, academic year 2014–2015

| Attitude                                      | Strongly agree |  |  |  |  |  |
|-----------------------------------------------|----------------|--|--|--|--|--|
|                                               | N   | %  | N | %  | N | %  | N | %  |
| It is the responsibility of doctors to convince people to stop smoking. | 104 | 35.1| 148 | 50.0| 37 | 12.5| 7  | 2.4 |
| Most smokers can stop smoking if they want to. | 117 | 39.5| 130 | 43.9| 38 | 12.8| 11 | 3.7 |
| Doctors should set a good example by not smoking. | 181 | 61.1| 97  | 32.8| 12 | 4.1 | 6  | 2.0 |
| Most smokers are not willing to stop smoking despite the physician’s advice. | 101 | 34.1| 152 | 51.4| 29 | 9.8 | 14 | 4.7 |
| Doctors should go beyond the activity of diffusing knowledge about the hazards of smoking, if you agree. | 120 | 40.5| 142 | 48.0| 29 | 9.8 | 5  | 1.7 |
| On every appropriate occasion, you should persuade your patient to quit smoking. | 88  | 29.7| 185 | 62.5| 19 | 6.4 | 4  | 1.4 |
| Your present knowledge is sufficient to persuade patients to quit smoking. | 62  | 20.9| 162 | 54.7| 69 | 23.3| 3  | 1.0 |
| Health professionals should get specific training on how to help patients who want to stop smoking. | 149 | 50.3| 129 | 43.6| 13 | 4.4 | 5  | 1.7 |
Table 4 Patterns and frequency of smoking and bango use among students, Cairo University, academic year 2014–2015

| Patterns                                                                 | Frequency | Percentage |
|--------------------------------------------------------------------------|-----------|------------|
| Have you ever smoked cigarettes                                         | 40⁹       | 13.5       |
| No                                                                       | 256       | 86.5       |
| At what age have you started smoking?                                   | 10–24     | 18.1 ± 3.1 |
| Median, IQR                                                              | 18.0 (16.3–20.0) |
| Did you smoke within the previous 30 days?                              | 21        | 52.5       |
| No                                                                       | 19        | 47.5       |
| How many cigarettes do you smoke/day                                    | 2–60      | 16.6 ± 14.8|
| Median, IQR                                                              | 12.5 (6.5–20.0) |
| How many months have passed since you last smoked?                      | 1–19      | 6.4 ± 6.2  |
| Median, IQR                                                              | 4.5 (1.5–10.5) |
| Did you start to smoke after you joined your medical school?             | 26        | 65.0       |
| No                                                                       | 14        | 35.0       |
| Do you want to stop smoking?                                             | 27        | 67.5       |
| No                                                                       | 13        | 32.5       |
| Have you ever made a serious attempt to stop smoking?                    | 30        | 75.0       |
| No                                                                       | 10        | 25.0       |
| May you smoke in presence of your patients?                              | 24        | 60.0       |
| No                                                                       | 11        | 27.5       |
| I do not know                                                            | 5         | 12.5       |
| How soon after you wake up do you smoke your first cigarette?            | 5         | 12.5       |
| Within 5 min                                                             | 9         | 22.5       |
| Within 6–30 min                                                           | 10        | 25.0       |
| After 60 min                                                             | 16        | 40.0       |
| Do you find it difficult to avoid smoke cigarettes in places where it is forbidden (e.g., at the library, in cinema)? | 13 | 32.5 |
| No                                                                       | 27        | 67.5       |
| Which cigarette would you hate most to give up?                          | 14        | 35.0       |
| Any other                                                                 | 26        | 65.0       |
| How many cigarettes per day do you smoke?                                | 17        | 42.5       |
| 10 or less                                                               | 9         | 22.5       |
| 21–30                                                                    | 12        | 30.0       |
With regard to smoking in front of their patients, 60% stated that they would do that while 12.5% did not know what would be their behavior at that time.

Regarding hook (shisha) smoking, 15.2% of the participants have tried shisha before and the mean of shisha smoking times per week was 3.8 ± 3.1. In addition, 2% of the participants stated using cannabis, and out of them, 66.7% stated using cannabis in 30 days preceding the study.

