

Factors influencing the initiation of smoking among Taif University students

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To Cite:

Ahmed RM, Osman H, Faizo NL, Aliazidi R, Eid MW, Elsamani M, Elkhader BA. Factors influencing the initiation of smoking among Taif University students. *Medical Science*, 2021, 25(112), 1318-1325

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Peer-Review History

Received: 24 April 2021

Reviewed & Revised: 26/April/2021 to 28/May/2021

Accepted: 28 May 2021

Published: June 2021

Peer-review Method

External peer-review was done through double-blind method.

ABSTRACT

Background: Tobacco is a leading source of death worldwide. **Objective:** estimating the prevalence, age groups, and factors influencing the initiation of smoking and varying types of tobacco. **Subjects and methods:** 1800 students, 18–24 years of age, from Taif University voluntarily participated in this study. An electronic questionnaire was administered to all students' WhatsApp groups at Taif University between May and October 2020. Statistical measures were performed using the Statistical Package for Social Studies (SPSS; version 25 for Windows) **Results:** 1080 students (60%) were non-smokers, while 720 (40%) were smokers. 400 students (55.6%) were males. A significant association existed between gender and smoking as well as ($p \leq 0.001$). Males had a higher percentage of smoking. A significant association was existed between pocket money and smoking ($p < 0.006$). The most frequent places for smoking was at chalets with friends (64.3%), followed by public places (45.3%), the most frequent factors influencing smoking were friends (27.8%), family problems, and stress (22.2%). **Conclusions:** Reducing the general population's smoking and educating families by observing the friends of their sons and daughters and implementing strong polices were important to be better role models for juveniles.

Keywords: Smoking, Students, Factors, Initiation, Taif.

1. INTRODUCTION

Tobacco use is a leading source of morbidity and death around the world (WHO, 1995). About 100,000 young people globally start smoking every day, most of whom are from developing countries (Jha & Chaloupka, 1999). The Saudi adolescent diet, exercise, physical inactivity, and related health problems, including nutritional deficiencies, have been the subject of several published studies in Saudi Arabia (Abalkhail et al., 2002). Other health-compromising habits have also been widely studied among young people, such as smoking (Mandil et al., 2014; Al-Makadma et al., 2014), and are and are a significant public health concern Saudi Arabia. Smoking rates among young people range from 30% to 37% (Medhat, 2009; Fida & Abdelmoneim,



2013). Negative health effects are correlated with the initiation of smoking activity during adolescence, teenage smokers are often more become adult smokers, and the earlier initiation of adolescent smoking raises the likelihood of adult smoking (Chassin et al., 1990). Moreover, tobacco consumption in developing nations, including Saudi Arabia and neighboring countries, is growing in many parts of the world (Alzayani & Hamadeh, 2015).

Even though Saudi Arabia does not participate explicitly in tobacco manufacturing, 20 billion cigarettes are imported per year, which costs approximately 351.8 million USD (Centers for Disease Control and Prevention, 2004). In terms of tobacco use, Saudi Arabia is now ranked eighth in the world, with a phenomenal shift from 52 between 1970 and 1972 to 23 between 1990 and 1992 (Khan, 1999; Centers for Disease Control and Prevention, 1997). The use of tobacco, especially smoking cigarettes, continues to be a leading cause of death in the United States that can be avoided. Young adults (18-29 years of age) appear to show the highest cigarette smoking prevalence. For example, the prevalence of smokers of cigarette among 18-24-year-olds over the past 30 days is 17 percent, while the prevalence among high school students is about 9 percent (Centers for Disease Control and Prevention, 2016). Because of tobacco-related diseases, thousands die each day worldwide, according to rough figures. Smoking's current death toll is millions per year, and if the smoking epidemic persists at the same rate, by 2030, it expected to reach 8 million deaths (Fulmer et al., 2015).

Young adults commonly develop this addictive habit as they achieve a certain degree of social freedom with an improved capacity to mingle between young groups. For such social events, colleges and universities have an excellent atmosphere (Moradi et al., 2015). The association between personal characteristics, social influences, other risk behaviors, geographic context, and drug use in young adults has been shown in previous studies (Cho et al., 2015; Amiri et al., 2009; Toprak et al., 2010). Studies investigating teenage tobacco use in Saudi Arabia revealed that the prevalence of ever-smokers and current smokers among boys was substantially higher compared to girls (Abdalla et al., 2007; Amiin et al., 2011).

