

Self-reported prevalence of tobacco use among university students

Üniversite öğrencileri arasında tütün kullanımı prevalansı

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ABSTRACT

Objective: Tobacco use is the most important public health concern worldwide, particularly in developing countries. It is estimated that 1.7 billion people worldwide will be smokers by 2025 if any intervention do not made. Turkey took an important step in the fight against smoking with the introduction of the project ‘smokeless airspace’ in May 2009. The aim of this study is to evaluate the prevalence of smoking and characteristics of smokers among undergraduates attending Celal Bayar University, Manisa, Turkey.

Methods: This cross-sectional study was realized among Manisa Celal Bayar University students between March 2015 and June 2015. A self-administered questionnaire was used to obtain sociodemographic data and determine smoking behaviour and nicotine dependence among university students. Descriptive statistical analyses were used to measure the prevalence of smoking and determine correlations between dependent and independent variables. Chi-square test was used to compare categorical variables

Results: Of the 2170 respondents, 518 (23.9%) were current smokers, comprising 312 (60.2%) males and 206 (39.8%) females. Cigarette smoking was significantly associated with having friends who smoked, male gender, and parental smoking. Based on the Fagerstrom Tolerance Test, 8.9% of the students were identified as being addicts. According to Fagerström Tolerance of Nicotine Dependence, 193 out of 518 (37.2%) students were reported as nicotine dependent.

Conclusion: Deleterious effects of smoking on human health should be incessantly emphasized in the university curriculum, policies of ‘smokeless airspace, should be supported by stronger, and more effective programs in order to encourage university students to quit smoking.

Key words: Smoking, prevalence, university students

ÖZ

Amaç: Tütün kullanımı, özellikle geliřmekte olan ülkelerde dünyadaki en önemli halk sađlığı olarak kabul edilmektedir. Herhangi bir müdahale yapılmazsa, 2025 yılına kadar dünyadaki 1.7 milyar insanın sigara içeceđi sanılmaktadır. Türkiye, Mayıs 2009’da “dumansız hava sahası” projesinin başlatılmasıyla sigara içilmesine karşı mücadelede önemli bir adım attı. Bu çalışmanın amacı, Celal Bayar Üniversitesi, Manisa, Türkiye’ye gelen lisans öğrencileri arasında sigara içme prevalansını ve sigara içenlerin özelliklerini değerlendirmektir.

Yöntem: Kesitsel tipteki bu araştırma Mart 2015 - Haziran 2015 tarihleri arasında Manisa, Celal Bayar Üniversitesi öğrencileri arasında gerçekleştirildi. Sosyodemografik veriler ile üniversite öğrencileri arasında sigara içme davranışını ve nikotin bađımlılıđını belirlemek için anket kullanıldı. Bađımlı ve bađımsız deđişkenler arasındaki ilişkileri belirlemek için tanımlayıcı istatistikler kullanıldı. Kategorik deđişkenleri karşılařtırmak için ki-kare testi uygulandı.

Bulgular: Ankete katılan 2170 katılımanın 518’i (%23,9) [312 (%60,2) erkek, 206 (%39,8) kadın] mevcut sigara içiciydi. Sigara içimi erkek cinsiyet, anne-babanın sigara içme durumları ile anlamlı şekilde ilişkiliydi. Fagerstrom Tolerans Testine dayanarak, öğrencilerin %8,9’u bađımlı olarak tanımlandı. Fagerström Nikotin Bađımlılıđı Toleransına göre sigara içen 518 öğrencinin 193’ü (%37,2) nikotin bađımlısı olarak rapor edilmiştir.

Sonuç: Yasal düzenlemelerin yanı sıra üniversite öğrencileri arasında sigarayı önlemeyi teşvik etmek için sigaranın insan sađlığı üzerindeki olumsuz etkilerinin eğitim müfredatında sürekli olarak işlenmesi ve “dumansız hava sahası” gibi sigara içiciliđini azaltmaya yönelik politikaların daha güçlü ve etkili programlar ile desteklenmesi gerekmektedir.

Anahtar kelimeler: Sigara, prevalans, üniversite öğrencileri

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INTRODUCTION

Smoking, predominantly in the form of cigarettes, is an important public health concern due to the level of associated healthcare expenditure and public health issues ⁽¹⁾. In the twentieth century, the tobacco epidemic is estimated to have been responsible for approximately 100 million deaths worldwide ⁽²⁾. In Turkey, there are approximately 100.000 deaths attributable to smoking each year ⁽³⁾.