Table 5 shows the levels of nicotine dependence among the smoking students, Cairo University, academic year 2014–2015.

Table 4 Patterns and frequency of smoking and bango use among students, Cairo University, academic year 2014–2015 (Continued)

| Patterns                        | Frequency | Percentage |
|---------------------------------|-----------|------------|
| 31 or more                      | 2         | 5.0        |

Do you smoke more during the first hours after waking than during the rest of the day?

- Yes 14 35.0
- No 26 65.0

Do you smoke even when you are ill enough to be in bed most of the day?

- Yes 16 40.0
- No 24 60.0

Shisha smoking

- Have you ever smoked shisha?
  - Yes 45 15.2
  - No 251 84.8

Did you smoke shisha in the previous 30 days?

- Yes 24 53.3
- No 21 46.7

How many times do you or did you smoke shisha per week?

- Range, Mean ± SD 1–10 3.8 ± 3.1
- Median, IQR 3.0 (1.0–6.3)

How many months have passed since you last smoked?

- Range, Mean ± SD 1–12 4.8 ± 3.5
- Median, IQR 4.0 (2.5–7.0)

Bango

- Have you ever used Bango?
  - Yes 6 2.0
  - No 290 98.0

Did you use bango in the previous 30 days?

- Yes 4 66.7
- No 2 33.3

*30 males and 10 females

Table 5 Levels of nicotine dependence among the smoking students, Cairo University, academic year 2014–2015

| Nicotine dependence | Frequency (n = 40) | Percentage |
|---------------------|--------------------|------------|
| Very low (0–2)      | 14                 | 35.0       |
| Low (3–4)           | 13                 | 32.5       |
| Medium (5)          | 4                  | 10.0       |
| High (6–7)          | 7                  | 17.5       |
| Very high (8–10)    | 2                  | 5.0        |

Nicotine dependence

- Range, Mean ± SD 0–9 3.5 ± 2.3
- Median, IQR 3.0 (2.0–5.0)

NB: The nicotine dependence index was calculated according to the Fagerstrom Test for Nicotine Dependence, 2010 [17]. The number between brackets is the interquartile range.
Out of them, 4.1% have used one of the abovementioned drugs at least once in 30 days preceding the study and the frequency of intake was $4.9 \pm 5.1$ per week.

4 Discussion

The studied sample had generally correct information about smoking health hazards. Similar results were shown by medical students of Agha-Khan University, Karachi, Pakistan, who expressed correct knowledge when asked about dangers of smoking, and they have also suggested that physicians and medical students should have proper smoking cessation training courses [18].

The mean age of starting smoking in the current study was $18.1 \pm 3.1$ years. In Iran, a study about smoking behaviors of medical students [19] showed that the mean age of smoking was $19.6 \pm 2.5$ and $18.9 \pm 2.4$ years for male and female students, respectively. Initiating smoking at this age may be due to causes related to relieving distress and pleasure or due to social causes as displayed by the current study and Iran study.

Regarding the harms of hook smoking versus harms of cigarette smoking, the majority of the participants stated that it is not less harmless. A study conducted in Malaysia among young people showed that 57.3% of the participants agreed that shisha use exposes the smoker to large amounts of smoke while the majority was uncertain about the hazards of shisha smoking compared to tobacco smoking [15].

The prevalence of smoking among medical students in Cairo University (13%) was nearly similar to the prevalence of smoking among students in Saudi Arabian medical schools where the prevalence was 14.3%. [17] The prevalence was lower than that among the medical students of other Arabic countries such as Bahrain (27.5%), Jordan (26.3%), Yemen (27.0%), and Syria (15.8%) [20–22].

Smoking among females was found to be much less when compared to males, a result that goes in accordance with a study in Pakistan, which showed lower smoking prevalence among females. This finding may be due to similar cultural factors as smoking is considered as a taboo, so females especially young women rarely smoke or never exposed their smoking habit to society [23].

