Attitudes and Knowledge for Smoking Among University Students

Üniversite Öğrencilerinin Sigara İçme Davranışları ve Sigara ile İlgili Bilgi Düzeyleri

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ABSTRACT Objective: This study was planned to clarify the extent of the smoking epidemic among young persons in Turkey. **Material and Methods:** The study included 3156 students from a university in the capital of Turkey. The questionnaire was prepared according to the criteria of the World Health Organization (WHO). It included items for sociodemographic features and the smoking status of students and their families, and the smoking behavior of the students. **Results:** The final population consisted of 3156 students. While the overall frequency of current smokers was 30.6%, the frequencies of nonsmokers, ever-smokers, occasional smokers, and ex-smokers were 36.8%, 23.2%, 4.8%, and 4.6% respectively. Current tobacco use was significantly higher among male students (p< 0.001). The percentage of smokers with a family member who smoked was 73.2%. The percentage of students that had tried to cease smoking in the previous year was 68.4%. **Conclusion:** University students comprise a large group of young Turkish people. Because one third of university students are regular smokers, serious interventions are required to prevent young persons from starting to smoke, rather than encouraging them to stop smoking after the behavior has already become a habit.

Key Words: Adolescent; smoking

ÖZET Amaç: Bu çalışma, Türkiye'de genç insanlar arasındaki sigara içme yaygınlığını aydınlatmak için planlandı. **Gereç ve Yöntemler:** Çalışmaya Türkiye'nin başkentinde üniversite öğrencisi olan 3156 kişi dahil edildi. Dünya Sağlık Örgütü (DSÖ) ölçütlerine göre hazırlanan anket, sosyodemografik özellikler, öğrencilerin ve ailelerinin sigara içme durumu ve öğrencilerin sigara içim davranışını ölçen maddelerden oluşmaktaydı. **Bulgular:** Çalışmaya alınan popülasyon 3156 öğrenciden oluştu. Halen sigara içmekte olanlar %30.6, sigara içmeyenler %36.8, hiç sigara içmemiş olanlar %23.2, ara sıra sigara içenler %4.8, sigarayı bırakmış olanlar %4.6 oranlarında idi. Tütün tüketimi erkek öğrencilerde anlamlı ölçüde yüksekti (p< 0.001). Aktif içicilerin ailesinde sigara içen bir kişi bulunma oranı %73.2, geçen bir yıl içinde sigarayı bırakmayı deneyen öğrencilerin oranı %68.4 olarak belirlendi. **Sonuç:** Üniversite öğrencileri ülkemizdeki genç toplumun geniş bir grubunu oluşturmaktadır. Bu öğrencilerin üçte biri düzenli sigara içicisidir. Bu sebeple gençleri sigara içme alışkanlığı kazandıktan sonra, sigarayı bırakma konusunda cesaretlendirmek yerine, sigara içmeye başlamaktan korumak için ciddi müdahalelere gereksinim vardır.

Anahtar Kelimeler: Adölesan; sigara içimi

Tobacco use is one of the major preventable causes of death worldwide. The World Health Organization (WHO) attributes more than 4 million deaths per year to tobacco use. Tobacco-attributable mortality is projected to increase to 8.4 million deaths per year by 2020.[1] Furthermore the WHO predicts that 70% of the deaths from smoking-related

illnesses will occur in low- and middle-income countries by 2020.[2] In developing countries, little information exists describing the magnitude of the tobacco use problem. There is a widespread assumption that smoking behavior is largely established by 18 years of age. The only investigation regarding smoking prevalence in the Turkish population is the public survey of smoking habits and anti-smoking campaign, which was carried out in 1988.[3] According to this report, the prevalence of smoking in Turkey by persons older than 15 years is 43.6%. In Turkey, 39% of the smokers smoked their first cigarette between the ages of 15 and 18 years of age, and 20% between 11 and 14 years of age. Tobacco use among young persons was called a "pediatric disease" by the United States Food and Drug Administration commissioner, Dr. David Kessler.[4] As a result, smoking prevention has focused almost exclusively upon young persons. Using a group of university students in Ankara, Turkey, we aimed to determine the prevalence of smoking in young persons and their attitudes toward tobacco use.