The prevalence of teenage smoking has only recently begun to be tracked in Saudi Arabia. The 2013 Global Tobacco Epidemic Study of the World Health Organization reveals that the prevalence of regular tobacco smoking among adults is 22% (men, 35%; women, 6%), while the prevalence of current cigarette use among youths 13 – 15 years of age from the 2010 Global Youth Tobacco Survey is 8.9% (boys, 13%; girls, 5%)(Amin et al., 2011). The current study was aimed to estimate the widespread of smoking and factors influencing the initiation of smoking different forms of tobacco among Taif University students.

2. MATERIALS AND METHODS

Design and population of the study

A cross-sectional analysis was carried out among the students of Taif University in Saudi Arabia between May and October 2020.

Inclusion criteria: All students studying in the colleges of Taif University who completed and returned an online questionnaire on data collection days were inclusive.

Data collection tools

Data gathered between May and October 2020. A questionnaire was provided to each student after obtaining verbal consent. Pre-trained investigators gave a verbal instructions and explanation for completing the structured questionnaire, which was designed specifically for this study. The questionnaires were de identified and student anonymity was assured.

Questionnaire

The questionnaire included three parts: Sociodemographic characteristics (sex, age, academic level, family economic status, amount of pocket money, co-habitants, and educational level of parents); type of smoking (cigarettes, shisha, or water pipe), smoking place, and frequency of smoking (per day/week); and factors influencing initiation of student smoking, and reasons to quit smoking and why.

Data analyses

The data was processed and analyzed usage SPSS statistical software (version 25). To measure categorical research variables, descriptive statistics were used. To test relationships, a chi-square test was used between categorical analysis and outcome variables; the results are presented in tables and graphs. A significant correlation between the variables was set at $p \leq 0.001$.

Ethical issues

The study was conducted after obtaining permission from the university authorities because this study is one of Taif University unfunded research priorities for the academic year 2019/2020 (Ethical approval number: IRB KACST/114/2020), and informed consent was achieved from participants. Participation from student’s side was voluntary. The participants did not receive any compensation. The students were not supervised. Confidentiality and anonymity were ensured.

3. RESULTS

The current study was comprised of 1300 males (72.2%) and 500 females (27.8%) females (male: female ratio of 3:1). The 20–23 year age group represented the highest percentage (1340/1800 [74.4%]), followed by the 17–19 year age group (310/1800 [17.2%]). Of the students, 1620 (90%) lived with their families, while 100 (5.6%) were raised by their mother and three (1.7%) lived with their fathers. One thousand eighty of the students (60%) were non-smokers and 720 (40%) were smokers; 400 smokers were males (55.6%) and 320 were females (44.4%). A significant association was existed between sexes and smoking ($p \leq 0.001$). A higher percentage of smokers were males than females. A significant association was existed between pocket money and smoking ($p \leq 0.006$). A higher percentage of smokers had more pocket money; Non smokers had less money in their pockets than smokers. There was no association between smoking and co-habitants among the participants (Table 1).

Table 1 Sociodemographic data of the study sample (n=1800)

Sex	Non-smokers	Smokers	χ^2 value	p-value
Male	900 (69.2%)	400 (30.8%)	16.61	0.001
Female	180 (36%)	320 (64%)		
Total	1080	720		
Age groups				
Age groups	Non-smokers	Smokers	1.38	0.5
17-19 y	200 (64.5%)	110 (35.5%)		
20-23 y	810 (60.4%)	530 (39.6%)		
≥ 24 y	70 (46.7%)	80 (53.3%)		
Total	1080	720		
Academic level				
Academic level	Non-smokers	Smokers	--	--
First year	160 (48.5%)	170 (51.5%)		
Second year	210 (63.6%)	120 (36.4%)		
Third year	160 (59.3%)	110 (40.7%)		
Fourth year	550 (63.2%)	320 (36.8%)		
Total	1080	720		
Amount of pocket money				
Amount of pocket money	Smokers	Non-smokers	12.47	0.006
5-10 SR	90 (22.5%)	310 (77.5%)		
11-20 SR	220 (43.1%)	290 (56.9%)		
20-50 SR	290 (56.9%)	220 (43.1%)		
None	120 (31.6%)	260 (68.4%)		
Total	720	1080		
Co-habitants				
Co-habitants	Smokers	Non-smokers	--	--
Family	610 (37.7%)	1010 (62.3%)		
One parent	70 (53.8 %)	60 (46.2 %)		
Other family members	60 (60%)	4 (40%)		

