

CLINICAL INVESTIGATIONS

Nicotine Dependence in Medical Students and Physicians in the Lakes Region

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Abstract: This study was carried out to evaluate the level of physical nicotine dependence in medical students and physicians working in the Lakes region, Turkey. The standardized Fagerström test of nicotine dependence questionnaire was given to 135 physicians and 61 medical students who smoked daily. The rate of daily smoking was 28.4% in medical students and 33.7% in physicians. Average Fagerström test for nicotine dependence scores were 3.98 ± 2.69 for medical students, 3.69 ± 3.05 for general practitioners, 3.06 ± 2.23 for research assistants and 3.34 ± 2.88 for specialist physicians. Of the medical students, 15 (24.6%) indicated high nicotine dependence, 6 (9.8%) very high dependence; of the physicians, 23 (17.0%) indicated high nicotine dependence and 13 (9.6%) very high dependence. The mean nicotine dependence score of males was similar to that of females. The mean age of smoking initiation was 16.9 ± 2.3 years for medical students and 19.7 ± 4.3 years for physicians. The mean duration of unsuccessful attempts to stop smoking was 31.8 days in dependent subjects and 240.7 days in nondependent subjects. Thirty-four (58.6%) dependent subjects and 91 (65.9%) nondependent subjects had attempted to stop smoking at least once, mostly due to future health risk. Thirty-two (55.2%) dependent subjects and 76 (55.1%) nondependent subjects reported that they experienced withdrawal symptoms during smoking cessation. The results suggest that there is a need to develop programmes to aid medical students and physicians to stop smoking. Equally, there is a need for programmes aimed at preventing or delaying the onset of cigarette use.

Key Words: Nicotine dependence, medical students, physicians

Introduction

Following the recognition of the serious health consequences of cigarette smoking, there has been a steady decline in the prevalence of smoking in most developed countries. This decrease in the prevalence of smoking has been extremely pronounced among physicians (1,2). In developing countries, including Turkey, tobacco use has increased. In studies in Turkey, smoking rates between 18.0% and 51.2% for medical students and 22.4% and 54.0% for physicians have been reported; however, these numbers are lower than those reported for the general population (3,4).

Smoking is a major threat to public health and the reduction of tobacco consumption is generally acknowledged as an extremely important preventive action against this threat (5). Physicians in the public health sector are in a position to play an important role in reducing the consumption of tobacco. Research suggests

that physicians who smoke cannot effectively convey the message to the people about the adverse health impacts of smoking (6).

Nicotine dependence is an important factor in the persistence of cigarette smoking, despite its serious health risks (7,8). No material regarding the importance of nicotine dependence in the high prevalence of smoking among Turkish physicians and medical students was found in the literature.

This study was carried out to evaluate the level of physical nicotine dependence in medical students and physicians in the Lakes region.

Materials and Methods

A questionnaire was given to 135 physicians and 61 medical students who smoked daily in the Lakes region of Central Anatolia including 4 cities (Isparta, Burdur, Dinar,

Beyşehir) in 2001. The questionnaire included the 6 items of the Fagerström test for nicotine dependence (9), and questions concerning experiences with cessation behaviour, attitudes towards quitting and the intentions of the study subjects to quit in the future. According to the Fagerström test for nicotine dependence criteria, nicotine dependence was defined as a score ≥ 6 .

Daily smokers were defined as those who have smoked during the past 6 months or more and currently smoke daily.

Statistical analyses were conducted by the SPSS statistical package (SPSS 9.1 for Windows, Chicago, IL). The prevalence of smoking and comparisons of intergroup proportions were performed with the chi-squared test. Student's t test and one-way analysis of variance (ANOVA) were used for comparisons between the means of quantitative variables. All statistical tests were 2-tailed and a P value less than 0.05 was considered significant.

Results

The rate of daily smoking was 28.4% in medical students and 33.7% in physicians. Eleven (5.1%) students and 41 (10.2%) physicians who had smoked for at least 6 months in their lifetime were ex-smokers.

The classification of the Fagerström test for nicotine dependence score in medical students and physicians in the Lakes region is shown in Table 1. Of the medical students, 15 (24.6%) indicated high nicotine dependence and 6 (9.8%) very high dependence; of the physicians, 23 (17.0%) indicated high nicotine dependence and 13 (9.6%) very high dependence.