MATERIAL AND METHODS

In this cross-sectional study, carried out during the second week of October 2004, subjects enrolled at the Başkent University, a large urban university in the capital of Turkey (Ankara), were evaluated regarding their smoking attitudes. Using the statistical software, Epi Info™ 6 StatsDirect, to calculate sample size, for a population size of 6144 students and smoking prevalence in this age group of 30% with a maximum acceptable deviation of ± 1%, we obtained a sample size of 3488 students with a 95% confidence interval. Of the 3488 students, 3156 (90.5%) participated in the study. We administered a 19-item tobacco questionnaire that consisted of 11 items assessing the sociodemographic features of the students and their families, 7 items assessing attitudes toward smoking started the age at which smoking started and the smoking status of the students and their families; 1 item assessed brand preference. This questionnaire was used in the previous International Union Against Tuberculosis and Lung Disease (IUATLD) studies, and was adapted

from the one designed by WHO in cooperation with the International Union Against Cancer and the American Cancer Society.[5] Provinces were considered *urban areas*, districts and villages were considered *rural areas*. Smoking status was assessed by the question: "Are you smoking?" Those who answered "yes" were classified as *current smokers* if they had smoked cigarettes during the 30 days preceding the survey, and they were considered *occasional smokers* if they were smoking occasionally. Those who answered "no" were considered *nonsmokers*. Those who had smoked previously but currently were not smoking were considered *ex-smokers*, and students who smoked once were considered *ever-smokers*. Medical education in Turkey lasts for six years, non-medical education for four years. Grades were divided into 2 groups: 4th, 5th, and 6th grades constituted one group; and prep, first, second, and third constituted the other group. This rationale of this classification was to assess the relationship between grade level and smoking behavior.

The Ethics Committee of the university approved the study. This study was conducted in accordance with the Helsinki Declaration principles. Self-administered written questionnaires were distributed at the beginning of the lessons under direct supervision of the researchers. Verbal consent was obtained from all participants. Reasons for not reaching the sample size were bad weather and the time of the study overlapping with the exam period of the students.

Sociodemographic features were expressed as mean ± standard deviation or numbers (percentage). Chi-square test and Mann-Whitney U test were performed to compare sex, grade, current living place, marital and educational status of the parents, monthly income, and the amount of daily pocket money between smokers and non-smokers. A backward stepwise logistic regression model was applied in order to identify the relationship between the variables (grade, current living place, parents' marital status and parents' education status) and the participants' smoking status. The Spearman correlation was used to evaluate the relationship between monthly income, daily money spent, and

daily cigarette consumption. Statistical analyses were performed using SPSS software (Statistical Package for the Social Sciences, version 11, SSPS Inc, Chicago, Ill, USA) for Microsoft Windows®. A *p* value < 0.05 was considered statistically significance.

RESULTS

The final population sample of 3156 students was composed of 59.4% women and 40.6% men. The mean age of the students was 20.1 ± 2.0 years. While the overall frequency of current smokers was 30.6%, the frequencies of nonsmokers, ever-smokers, occasional smokers, and ex-smokers were 36.8%, 23.2%, 4.8%, and 4.6% respectively.

Current tobacco use was significantly higher among male students (p= 0.001, Table 1). The mean age at which smoking started was 16.7 ± 2.1 years for females and 16.1 ± 2.4 years for males; this difference was statistically significant (p= 0.001). While the mean number of cigarettes smoked per day was 13.8 ± 8.4 for the study group, male students smoked significantly more cigarettes per day (15.5 ± 9.3) than did female students (12.4 ± 7.3),

(p< 0.001). The students in higher classes (fourth, fifth, and sixth) had higher smoking rates than did students in the other grades (p= 0.001, Table 1).

Students whose parents lived together and whose mothers graduated from primary school smoked less than did other students (p= 0.002, p= 0.023, Table 2).

The mean number of cigarettes smoked per day was related with monthly income and the age at which students started smoking was inversely related with the mean number of cigarettes smoked per day (r= 0.305, p< 0.001; r= -0.249, p< 0.001).

The backward stepwise logistic regression model showed that the smoking status of the students was associated with monthly income, pocket money (daily), grade, current living place, parents' marital status and parents' education status. Table 3 presents the variables that affect the smoking status of the students by the backward stepwise logistic regression model when the sex variable was excluded. First and second-year university students and the students living in the student dormitory seemed to be low-risk groups in terms of smoking.