Alone	30 (100%)	0 (0%)		
Other	10 (50%)	10 (50%)		
Total	720	1080		

Significant when $p \leq 0.001$

Three hundred smokers (41.7%) smoked cigarettes, 190 (26.4%) smoked water pipes and shisha, 90 (12.5%) smoked cigarettes, water pipes, and shisha, seventy (9.7%) smoked cigarettes, water pipes, shisha, and electronic cigarette smokers, fifty (6.9%) smoked electronic cigarettes, and twenty (2.8%) smoked cigarettes and electronic cigarettes. Two hundred ninety smokers (40.3%) had a 1–2 year smoking history, 240 (33.3%) had a 3-5 year smoking history, and 190 (26.4%) had a > 5 year smoking history. A significant association existed between age groups and initiation of smoking; the 20–23 year age group had the strongest association ($n=540$ [75%], $p \leq 0.001$; Table 2). Furthermore, a significant association existed between sex and the number of cigarettes smoked per day; male students smoked more than females ($p \leq 0.002$ and 0.009, respectively; Table 3).

Table 2 Age group * When did you start smoking? ($n=720$)

Age	When did you start smoking?			Total	p-value
	1-2 year	3-5 year	More than 5 years		
17-19 y	80	20	10	110 (15.3%)	0.001
20-23 y	210	170	160	540 (75%)	0.001
Greater than 24 y	0	50	210 (26.4%)	70 (9.7%)	
Total	290 (40.3%)	240 (33.3%)		720 (100%)	

Significant when $p \leq 0.001$

Table 3 Sex * How many cigarettes do you smoke per day/week? ($n=720$)

Sex	How many cigarettes do you smoke per day/week?			Total	p-value
	1-2 cigarettes/shisha per week	2-3 cigarettes/shisha per day	Greater than 3 cigarettes/shisha per day		
Male	240	160	0	400	0.002
Female	10	300	10	320	0.009
Total	250	360	10	720	

Significant when $p \leq 0.001$

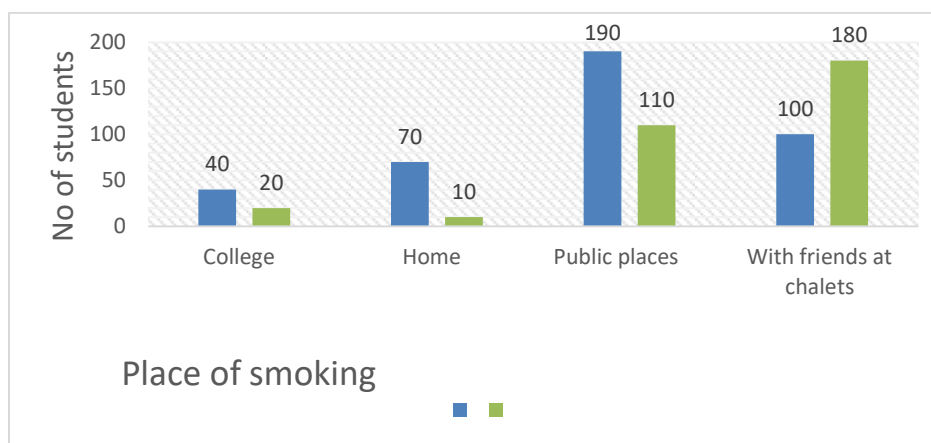


Figure 1 Sex * Place of smoking

The most frequent places students smoked were public places, followed by chalets; 64.3% of female students and 37.5% of male students smoked at chalets with their friends. Of the 300 male and female students, 63.3% and 36.6% smoked in public places,

respectively. Of the eighty students who smoked at home, 87.1% were males. Students who smoked at college represented the lowest frequency. A significant association existed between sex and place of smoking ($p \leq 0.001$ and 0.09 , respectively; Figure 1). The most reported factors influencing the initiation of smoking in the current study were friends (27.8%), and family problems and stress (22.2%), while professional influence and stress at college were reported in 9.7% ($p = 0.001$ and 0.002 , respectively; Table 4). A significant association existed between sex and the desire to quit smoking; 330 students (45%) reported that they wanted to quit smoking, while 380 students (52.8%) did not want to quit smoking ($p = 0.002$ and 0.001 , respectively; Table 5).