The average Fagerström test for nicotine dependence scores of medical students and physicians in the Lakes region are presented in Table 2. Average Fagerström test for nicotine dependence scores were 3.98 ± 2.69 for medical students, 3.69 ± 3.05 for general practitioners, 3.06 ± 2.23 for research assistants and 3.34 ± 2.88 for specialist physicians. The average nicotine dependence score of medical students (3.98 ± 2.69) was similar to that of physicians (3.58 ± 2.77) ($P = 0.473$), and the average nicotine dependence score of males (3.72 ± 2.80) was similar that of females (3.20 ± 2.68) ($P = 0.253$).

The smoking characteristics of medical students and physicians in the Lakes region are given in Tables 3 and 4. The mean age of smoking initiation in medical students (16.9 ± 2.3 years) was lower than that of physicians (19.7 ± 4.3 years) ($P = 0.000$). General practitioners were the least likely to stop smoking in terms of proportion and specialist physicians were the least likely to stop smoking in terms of number. The mean duration of the last attempt to stop smoking was shorter in medical students (56.9 ± 94.7 days) than in physicians (242.5 ± 564.9 days) ($P = 0.018$) and specialist

Table 2. The average Fagerström test for nicotine dependence scores of medical students and physicians in the Lakes region.

	Average nicotine dependence score
Medical students	3.98 ± 2.69
Physicians	3.58 ± 2.77
General practitioners	3.69 ± 3.05
Research assistants	3.06 ± 2.23
Specialist physicians	3.34 ± 2.88

Table 1. The classification of Fagerström test for nicotine dependence score in medical students and physicians in the Lakes region.

	Very low (0-2) n (%)	Low (3-4) n (%)	Moderate (5) n (%)	High (6-7) n (%)	Very high (8-10) n (%)	Total
Medical students	21 (34.4)	8 (13.1)	11 (18.0)	15 (24.6)	6 (9.8)	61
Physicians	65 (48.1)	20 (14.8)	14 (10.4)	23 (17.0)	13 (9.6)	
General practitioners	24 (46.2)	5 (9.6)	5 (9.6)	12 (23.1)	6 (11.5)	52
Research assistants	19 (55.9)	5 (14.7)	4 (11.8)	5 (14.7)	1 (2.9)	34
Specialist physicians	22 (44.9)	10 (20.4)	5 (10.2)	6 (12.2)	6 (12.2)	49
Total	86 (43.9)	28 (14.3)	25 (12.8)	38 (19.4)	19 (9.7)	196

Table 3. Smoking characteristics of medical students and physicians in the Lakes region.

Characteristics	Medical students	General practitioners	Research assistants	Specialist physicians	P value
Age at first cigarette (year)	16.9 ± 2.3	19.1 ± 4.4	21.2 ± 2.8	19.3 ± 4.8	0.000
Cigarettes smoked per day	16.0 ± 8.5	16.1 ± 8.7	14.2 ± 5.3	15.4 ± 9.3	0.222
Desire to quit smoking	50 (82.0%)	34 (65.4%)	33 (97.1%)	43 (87.8%)	0.003
Attempt to quit smoking	39 (63.9%)	27 (51.9%)	21 (61.8%)	39 (79.6%)	0.043
Mean number of attempts to quit	4.8 ± 5.8	4.2 ± 5.2	3.1 ± 2.7	3.0 ± 3.2	0.543
Mean duration of attempt to quit smoking (day)	56.9 ± 94.7	147.8 ± 238.2	109.9 ± 155.6	380.5 ± 798.3	0.018
Withdrawal symptoms	35 (57.4%)	23 (44.2%)	15 (44.1%)	35 (71.4%)	0.499
Smoking behaviour over the next 5 years	22 (36.1%)	16 (30.8%)	10 (29.4%)	15 (30.6%)	0.905

Table 4. Smoking characteristics of medical students and physicians in the Lakes region.

Characteristics	Medical students	Physicians	P value
Age at first cigarette (year)	16.9 ± 2.3	19.7 ± 4.3	0.000
Cigarettes smoked per day	16.0 ± 8.5	15.4 ± 8.2	0.229
Desire to quit smoking	50 (82.0%)	110 (81.5%)	0.683
Attempt to quit smoking	39 (63.9%)	87 (64.4%)	0.756
Mean number of attempts to quit	4.8 ± 5.8	3.4 ± 3.8	0.092
Mean duration of attempt to quit smoking (day)	56.9 ± 94.7	242.5 ± 564.9	0.044
Withdrawal symptoms	35 (57.4%)	73 (54.1%)	0.629
Smoking behaviour over the next 5 years	22 (36.1%)	41 (30.4%)	0.772

physicians had stopped smoking for the longest duration. General practitioners were the least likely to want to quit smoking in terms of proportion and research assistants were the most likely to want to stop smoking in terms of proportion. There were no differences between the groups regarding the number of cigarettes smoked per day, the mean number of attempts to quit smoking, withdrawal symptoms during cessation of smoking and smoking behaviour over the next 5 years.