TABLE 1: Demographic characteristics according to smoking attitudes of the students.						
	Nonsmoker		Smoker		Total	
	n	%	n	%	n	p*
Sex						
Female	1243	66.8	617	33.2	1860	
Male	775	61	496	39	1271	**0.001**
Grade						
Prep	512	60.8	330	39.2	842	
1st	683	69.4	301	30.6	984	
2nd	386	66.8	192	33.2	578	**0.001**
3rd	220	64.1	123	35.9	343	
4th and above	228	58.3	163	41.7	391	
Residence (before university)						
Urban	1764	64.3	979	35.7	2743	
Rural	258	66.5	130	33.5	388	0.399
Current residence						
Home (with family)	1286	63.5	738	36.5	2024	
Home (with friends)	196	61.4	123	38.6	319	
Student dormitory	349	71.1	142	28.9	491	**0.01**
Other	197	64.4	109	35.6	306	

* Chi-square test.

TABLE 2: Marital status and educational level of parents according to smoking attitudes of the students.

	Nonsmoker		Smoker		Total	
Marital status of the parents	n	%	n	%	n	p*
Together	1846	65.5	972	34.5	2818	
Widow	179	56.6	137	43.4	316	**0.002**
Educational status (mother)						
Primary school	325	69.9	140	30.1	465	
Junior high school	117	58.8	82	41.2	199	
High school	704	63.3	409	36.7	1113	**0.023**
University	879	64.7	479	35.3	1358	
Educational status (father)						
Primary school	141	66.8	70	33.2	211	0.708
Junior high school	104	63.8	59	36.2	163	
High school	443	62.9	261	37.1	704	
University	1329	64.8	721	35.2	2050	

* Chi-square test.

Additionally, if parents were divorced or if one of them had died, their children had 1.49-fold greater chance of smoking than if their parents were alive and were not divorced (CI: 1.14-1.94).

The percentage of students with a family member who smoked was 73.2% (59.6% of the mothers, 64.1% of the fathers, 36.1% of both parents and 33.9% of the siblings were smoking). The percentage of students that had tried to cease smoking at least once in the prievious year was 68.4%. Only 4.6% of the students had been able to stop smoking.

DISCUSSION

Smoking is a major problem in Turkey that has been exacerbated by two important factors: the shifting of tobacco promotion activities from developed to developing countries, and the impending liberalization of the country's tobacco industry. The usual long-term delay before smoking-related diseases occur, especially in a country with a relatively young population, ensures a heavy future public health burden in Turkey. The smoking behavior of college students is a useful index of tobacco use among young adults.[6]

In our study, the sample size is relatively large. These results reflect the status of tobacco consumption by university students, particularly those liv-

TABLE 3: Factors influencing smoking status (Backward stepwise logistic regression model).

	Beta	OR	95% CI	p
Monthly Income				
	0.001	1.00	1.00-1.001	**0.01**
Pocket Money	0.012	1.01	1.00-1.02	**0.04**
Grade				
1st	-0.46	0.63	0.50-0.79	**0.001**
2nd	-0.35	0.71	0.54-0.92	**0.009**
3rd	-0.21	0.81	0.60-1.09	0.17
4th or above	-0.13	0.87	0.66-1.16	0.36
Educational Status (mother)				
Primary school-junior high school	0.50	1.66	1.12-2.45	**0.01**
High school	0.25	1.29	0.98-1.69	0.06
University	0.12	1.12	0.86-1.47	0.39
Parents' marital status	0.39	1.49	1.14-1.94	**0.04**

Reference categories for grade, educational status of mother and parents' marital status are; 4th grade or above, graduated from university and parents who are living together, respectively. Sensitivity: 0.1122, OR: Odds ratio, Specificity: 0.9567, CI: Confidence interval, Accuracy: 0.65.

ing in urban areas of our country. In this study, the frequency of current smoking was 30.6% of all participants, which was considered high and noteworthy. Among the WHO regions, the Western Pacific Region, which covers East Asia and the Pacific, accounted for 38% of smokers throughout the world but only 32% of the population aged 15 years and older.[7] In contrast to developing countries like Turkey and Asian countries, data from deve-

loped countries demonstrate that adolescent smoking rates are lower. According to the European Community Respiratory Health Survey (ECRHS) II, the prevalence of active smoking in middle-aged adults living in Europe declined by 5.9% per 10 years of follow-up (current smoking 33.9% in ECRHS I; 28.7% in ECRHS II).[8]

The male predominance of tobacco consumption in this study is not surprising (39% among males, 33.2% among females). The prevalence of current cigarette smoking was much higher among men (60.2%) than among women (6.9%) in Asia.[9] Traditionally, men have a dominant social role in Turkey. Consistent with previous studies, men are at a higher risk for smoking than women.[10,11] Although smoking may be considered an acceptable male social behavior, the rate of tobacco consumption among female students is also higher than the reported smoking prevalence for women in previous studies from Turkey. The smoking rate of female university students at medical and non-medical schools in Turkey was reported to be 22.9% and 31.2%.[10] Increased smoking rates among females may simply be a reflection of a broken cultural taboo in urban university students. Moreover, over the last century, the tobacco industry has made various appeals to women including touting cigarettes as a way to curb hunger and achieve weight reduction. It also has been portrayed as a "torch of freedom" symbolizing emancipation from male dominance, and as a vehicle for attracting men.[12]