The prevalence of smoking among university students in Turkey has reportedly ranged between 26.5% and 51.7% in the early 2000s ⁽⁴⁻⁶⁾. According to the 2008 Global Adult Tobacco Survey that evaluated smoking in the general population, the prevalence of daily tobacco consumption in Turkey was 21.7% in the 15-24 age group and 34.9% and 9.1% in men and women, respectively. The same survey reported that 39.3% of daily smokers started smoking between 15 and 17 years of age ⁽⁷⁾. The higher prevalence of smoking among university students is associated with a transition period between adolescence and adulthood ⁽⁸⁾. Smoking is typically initiated due the influence of peers and social environment at an early age before becoming habitual due to increasing frequency and intensity ^(9,10).

Since high school and university students were considered to be the most important target population for the prevention of smoking initiation, The Ministry of Health of the Turkish Republic Turkey and the WHO decided to prepare a new cooperative action plan aimed at reducing the high rates of cigarette consumption and minimizing the environmental impacts of smoking in this age group. For this purpose, some items of the Law on the Prevention of Harmful Effects of Tobacco Products of Turkey adopted in 1996 were changed in accordance with this action plan in 2009 such that tobacco products were banned in all closed areas with the objective of providing 'smokeless airspaces' nationwide.

The aim of the present study is to study the prevalence of smoking and characteristics of smokers among undergraduates at the Celal Bayar University, Manisa, Turkey.

MATERIAL and METHODS

This descriptive cross-sectional study was conducted from March 2015 to June 2015 among students attending Celal Bayar University, Manisa, Turkey. The prevalence of tobacco consumption among Turkish university students reportedly ranged between 26.5% and 51.7% in previous studies ⁽⁴⁻⁶⁾. There were approximately 16,000 students in undergraduate education programs when the present study was conducted between March and May 2015. The calculated minimum sample size, using the software of Epi info 7.0, was 2162, with a frequency value of 0.5 used for situations where the prevalence was unknown. A total of 2170 participants, selected from student lists of each departments with simple random sampling, were interviewed during the present study.

Selection of participants

This study was conducted in 7 departments of the Celal Bayar University, Manisa, Turkey. The study aimed to enrol an equal number of randomly selected students from each class of the first to the fourth years to achieve the calculated number of samples required from all departments. Students in the 5th and 6th grades of medical school were excluded. Verbal and written consent was obtained from all the study participants.

Data collection

A self-administered questionnaire comprising three parts was used to collect: 1) Socio-demographic profile: age, gender, class, department and location; 2) Smoking behaviour: smoking status, age at onset of smoking, family smoking; and 3) Nicotine dependence: consisted of six standard questions of the Fagerström Tolerance of Nicotine Dependence (FTND). The FTND test was developed in 1989 to determine the presence of nicotine dependence due to smoking. FTND is a standard questionnaire for assessing physical dependence on nicotine. Responses to the questionnaire were stratified according to respon-

dents' nicotine dependence levels, as defined by the FTCD, as follows: low (FTCD score ≤ 3); middle (4-6); and high (≥ 7)⁽¹¹⁾. The reliability and validity of the FTND in a Turkish population was demonstrated in 2004⁽¹²⁾.

Ethics statement

The present study was approved by the local ethics committee of the Celal Bayar University, Manisa, Turkey and it was conducted in accordance with general principles applicable to clinical trials (reference no. 20478486-156).

Definitions

Smoking definitions used in the present study are based on the criteria of United States Centers for Disease Control and Prevention as follows:

1. Never smokers: Adults who have never smoked a cigarette or who smoked fewer than 100 cigarettes in their entire lifetime.
2. Former smokers: Adults who have smoked at least 100 cigarettes in their lifetime but say they currently do not smoke.
3. Current smokers: Adults who have smoked 100 cigarettes in their lifetime and currently smoke cigarettes every day (daily) or frequently (often, but not daily)⁽¹³⁾.

Data analyses

All data obtained from the present study were assessed using SPSS software (Statistical package for social Sciences for Windows) version 15.0. Descriptive statistics (percentage, mean) were used to demonstrate demographic characteristics and nicotine addiction. The chi-square test was used to compare differences between categorical variables.

RESULTS

A total of 2170 students aged between 18 and 47 years and with a mean age of 21.41 ± 1.97 years participated in the present study. Participants were comprised of 1249 female (57.6%) and 921 (42.4%) male

students. Demographic characteristics of participants are presented in Table 1. Overall, 23.9% of the students ($n=518$) were current smokers, 68.8% of the students ($n=1493$) said that they had never smoked, and 7.3% of them were former smokers. Participants' age at their first smoking ranged between 7 and 23 years, with a mean age of 16.21 ± 2.72 years. A significantly greater proportion of current smokers were male, with an overall prevalence of 23.9% for current smoking (60.2% male, 39.8% female; $P < 0.001$). When assessing smoking status, increase predominantly in the number of male smokers was observed towards higher grades ($P=0.002$) (Table 2).