The sociodemographic and smoking characteristics of dependent and nondependent subjects are shown in Table 5. The mean number of cigarettes smoked per day was higher in dependent subjects (22.6 ± 6.8 number) than in nondependent subjects (13.0 ± 6.8 number). There were no differences between dependent and nondependent subjects regarding the sex, professional

status, mean age of smoking initiation, duration of smoking, withdrawal symptoms during smoking cessation or smoking behaviour over the next 5 years.

The attitudes and reasons behind attempts to quit smoking among dependent and nondependent subjects are given in Table 6. The mean duration of the most recent attempt to quit smoking was lower among dependent subjects (31.8 ± 41.9 days) than among nondependent subjects (240.7 ± 550.3 days) ($P = 0.034$). Thirty-four (58.6%) dependent subjects and 91 (65.9%) nondependent subjects had attempted to quit smoking at least once, mostly due to fears over future health risks. There were no differences between dependent and nondependent subjects regarding the desire to quit smoking and the number of attempts to quit smoking.

Table 5. Sociodemographic and smoking characteristics of dependent and nondependent subjects.

Characteristics	Dependent subjects	Nondependent subjects	P value
Professional status			0.245
Medical student	21 (34.4%)	40 (65.6%)	
Physician	36 (26.7%)	99 (73.3%)	
Sex			0.637
Male	41 (28.3%)	104 (71.7%)	
Female	16 (31.4%)	35 (68.6%)	
Age at first cigarette (year)	19.0 ± 3.5	18.8 ± 4.1	0.743
Duration of smoking	10.1 ± 6.3	10.7 ± 8.6	0.625
Cigarettes smoked per day	22.6 ± 6.8	13.0 ± 6.8	0.000
Withdrawal symptoms	32 (56.1%)	76 (54.7%)	0.117
Smoking behaviour over the next 5 years	23 (40.4%)	40 (28.8%)	0.134

Table 6. Attitudes and reasons of attempts to quit smoking among dependent and nondependent subjects.

	Dependent subjects	Nondependent subjects	P value
Number of subjects who wanted to quit	47 (82.5%)	111 (79.9%)	0.815
Number of subjects with quitting attempts	34 (58.6%)	91 (65.9%)	0.507
Number of attempts to quit	4.3 ± 5.3	4.0 ± 4.5	0.701
Duration of smoking cessation (day)	31.8 ± 41.9	240.7 ± 550.3	0.034
Reasons of attempts to quit			
Risk to future health	12 (35.3%)	25 (27.5%)	
Measure of claim	9 (26.5%)	23 (25.3%)	
Ill-health and discomfort	7 (20.6%)	18 (19.8%)	
Self-control	1 (3.0%)	6 (6.6%)	
Social and economic conditions	3 (8.8%)	4 (4.4%)	
Others	2 (5.9%)	14 (15.4%)	

The distribution of smoking cessation methods used by dependent and nondependent subjects are shown in Table 7. Quitting smoking by “cold turkey” was the most common method for dependent and nondependent subjects.

The distribution of tobacco withdrawal symptoms during smoking cessation among dependent and nondependent subjects is presented in Table 8. Cravings for tobacco were experienced at the highest proportion among both dependent and nondependent subjects.

Discussion

In this study the rate of daily smoking was 28.4% in medical students and 33.7% in physicians. The average nicotine dependence scores were 3.98 ± 2.69 for medical students and 3.58 ± 2.77 for physicians. However, it was found that 34.4% of medical students and 26.6% of physicians indicated nicotine dependence. Younger smokers at times demonstrate nicotine dependence patterns similar to those of adult smokers (10). The tobacco industry has argued that the decision to smoke

Table 7. The distribution of smoking cessation methods used by dependent and nondependent subjects.

Methods	Dependent subjects (n = 34)	Nondependent subjects (n = 91)	Total (n = 125)
Cold turkey	27 (79.4%)	74 (81.3%)	101 (80.1%)
Gradually	4 (11.8%)	11 (12.1%)	15 (12.0%)
Nicotine replacement therapy	2 (5.9%)	2 (2.2%)	4 (3.2%)
Behavioural therapy	- (0.0%)	1 (1.1%)	1 (0.8%)
Acupuncture	- (0.0%)	1 (1.1%)	1 (0.8%)

Table 8. The distribution of tobacco withdrawal symptoms during smoking cessation among dependent and nondependent subjects.