The median age at which smoking began was 17.0 years in our study. Erbaydar and coworkers, in a study that included 6012 adolescents aged 13-17 years in Turkey, reported a mean age of initiation of 12.39, SE (standard error) 2.5 years; 29.3% had tried smoking cigarettes at least once, and 9.1% were current smokers.[13] The increase in the age of starting smoking for Turkish university students is a favorable finding and is most likely due to anti-smoking activities.

The vast majority of smokers begin using tobacco products before the age of 18 years.[4] According to the Global Youth Tobacco Survey (GYTS), the overall median percentage of students who smoked their first cigarette before the age of 10 years is 23.9%.[14] Two thirds of men in China become daily smokers before 25 years of age.[15] Recent trends suggest that young adulthood is an important period in the development of regular smoking behavior.[16] Young people also have been targets of the tobacco industry for survival of the tobacco business, making young persons potential life-long customers. Therefore, marketing to teenagers is important for the viability of the tobacco industry.

In the current study, the age at which smoking started was inversely related with cigarette consumption. Although the health consequences of cigarette smoking are well known today, young people continue to start smoking and become addicted. This may be a reflection of young persons being a target of the tobacco industry and not being completely conscious of the health hazards of smoking. Intensive health programs focusing on the hazards of smoking are needed to prevent young persons from beginning to smoke.

Turkey, a tobacco-growing country, welcomed multinational tobacco corporations in the mid-1980s. Their aggressive marketing techniques increased tobacco awareness among children.[13,17,18] Their role of peer affiliations, social, family and individual factors in cigarette smoking in adolescence was demonstrated in previous studies and in this study.[19-22]

Several studies have demonstrated that the prevalence of smoking is related to the socioeconomic status.[23-25] Among adults, prevalence of cigarette smoking is associated with lower educational attainment and lower income levels in developed countries.[12, 23, 26] However, in the current study, students with higher income levels were smoking more than those with lower income (data shown in Table 4). In accordance with this result, smokers most commonly preferred expensive brand names. According to the students' brand preferences, this study shows that foreign cigarette companies have deeply penetrated the Turkish market. Although Turkey is a leading tobacco producer, the influence of powerful multinational tobacco corporations has dramatically influenced the tobacco market in Turkey, with a resultant increase in consumption.[13,17]

TABLE 4: Smoking status and income.			
	Nonsmoker	Smoker	p
Monthly income			
(TL) Mean + SD	373.5 ± 338.2	472.5 ± 537.6	**0.001**
Pocket money (daily)			
(TL) Mean + SD	11.6 ± 13.5	14.6 ± 10.7	**0.001**

SD: Standard deviation, TL: Turkish Liras.
*Mann Whitney U test.

In this study, the education level of mothers was inversely related with smoking. Students whose mothers graduated from primary school or junior high school smoked more than did other students. The high education level of mothers may be a protective factor for their children against smoking.

Current living place was another factor found to influence the students' smoking status. Students living in the student dormitory had lower smoking rates than did students living at home with family or friends. In Turkey, smoking is forbidden by the "Prevention of the Harms of Tobacco Products Law" which has been in effect since 1996. According to this law, smoking is banned in student dormitory rooms. This result reflects the dissuasive effect of legislation on students' smoking habits.

Only a few smokers completely quit smoking in this study. While the percentage of students that had tried to stop smoking in the previous year was 68.4%, only 4.6% had been able to stop smoking completely.

CONCLUSION

University students comprise the largest group of Turkish persons aged 18 to 24 years. This is the youngest age group that tobacco manufacturers can legally target. The school year is a critical time in either the development or the abandonment of smoking behavior. Tobacco use in this group should be monitored closely, and young adults should be included in all tobacco control efforts. Reducing tobacco use among young adults should be a national health priority. Because one third of university students are regular smokers, serious interventions in this population are required. It is apparent that stronger interventions are needed than just good knowledge to encourage this population to stop smoking. Serious interventions are required to prevent young persons from *starting to smoke* in the first place, rather than encouraging them to *stop smoking after* the behavior has already become a habit.

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