Table 1. Demographic characteristics of participants (n=2170).

Characteristics	Value
Age, yr	21.41±1.97
Age of smoking initiation, yr	16.09±2.97
Smoking amount	
Packs per day	13.08±8.38
Years of smoking	4.85±3.05
Packs-years	3.63±3.69
Gender	
Male	921 (42.4)
Female	1249 (57.6)
Class	
1	595 (27.4)
2	649 (29.9)
3	414 (19.1)
4	512 (23.6)
Location	
With Family	759 (35.0)
Dorm	732 (33.7)
With Friends	596 (27.5)
Alone	83 (3.8)
Family members who smoked	1048 (48.3)
Family smoking status (among students who smoked)	327 (63.1)
FTND ^a score	2.80±2.62

Values are presented as mean \pm SD (Standard Deviation) or number (%)

^aFTND, Fagerström test for nicotine dependence

^aFTND was measured in current smokers ($n=518$)

Table 2. Current smoking status according to sex of students.

Students	N (%) Total=2170	Male (%) Total=921	Female (%) Total=1249	p
Smoking history				
Current smokers	518 (23.9)	312 (60.2)	206 (39.8)	
Ex-smokers	159 (7.3)	81 (50.9)	78 (49.1)	<0.001
Never smoked	1493 (68.8)	528 (35.4)	965 (64.6)	
Class				
1	122 (20.5)	77 28.6	45 13.8	0.00000
2	146 (22.5)	83 31.0	63 16.5	0.0000
3	106 (25.6)	57 34.1	49 19.8	0.004
4	144 (28.1)	95 43.8	49 16.6	0.0000

Significant differences in smoking status were observed according to accommodation of the students (living with family, in a dormitory, with friends, or alone). Cigarette smoking was significantly associated with the presence of friends smoking, male gender, and parental smoking. Interestingly, female students living in dormitories had a significantly higher

Table 3. Current smoking status according to location and family smoking.

	Current smokers N (%) Total=518	Male smoking N (%)	Female smoking N (%)	p
Location				
With Family n=759	181 (23.8)	106 (58.6)	75 (41.4)	<0.001
Dorm n=732	123 (16.8)	48 (39.0)	75 (61.0)	<0.001
With Friends n=596	185 (31.0)	135 (73.0)	50 (27.0)	<0.001
Alone n=83	29 (34.9)	23 (79.3)	6 (20.7)	0.003
Family smoking				
Yes n=1048	327 (63.1)	190 (58.1)	137 (41.9)	<0.001
No n=1122	191 (36.9)	122 (63.9)	69 (36.1)	<0.001

Table 4. Current smoking status according to faculties.

	N (%) Total=2170	Current smokers (%) Total=518	p
Departments (Faculty)			
Science and Letters	410 (18.9)	101 (24.6)	
Engineering	238 (11.0)	79 (33.2)	
Medicine	308 (14.2)	48 (15.6)	
Economics and Administrative Science	296 (13.6)	77 (26.0)	<0.001
	411 (18.9)	121 (29.4)	
Physical Education and Sports	208 (9.6)	31 (20.4)	
Vocational School of Health Education	299 (13.8)	61 (20.4)	

Table 5. Status of current smoking students according to the test FTND.

	Number (%) Total=193	Male smoking (%) Total=124	Female smoking (%) Total=69	p
Fagerström score				
Low (0-3)	104 (53.9)	59 (47.6)	45 (65.29)	
Moderate (4-6)	70 (36.3)	48 (38.7)	22 (31.9)	0.15
High (7-10)	19 (9.8)	17 (13.7)	2 (2.9)	

Responses to the questionnaire were stratified according to respondents' nicotine dependence levels, as defined by the FTCD: low (FTCD score ≤ 3), middle (4–6) and high (≥ 7)

smoking rate ($P < 0.001$). Furthermore, family members of 48.3% of the study participant students (parents, sisters, brothers, or other) had a smoking history. Family smoking was observed in 63.1% of smoking students ($P < 0.0001$; Table 3).

The current smoking rate in the faculty of engineering students (33.2%) was the highest among students in schools related to health education (faculty of medicine and vocational school of health) Table 4.