It is generally accepted that physicians are like role models to patients, so their attitude and behavior about smoking represent a major influence on the psychology of the patients regarding this issue. Among medical students, health-related behaviors and hygiene practices have a greater influence on their academic performances and future professional prospects [24].

In the current study, the participants had positive attitude towards banning smoking by law, results that goes in accordance with a study done in Riyadh, KSA, where students showed positive attitude towards minimizing passive smoking through their support of banning smoking in public areas as well as their willingness to discuss and advise their patients to quit smoking. [25]. This attitude may stem from the satisfactory level of awareness of the participants regarding health hazards of smoking, similar to a study conducted among medical students in Turkey which showed that among the smokers, 92.6% considered smoking harmful to health, 81.5% worried that smoking was harmful to their health, but 12.3% did not worry about it [26].

Medical students have distinct stressors and predispositions for drug abuse. Pressure to achieve good grades is often thought to be a powerful driver for drug use [27]. In the present study, drug abuse behavior constituted a small percentage among the participants, a finding that was different from a study conducted in a medical college in India that explored drug abuse behavior among graduate medical students that constituted 20.43% of 230 participants [27].

A recent review on substance abuse among medical students in the USA noted that there were so few studies

| Table 6 Addictive medications abuse among students, Cairo University, academic year 2014–2015 |
|-----------------------------------------------|-----|----------------|-----|
| Addictive medications abuse                  | Yes |                  | No  |
|                                               |  N  | %               |    N | %               |
| Have you ever used any addictive medications without medical prescription? | 27  | 9.1             | 269 | 90.9           |
| Have you ever used any of the following medications without medical prescription? |  |                  |     |                 |
| Xanax                                         | 19  | 6.4             | 277 | 93.6           |
| Valium                                        | 14  | 4.7             | 282 | 95.3           |
| Tramadol (Tramal)                             | 13  | 4.4             | 283 | 95.6           |
| Other addictive medications                   | 9   | 3.0             | 287 | 97.0           |
| Did you use any of the above drugs within the previous 30 days? | 12  | 4.1             | 284 | 95.9           |
| How many times do you or did you use per week? |     | 1–15            | 4.9 ± 5.1 |
| Range, Mean ± SD                             | 3.0 | (1.0–8.8)       |     |                 |

The displayed results of addictive medications use are not mutually exclusive
in this area. [28]. Available research, however, indicates that the actual rate of drug use in medical schools in the USA has been lower than that of an equivalent non-medical school population and this abuse started before students began their medical studies. The authors considered that the stress of medical school may not be a major factor as was originally hypothesized. [28] The rate of abuse in the present study is lower than those reported in the USA (10%) [29] and India (20%) [30]. The latter high rate may be related to the fact that it included various substances used by the participants including alcohol, cigarettes, cannabis, bhang, tobacco (chewing), and other substances (gel and drugs). A lower rate of drug use (3.9%) was reported in a study among male students in different faculties in Isfahan and Kermanshah medical universities in Iran. The rate was relatively lower than other substance abuse (especially smoking (19.4%) and alcohol drinking (10.1%)) [31].

5 Conclusion and recommendations
The prevalence of smoking and drug abuse was relatively low among Cairo University medical students who had generally correct knowledge about the hazards of these practices. Their perceptions about their future role as doctors towards smoking control were promising. They showed positive supportive attitudes towards tobacco banning legislations and were enthusiastic to receive more training that would help them in their tasks as physicians. Medical students ought to be educated about avoiding such behaviors under any circumstances and to be trained about stress management skills without having to smoke or abuse drugs. In this aspect, different and regular “stress coping strategies” sessions could be organized for medical students to assist them to cope with various stressors.

Drug abuse of substances such as cannabis and other medications ranged from 2–6.4% among the studied sample. It may be appropriate to consider implementing counseling programs to support students, especially medical students and the future doctors, who have a leading role in combating smoking and substance abuse in the community. More research is to be conducted to find the optimum way for implementation of curricula change for early prevention of smoking and to address smoking cessation programs for medical students during their study years.