Table 4 Sex * Factors influencing the initiation of smoking among students at Taif University (n=72)

Sex	Reasons for initiating smoking among students							p-value
	Family problems and stress	Friends	I think that smoking is a sign of maturity	Professionals at college are smokers	One of my family members is a smoker	Parents are divorced	Total	
Male	60	150	20	0	110	60	400	0.002
Female	90	110	10	10	80	20	320	0.001
Total	150	260	30	10	190	80	720	

Significant when $p \leq 0.001$

Table 5 Sex* Do you want to quit smoking? (n=72)

Sex	Do you want to quit smoking?			Total	Significance (2-sided)
	Yes	No	I don't know		
Male	220	210	10	440	0.002
Female	110	170	0	280	0.001
Total	330 (45.8%)	380 (52.8%)	10(1.4%)	720	

Significant when $p \leq 0.001$

4. DISCUSSION

A novel previous study (Eriksen et al., 2012) reported that in Western Europe, cigarette consumption fell by 26 percent between 1990 and 2009, while smoking increased by 57 percent in the Middle East and Africa during the same period. Of the 1800 students of both sexes in the current study, more male than female students were smokers at Taif University, a significant association existed between sex and smoking ($p \leq 0.001$), which is in agreement with two previous studies (Toprak et al., 2010; Skhiri et al., 2017) that reported male students are more likely to smoke than females.

With respect to the age of students at Taif University who smoked, among smokers between 17 and 24 years of age, the 17–19 year age group represented the highest percentage of smokers, while older students were slightly more likely than younger students to report smoking for more days were. Two hundred forty students (33.3%) were smokers for 3–5 years and 290 (40.3%) were smokers for 1–2 years. These findings are in agreement with one Tunisian previous study (Zedini et al., 2017) that reported the average age at which tobacco and alcohol use was initiated was nearly 17 years and the mean age of starting illicit substance use was 19 years. Another Saudi study (Mukhtiar et al., 2016) showed that (61%) of the participants started smoking at 15–19 years of age when they became socially independent and left school to start college. Approximately 23% of the students started smoking when they started professional colleges and universities. The findings also are in agreement with study carried by Kobus et al., (2003) who stated that in particular, under well-defined circumstances, initial smoking episodes occur mainly because of social pressures that are conducive to smoking.

There was no correlation between the parents' level of education and smoking habits, while there was a strong correlation between the presences of one or more smoking family members and smoking among students at Taif University. These findings are in agreement with a study conducted by Mandil et al., (2014). This study found that all students who identified as smokers had one or more family members or friends who were currently smoking cigarettes or using other tobacco products, which is consistent with Amin et al., (2011) study's Who reported that a positive predictor of smoking in Saudi adolescents is smoking among family members and the smoking behavior of fathers was strongly associated with current smoking behavior among adolescents.

Therefore, it was important to minimize smoking in the general population and inform families about better role models for teenagers.

This study showed that there was a significant correlation between sex and the number of smoked cigarettes per day ($p \leq 0.001$), which is in agreement with a previous novel Saudi study (Abdul Karim et al., 2014) reported that there is a substantial difference between males and females in the amount of cigarettes smoked per day recorded. Adolescent boys were more likely to report several cigarettes a day smoking, while girls were more likely to report just one cigarette a day smoking. The most frequent places where both male and female students smoked were public areas and chalets with their friends, followed by smoking at home, while smoking at college had a lower percentage of smokers ($p \leq 0.001$ and 0.009 , respectively). The American College Health Association (ACHA) (ACHA, 2016) reported that more young adults attend college, the college campuses can provide a great atmosphere for primary and secondary smoking prevention as well as smoking reduction campaigns targeted at young adults, and a family member or acquaintances who are smokers are common factors, followed by family issues and stresses.

One previous Saudi study (Abdul Karim et al., 2014) conducted in Riyadh revealed that the major number of students 'everywhere' they smoked. The most frequently reported explanation for smoking was that irritation, rage, and dissatisfaction were minimized by smoking. The most reported factors that influenced smoking in this study were friends (27.8%), and family problems and stress (22.2%), while professional influence and stress at college were reported in 9.7% ($p \leq 0.001$ and 0.002 , respectively). Similarly, a previous study (Tang & Loke, 2013) showed that the key source of inspiration for starting smoking when boys join college or boarding houses is a social circle and friend, and other temptations include media encouragement and displaying maturity among classmates.

There was a significant correlation between sex and the desire to quit smoking in this study; 330 students (45%) had a desire to quit smoking, while 380 (52.8%) did not want to quit smoking ($p \leq 0.002$ and 0.001 , respectively). Thus, an understanding of smoking cessation mechanisms may help improve coping skills, as reported by William et al., (2011) study. The results are in agreement with a previous study conducted by White et al., (2008) that reported an increased consideration to quit smoking by students, as well as another study (Shiffman et al., 1996) that reported smokers who incorporate coping mechanisms to control the context in which smoking is caused by smoking cessation are more successful. It may be ideal to cease smoking, but nicotine addiction is a struggle to conquer. Perseverance and dedication on the part of smokers and society are required (Compton, 2015).