Withdrawal symptoms	Dependent subjects (n = 32)	Nondependent subjects (n = 76)	Total (n = 108)
Craving for tobacco	31 (96.9%)	54 (71.1%)	85 (78.8%)
Anxiety	25 (78.1%)	30 (39.5%)	55 (51.0%)
Disquietude	22 (68.8%)	32 (42.1%)	54 (50.0%)
Difficulty in concentrating	16 (50.0%)	25 (32.9%)	41 (38.0%)
Increased appetite	10 (31.3%)	24 (31.6%)	34 (31.5%)
Impatience	11 (34.4%)	15 (19.7%)	26 (24.1%)
Irritability	12 (37.5%)	9 (11.8%)	21 (19.4%)
Restlessness	5 (15.6%)	12 (15.8%)	17 (15.7%)
Excessive desire to drink coffee and tea	5 (15.6%)	11 (14.5%)	16 (14.8%)
Headache	4 (12.5%)	3 (3.9%)	7 (6.5%)
Drowsiness	3 (9.4%)	2 (2.6%)	5 (4.6%)

and to continue smoking is a free choice made by adults, but nicotine addiction is really a condition that takes hold in young people (11).

The mean age of smoking initiation was lower in medical students than that in physicians. Age of smoking initiation is a powerful predictor of consequences and nicotine dependence (12,13). Between one third and one half of young smokers who try smoking even just a few cigarettes soon become regular smokers (11). With more smoking experience, it becomes increasingly apparent to young smokers that cigarettes are an addiction that they will not easily end (14,15). For that reason, as suggested at the National Cancer Institute's expert panel, smoking cessation interventions should be made at an early stage of smoking behaviour (16).

The mean duration of the last attempt to stop smoking by medical students was shorter than that of physicians. This finding suggests that nicotine dependence may play a

role in the return to smoking. Young smokers self-administer active doses of nicotine very early in their smoking behaviour. Previous studies have demonstrated that adolescent cigarette smokers obtain significant amounts of nicotine from their cigarettes and experience difficulty in quitting. Older smokers are more likely to quit than younger smokers. This behaviour is attributed to the growing awareness of smoking-related illnesses with advancing age (17,18). In fact, there is evidence to suggest that age modifies the relationship between heavy smoking and quitting. Among older adults, the chance of quitting is higher in heavy smokers than in light smokers, while there is an opposite trend to that in young smokers (19).

It was found that 28.3% of men and 31.4% of women showed physical dependence to nicotine. In fact, other studies have shown that women tended to have higher addiction scores and more difficulty than men in quitting smoking (20,21).

Thirty-four (58.6%) dependent subjects and 91 (65.9%) nondependent subjects had attempted to quit smoking at least once, mostly over future health risks. Nicotine dependence has many features typical of a chronic disease. While a minority of tobacco users achieve permanent success into an initial quit attempt, the majority persist in tobacco use for many years and fall into a vicious circle through which many periods of relapse and remission follow each other (22).

Although the mean age of smoking initiation and smoking cessation rates were similar among dependent and nondependent subjects, the mean duration of last attempt to quit smoking was shorter in dependent subjects than in nondependent subjects. Nicotine-dependent smokers have more difficulty in quitting than nondependent smokers. Dependent smokers who had started smoking at later ages are more likely to quit than those who had started smoking at earlier ages (19).

Only 5.2% of medical students and 11.2% of physicians had smoked for at least 6 months in their lifetime and then had quit smoking. In addition, 79.5% of dependent smokers and 81.3% of nondependent smokers had tried to quit smoking by themselves, but had failed. Since nicotine addiction is considered a fundamental issue in preventing smokers from successfully stopping smoking, active help and support are needed to increase the chances of success (21-23). In fact, although only about 7.0% of smokers achieve long-

term success when trying to quit on their own, it is revealed that success rates can be increased to 15.0% and even to 30.0% by using updated guideline-recommended treatments (22).

Although the mean duration of last period of smoking cessation was shorter among dependent subjects than among nondependent subjects, there were no differences regarding the withdrawal symptoms during this period between both groups of subjects. Another study has suggested that withdrawal symptoms are not associated with the length of time since the last cigarette or the duration of the last period of smoking (24).

In conclusion, although medical students and physicians know the hazards of smoking, they show nicotine dependence patterns and attitudes towards quitting similar to other people. There is a need to develop programmes to aid medical students and physicians to stop smoking. There is also a need for programmes aimed at preventing or delaying the onset of cigarette use.

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