5.1 Limitations of the study
The study handled a sensitive issue that despite the questionnaire was anonymous, underreporting of tobacco smoking and substance abuse by the students could not be excluded. Another limitation is that the study was done only among Cairo University medical students, so its results cannot be generalized to other medical schools in Egypt.

Acknowledgements
Thanks to the students who participated in the study and special thanks to those who helped the authors to reach their colleagues in the sample.

Funding
Funding is personal by the authors.

Availability of data and materials
Please contact authors for data requests.

Authors’ contributions
This work was carried out in collaboration between both authors. SF did the data analysis, the interpretation of data, and the final writing of the manuscript. MA contributed to the design of the study, the acquisition of data, and doing the data analysis. Both of them prepared and approved the final report for publishing. No scientific (medical) writers assisted in the or with the preparation of the manuscript content.

Ethics approval and consent to participate
The used questionnaire included no identifiable personal data; it was anonymous and voluntary. No invasive procedures were used. Administrative approvals were obtained from the Dean of the Faculty of Medicine – Cairo University. Ethical approval was obtained from the Research Ethics Committee (REC) of Faculty of Medicine, Cairo University. Students were treated according to the Helsinki Declaration of biomedical ethics. Informed verbal consents were obtained from the respondents and anonymity assured and strictly applied. Due to the sensitivity of this research topic and the expected fear and refusal of the students to declare their names; a verbal consent was preferred. Also, the ethical committee had approved this consent type as written approval could markedly increase the non response rate and affect the study results especially those related to the students’ opinions and reporting of using drugs. The researchers in charge of the survey explained the objectives of the research to the participants and ensured that participation was voluntary. Caution was taken to communicate information about the research in an understandable way to enable a genuine choice to be made.

Consent for publication
Consent for publication is not applicable as this study did not include details, images, or videos relating to individual participants.

Competing interests
The authors declare that they have no competing interests.

Publisher’s Note
Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Author details
1Public Health and Community Medicine Department, Faculty of Medicine, Cairo University, 131 Eltair Fekri Street, Giza, Egypt. 2Public Health and Community Medicine Department, Faculty of Medicine, Cairo University, 8th District, Madinet Nasr, Cairo, Egypt.

Received: 11 January 2019 Accepted: 7 February 2019
Published online: 26 February 2019

References
1. Ezzati M, Lopez AD, Rodgers A, Vander HS, Murray CJ. Selected major risk factors and global and regional burden of disease. Lancet. 2002;360:1347–60.
2. World Health Organization. WHO report on global tobacco epidemic 2008: the M power package. Geneva; 2010. Available from: https://www.who.int/tobacco/mpower/2008/en/. Accessed 3 Mar 2017
3. Peto R, Lopez AD, Boreham J, Thun M, Heath C Jr. Mortality from smoking in developed countries 1950-2000: indirect estimation from national vital statistics. Lancet. 1992;339:1268–78.
4. Kabbash A, Sarsik S, Hagar A, Othman N, Ismail M, Elazouli M, et al. Perception and practices of tobacco smoking among medical students in the Nile Delta, Egypt 2017. Environ Sci Pollut Res. (1–8).

5. Mas A, Nerín I, Barrueco M, Cordero J, Guillén D, Jiménez-Ruiz C, Sobradillof V. Smoking habits among sixth-year medical students in Spain. Arch Bronconeumol. 2004;40(9):403–8.

6. Chatkin J, Chatkin G. Learning about smoking during medical school: are we still missing opportunities? J Tuberc Lung Dis. 2009;13(4):429–37.

7. Richmond R. The process of introducing a tobacco curriculum in medical school. Respirology. 2004;9:165–72.

8. Richmond R, Taylor R. Global dissemination of a tobacco curriculum in medical schools. J Tuberc Lung Dis. 2006;10:750–5.

9. Richmond R, Zwar N, Taylor R, Hunnissett J, Hyslop F. Teaching about tobacco in medical schools: a worldwide study. Drug Alcohol Rev. 2009;28:484–97.

10. Vrazic H, Ljubicic D, Schneider NK. Tobacco use and cessation among medical students in Croatia–results of the Global Health Professionals Pilot Survey (GHPs) in Croatia, 2005. Int J Public Health. 2008;53(2):111–7.