Based on Fagerstrom Tolerance Test scores, 8.9% of students were identified as addicts. Self-declared addiction according to FTND scores was observed in 193 of 518 (37.2%) smoking students, with 19 (9.8%) of these categorizing their smoking dependence as very high (Table 5).

DISCUSSION

As far as we know, the present study, which evaluated the prevalence of smoking habits among university students according to a self-administered questionnaire, is the most comprehensive research to examine the long-term effects of the 'smokeless airspace' law introduced in May 2009 up to now. The prevalence of self-reported current cigarette smoking in the present study was lower than in previous studies conducted before the aforementioned law^(4,6). In our study, the current smoking rate of 23.9% was significantly lower than the rate of 37.4% reported among young people in the 20-24 age group in the Turkey Youth Sexual and Reproductive Health Survey which is considered a better nationwide representation of young individuals⁽¹⁴⁾. This difference may be attributable to the present study population, which was limited to a specific group of university students. However, the 'smokeless airspace' law and nationwide initiatives to reduce smoking related to this law may explain the lower rate of current smoking in the present study.

The high smoking rates observed among male students in the present study corroborated with results reported in previous studies comparing students and the general population of Turkey. The average current smo-

king rate in males and women aged 20-44 in the European Union is 39.5% and 30.1%, respectively ⁽¹⁵⁾. The estimated age-standardised prevalence of daily smoking declined among males from 41.2% to 31.1% (0.9% average annual decline), and for women from 10.6% to 6.2% (1.7% per year), between 1980 and 2012 ⁽¹⁶⁾. However, a higher rate of smoking was detected among female students than women in the general community. This change in the prevalence of smoking among females has occurred in parallel with reductions in family authority on girls, behavioral changes that compatible with changing social roles, and socio-economic development (e.g. student scholarships) ⁽¹⁷⁾.

The change in social environment with university life and new friends have significant impacts on the habits of students. It has been shown that a teen whose best friend is a smoker are under an increased risk of smoking ⁽⁷⁾. While the smoking rates among first year students living with their families is at a high level, an even higher smoking rate is observed among students staying with friends (for males) and in dormitories (for females) in the following year. The average duration of smoking of 3 years among students in Turkey indicates the influence of attending university on smoking habits ⁽¹⁸⁾. Collectively, these data highlight the importance of peer influence in program fighting against smoking especially among students.

When the effect of the smoking behavior of the participants' family members was examined, current smoking rates were found to be higher among the students who have smoking family members, corroborating with the results of the previous studies ^(19,20). In the present study, different smoking rates were observed among students according to their department of study. Levels of smoking were found to vary among faculties in a survey conducted among university students in the UK. In the same study, the lowest frequency of smoking was observed in the departments of veterinary medicine and clinical medicine, whereas the highest rates were observed in the departments of arts and social sciences ⁽²¹⁾. In Turkey, higher smoking rates were detected at researches

conducted in university students except medical faculties ⁽¹⁹⁾. The present study found similar smoking rates among departments. However, smoking status among students of the medical faculty at our university was lower than that reported by other studies from Turkey ^(19,22). This difference may be attributable to several factors, such as the number of participants, the application style, or education regarding the hazards of smoking in the first and third grade classes at our medical faculty.

Smoking addiction has been shown to be associated with age of starting smoking ⁽²³⁾. The mean age of onset of smoking reported by previous studies in Turkey varied between 16 and 19 years ⁽²⁴⁾. In the present study, the mean age of starting smoking was $16:09 \pm 2.97$ years, with the mean duration of smoking found to be 4.85 ± 3.05 years. Further, self-declared addiction according to FTND scores was associated with smoking duration. This relationship was particularly strong among moderate and high addicts.

There are some limitations to the present study. Firstly, the present study was conducted at a single university in Turkey. Secondly, survey data were collected between students, with volunteers identified within the relevant departments. Therefore, it is difficult to determine the effects of student bias, the lack of participation of students, and non-responders on the outcomes of the present study. Finally, students may have misreported their smoking status as the data obtained in the present study was based on self-reported student statements.

CONCLUSION

Despite the low prevalence of smoking in the study population, the present study has demonstrated that a significant portion of smokers among university students are affected by their smoking friends. The majority of students who began smoking during college years, perhaps as they had not become aware of the negative effects of smoking on their health status and quality of life, may not regard smoking as a health issue. Therefore, in addition to legislative

measures to prevent the onset of smoking among university students through continuous training regarding the negative effect of smoking on human health, the provision of expert support and developing an effective anti-smoking campaign according to the new anti-smoking policy targeting this group is important.

Compliance with Ethical standards

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments of comparable ethical standards. Informed consent was obtained from all individual participants included in the study.

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