5. CONCLUSION

The prevalence of smoking prevalence, place of smoking, and main factors influencing the initiation of smoking between Taif University students, such as sex, the presence of one or more family members or friends, and pocket money, were determined in the current study. Considering the results, the parents of students should care about their friends and mass media should be involved in an awareness drive to attract the attention of stakeholders to the students' issue of smoking.

Limitation

This study was conducted among Taif University students, and outcomes cannot be reached rates of smoking among university students in other parts of Saudi Arabia.

Recommendations

Anti-smoking policies in public places must be implemented, as well as smoke-free policies inside all university campuses, to decrease the smoking prevalence among students. There is also a need for a mental health practitioners' therapy service for both students and their peers who smoke to help them stop smoking.

Acknowledgment

The researchers would like to thank Taif University for the opportunity to conduct this study because it was one of a Taif University unfunded research priorities for 2020. We also thank all books authors and sources from where the data were discussed and reviewed.

Author's contributions

First author is the main author who planned the research and prepares the questionnaire and revises the final version. Second author revise the literature and write the draft as well as submission of paper. Third author literature collection and data collection, fourth, fifth, sixth and, seventh author share in data analysis data collection phase and revise the draft.

Informed consent

The written and verbal informed consent was obtained from all participants before enrolment in the study.

Ethical approval

Ethical approval Directorate of Health Affairs in Taif city approved this study (Ethical approval number: IRB KACST 114/2020). The procedures followed were in accordance with the Helsinki Declaration of 1975 that was revised in 2013.

Conflict of interest

The author declare that they are no conflict of interest

Funding statement

The study had not funded from any institute or received any fund from external body.

Data and materials availability

All data associated with this study are present in the paper.

REFERENCES AND NOTES

- Abalkhail BA, Shawky S, Soliman NK. Validity of self-reported weight and height among Saudi school children and adolescents. *Saudi Med J* 2002; 23(7):831-837.
- Abdalla AM, Al-Kaabba AF, Saeed AA, Abdulrahman BM, Ratt H. Gender differences in smoking behavior among adolescents in Saudi Arabia. *Saudi Med J* 2007; 28:1103 – 1108.
- Abdul Karim S. Al-Makadma, Melissa Moynihan, Sarah Dobson and Elizabeth Saewyc. Tobacco use among adolescents in Riyadh, Saudi Arabia. *Int J Adolesc Med Health* 2015; 57(3):357-360.
- Ahmed Mandil, Abdulaziz Bin Saeed, Shaffi Ahmad, Mohammad Yamani, Nouf Turki, Mohammad Al-Enzi, Mohammad Abdul-Karim, Rakan Al-Hamad and Hussam Alnowaiser. Pattern of tobacco consumption and influencing factors among male school children in Riyadh, Saudi Arabia. *J Addict Res Ther* 2014;5(3):192. .
- Al-Makadma AS, Moynihan M, Dobson S, Saewyc E. Tobacco use among adolescents in Riyadh, Saudi Arabia. *Int J Adolesc Med Health* 2014; 15(1):14-23.
- Alzayani S, Hamadeh RR. Tobacco smoking among medical students in the Middle East: Identifying areas for intervention. *Int J Innov Educ Res* 2015; 3:72-78.
- American College Health Association. Position statement on tobacco on college and university campuses. 2011.
- Amin TT, Amr MAM, Zaza BO. Psychosocial predictors of smoking among secondary school students in Al-Hassa, Saudi Arabia. *J Behav Med* 2011; 34:339 – 350.
- Amiri ZM, Shakib AJ, Moosavi AK. Prevalence and risk factors of ecstasy use among college students in Astara, Islamic Republic of Iran. *East Mediterr Health J* 2009; 15(5):1192–1200.
- Aounallah Skhiri H, Zalia H, Zid T, Boukassoula H, Ben Salah N. Tunisia drug situation and policy. *P-PG/MedNET*. 2014:12.
- Centers for Disease Control and Prevention (CDC) (1997) Progress toward global measles control and elimination, 1990-1996.
- Centers for Disease Control and Prevention (CDC) (2005) State-specific prevalence of cigarette smoking and quitting among adults—United States, 2004; 54:1124-1127.
- Centers for Disease Control and Prevention (CDC). Smoking and tobacco use. 2016. http://www.cdc.gov/tobacco/data_statistics/. Accessed 16 Aug. 2016.
- Chassin L, Presson CC, Sherman SJ, Ewards DA. The natural history of cigarette smoking: Predicting young adult smoking outcomes from adolescent smoking patterns. *Health Psychol* 1990; 9:701–716.
- Cho SB, Llaneza DC, Adkins AE, Cooke M, Kendler KS, Clark SL, Dick DM. Patterns of substance use across the first year of college and associated risk factors. *Front Psychiatry* 2015; 6:152.
- Compton W. Understanding nicotine addiction and its brain reward system. *AAAS Annual Meeting* 2015; 12-16.
- Eriksen M, Mackay J, Ross H. *The Tobacco Atlas*. Fourth ed. Atlanta, GA: American Cancer Society, and New York, NY: World Lung Foundation; 2012.n2. Jha P, Chaloupka FJ. Tobacco control in developing countries. Oxford: University Publication for the World Bank and the World Health Organization; 2000.
- Fida HR, Abdelmoneim I. Prevalence of smoking among secondary school male students in Jeddah, Saudi Arabia: a survey study. *BMC Public Health* 2013; 13:1010.
- Fulmer EB, Neilands TB, Dube SR, Kuiper NM, Arrazola RA, Glantz SA. Protobacco media exposure and youth