11. Abdullah S, Stillman F, Yang L, Luo H, Zhang Z, Samet J. Tobacco use and smoking cessation practices among physicians in developing countries: a literature review (1987–2010). J Environ Res Public Health. 2014;11(1):295–55.

12. Do YK, Bautista MA. Medical students’ tobacco use and attitudes towards tobacco control. Med Educ. 2013;47(6):607–16.

13. Ekhtiavi H, Behzadi A, Ganjahi H. Functional neuroimaging study of brain activation due to craving in heroin intravenous users. Iranian J Psychiatr Clin Psychol. 2008;14:269–80.

14. Radwani GN, Loffredo CA, Aziz R, Abdel-Aziz N, Labib N. Implementation, barriers and challenges of smoke free policies in hospitals in Egypt. BMC Res Notes. 2012;5:568.

15. Ping Wong L, Alias H, Aghamohammadi N, Aghazadeh S, Chee Wai H. Shisha smoking practices, use reasons, attitudes, health effects and intentions to quit among shisha smokers in Malaysia. Int J Environ Res Public Health. 2016;13(7):726.

16. WHO. GTSS Global Tobacco Surveillance System. Tobacco questions for surveys. A subset of key questions from the Global Adult Tobacco Survey (GATS). 2nd ed: CDC WHO; 2011.

17. Fagerstrom KO. Measuring degree of physical dependence to tobacco smoking with reference to individualization of treatment. Addict Behav. 1978;3:235–41.

18. Khan FM, Hussain SJ, Lareaq A, Awais A, Hussain SF, Khan JA. Smoking prevalence, knowledge and attitudes among medical students in Karachi. Pakistan J Med Sci. 2005;11:5–6;592–8.

19. Taherib E, Ghorbani A, Salehi M, Sadeghnia H. Cigarette smoking behavior and the related factors among the students of Mashhad University of Medical Sciences in Iran. Iran Red Crescent Med J. 2015;17(1).

20. Alisherdi M, Haleem A. Knowledge, attitude and behavior of medical and dental students towards smoking habit in Saudi Arabian universities: a comparative study. Int J Dent J Res. 2012;1:1–16.

21. Merrill JR, Madanat HN, Cox E, Merrill JM. Perceived effectiveness of counseling patients about smoking among medical students in Amman. Jordan East Mediterr Health J. 2009;15(5):1180–91.

22. Almerie MQ, Matar HE, Salam M, Moradi A, Abdulmaal M, Koudsi A, et al. Cigarettes and water pipe smoking among medical students in Syria. J Tuberc Lung Dis. 2008;12(9):1085–91.

23. Babar B. Knowledge, attitude and practice regarding smoking among medical students in Pakistan. University of Eastern Finland, Faculty of Health Sciences Public Health; 2016.

24. Centers for Disease Control and Prevention (CDC). Tobacco use and cessation counseling: global health professionals survey pilot study, 10 countries. MMWR Morb Mortal Wkly Rep. 2005;54(20):505–9.

25. Al-Haqwi A, Tamim H, Asery A. Knowledge, attitude and practice of tobacco smoking by medical students in Riyadh, Saudi Arabia. Ann Thorac Med. 2010;5(3):145–8.

26. Demuralay R. Behaviors and attitudes of medical students towards smoking. Turk J Med Sci. 2002;32:339–44.

27. Cassels, C. Stimulant use exceptionally high among medical students. 2013. Medscape News. Feb 06, 2013. [cited 2017 Feb 2] Available from: www.medscape.com/viewarticle/778843

28. Dimintrascu C, Mannes PZ, Gamble LJ, Selzer JA. Substance abuse among physicians and medical students. Med Res J. 2014;26(3):36.

29. Tuttle JP, Scheurich NE, Ranseen J. Prevalence of ADHD diagnosis and nonmedical prescription stimulant use in medical students. Acad Psychiatry. 2010;34(3):220–3 https://doi.org/10.1176/appi.ap.34.3.220.