- susceptibility to smoking cigarettes, cigarette experimentation, and current tobacco use among US youth. *PLoS ONE* 2015; 10(8): 134734.
20. Jha P, Chaloupka FJ. *Curbing the epidemic. Governments and the Economics of Tobacco Control*. Washington D.C. The World Bank Group. 1999.
 21. Khan SA Khan LA. Cigarette smoking a dangerous trend in Saudi Arabia. *The Practitioner East Med Edition* 10: 1999; 399.
 22. Kobus K. Peers and adolescent smoking. *Addiction*. 2003; 98(1):37–55.
 23. Medhat MB. Smoking in Saudi Arabia. *Saudi Med J* 2009; 30(7): 876-881.
 24. Moradi-LM, El Bcheraoui C, Tuffaha M, Daoud F, Al Saeedi M, Basulaiman M, Memish ZA, AlMazroa MA, Al Rabeeah AA, Mokdad AH. Tobacco consumption in the Kingdom of Saudi Arabia, 2013: findings from a national survey. *BMC Public Health* 2015; 15(1):611.
 25. Mukhtiar Baig, Marwan A Bakarman, Zohair J Gazzaz, Mohamad N Khabaz, Tahir J Ahmed, Imtiaz A Qureshi, Muhammad B Hussain, Ali H Alzahrani, Ali A AlShehri, Mohammad A Basendwah, Fahd B Altherwi, Fahd M AlShehri. Reasons and motivations for cigarette smoking and barriers to quitting among a sample of young people in Jeddah, Saudi Arabia. *Asian Pac J Cancer Prev* 2016; 17(7). 3483 - 3487.
 26. Shiffman S, Paty J, Kassel J, Hickcox M. First lapses of smoking: within-subjects analysis of real-time reports. *J Consult Clin Psychol* 1996; 62:366–379.
 27. Tang SM, Loke AY. Smoking initiation and personal characteristics of secondary students in Hong Kong. *J Adv Nurs* 2013; 69, 1595-606.
 28. Toprak S, Cetin I, Akgul E, Can G. Factors associated with illicit drug abuse among Turkish college students. *J Addict Med* 2010; 4(2):93–98.
 29. White V, Webster B, Wakefield M. Do graphic health warning labels have an impact on adolescents' smoking-related beliefs and behaviours? *Addiction* 2008; 103(9):1562–1571.
 30. William G. Shadel, Daniel Cervone. The role of the self in smoking initiation and smoking cessation: A review and blueprint for research at the intersection of social cognition and health. *Self-Identity* 2011; 10(3): 386–395.
 31. World Health Organization (WHO). *WHO program on tobacco on health*. Geneva 1995.
 32. Zedini Chekib, Nawel Zammit, Limam Manel, Mellouli Menel, Meriam Elghardallou, Sahli Jihen, Mtiraoui Ali, Ajmi Thouraya. Illicit substance use among Tunisian college students: prevalence and risk factors. *Int J Adole Med Health* 2017; 30(6), doi: 10.1515/ijamh-2016-0108