



Investigation of smoking prevalence and related factors among final year medical students: The case of Giresun University

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Abstract

Objectives: Tobacco use among medical students is common worldwide. It is estimated that one in every five students smoke. The aim of this study was to evaluate smoking prevalence and associated factors in final year medical students.

Methods: The study included 100 students studying in their final year at Giresun University Faculty of Medicine. The students who participated in the study were questioned with two scales and one form: sociodemographic form, Decisional Balance Scale for Smoking (DBSS), Fagerstrom Nicotine Dependence Test (FNBT).

Results: The mean age of the students was 24.3 ± 1.1 years (22-29 years). 54% of the participants were female and 46% were male. The rate of smoking in the living area was 56%. The prevalence of smoking in the family was 65%. The most common reasons for smoking were personal and family related reasons (37.5%), curiosity (30%) and peer influence (22.5%). The FNBT scale showed that the level of addiction was low in 72.5%, moderate in 25% and high in 2.5% of the students. Total DBSS score was negative in 85% and positive in 15% of the smoking students.

Conclusion: The prevalence of smoking among final year medical students is quite high. Students who are prone to smoking cessation according to the DBSS scale should be directed to smoking cessation treatments. The theoretical and clinical curriculum on smoking in medical school should be reviewed and implemented from the first years of medical school. Smoking rates can be reduced by increasing the number of smoking cessation outpatient clinics, easy access to counselling services and inclusion of students' close environment in the intervention process.

Keywords: Tobacco use; cigarette smoking; medical students; dependence of smoking

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Introduction

Cigarettes, a type of tobacco product, are one of the leading causes of non-communicable diseases, disabilities, and preventable deaths. Due to the nicotine they contain, cigarettes are addictive, and the various harmful substances present in them lead to numerous health issues for both smokers and passive smokers [1].

The negative health effects of tobacco use were confirmed by scientific research conducted in the 1950s, leading to numerous studies on tobacco-related diseases being added to the literature since then. However, the history of tobacco use dates back over 4,000 years. Substance use dates back to nearly the beginning of human history. A historical review reveals evidence of the consumption of addictive substances in mythological tales, legends, religious and literary works, and songs [2]. Today, tobacco products, especially cigarettes, are associated with approximately fifty different chronic diseases that do not directly cause death but significantly impact health [3]. Smokers often require medical assistance to overcome their smoking habit. Treatment should begin with non-pharmacological approaches, followed by the application of pharmacological therapies [4].

mPower is a policy package developed by the WHO to reduce tobacco use, containing a set of policies that have been proven effective. The main components of this policy package are: Monitor, protect, offer, warn, enforce [5].

In the coming years, medical students, who will be guardians of public health, will play a key role in the fight against smoking. In this context, our study aims to investigate the frequency of smoking among final-year medical students and the associated factors.

Materials and Methods

Our study was approved by the Giresun Training and Research Hospital Clinical Research Ethics Committee with decision number 2023/4522 on September 15, 2023. The study was conducted in accordance with the World Medical Association Declaration of Helsinki and Good Clinical Practice guidelines. Participants were informed about the research, and data were collected based on voluntary consent after obtaining informed consent. The study population consists of final-year medical students at Giresun University between the dates of February 1, 2024, and July 1, 2024. The data obtained through the survey in the study were collected by researchers using face-to-face interview techniques from final-year medical students included in the sample.

The GPower 3.1 program was used to calculate the sample size. According to a two-sided hypothesis with a 5 % Type I error rate, 0.217 effect size, and 95% power, the required number of participants was calculated as 65.

The demographic form included questions about age, gender, marital status, family type, living situation (family, friends, alone), the student's income level, the family's income level, the educational background of the mother and father, current smoking status, smoking in the living area, presence of smokers in the family, awareness of the harms of smoking prior to medical school, adequacy of theoretical knowledge regarding the harms of smoking in medical school, adequacy of education on smoking cessation methods in medical school, negative effects of faculty members' smoking on students, age of starting smoking, reasons for starting smoking, daily amount of cigarettes used, duration of smoking, smoking before university, type of tobacco product used and questions about attempts to quit smoking after education on smoking cessation methods provided in medical school.

The Fagerström Test for Nicotine Dependence (FTND) was used to assess the degree of addiction among smokers, while the Smoking Decision Balance Scale (SDBS) was utilized to evaluate the significance of students' perceptions of the harms and benefits of smoking.

The Fagerström Test for Nicotine Dependence (FTND), widely used to evaluate the physical aspect of nicotine addiction, was developed in 1991 by Heatherton et al. as a revision of the Fagerström Tolerance Questionnaire. It consists of six items [5]. The total FTND score is categorized as low dependence for 0–3, moderate dependence for 4–6, and high dependence for 7 and above [6].

The Turkish validity and reliability study of the Smoking Decision-Making Scale (SDMS) was conducted by Bektaş et al. in 2010 [7].

The normality of the variables was assessed using visual methods (histograms and probability plots) and analytical methods (Kolmogorov–Smirnov and Shapiro-Wilk tests). Descriptive statistics were expressed in terms of frequency, percentage, mean, standard deviation, and median.

Results

The average age of the 100 final-year medical students

included in the study was 24.3 ± 1.1 years (ranging from 22 to 29 years). Of the participants, 54% were female and 46% were male, resulting in a female-to-male ratio of 1.2:1. Ninety-nine percent of the students were single. Most students came from nuclear family types, and 12% of the students lived alone. The income level of the majority of the students (97%) was above 4,000 TL. Additionally, 64% of the students' fathers and 44% of their mothers were university graduates.

Among the 100 students participating in the study, 40 were smokers. The rate of smoking in the living area was 56%. The frequency of smoking within the family was 65%. Smokers and non-smokers were compared in terms of smoking history characteristics. The presence of individuals who smoke in the living environment was more common among smokers than non-smokers. All students had acquired knowledge about the harms of smoking prior to medical school. The vast majority of participants (95%) found the education on the harms of smoking in medical school to be sufficient, while 90% deemed the education on smoking cessation methods adequate. Only 5% of the students expressed that they were negatively affected by faculty members' smoking.

The smoking history of the 40 students who smoked was evaluated. Among them, approximately half started smoking at the age of 19 or older, while 2.5% began smoking between the ages of 13 and 15, and 45% started between the ages of 16 and 18. The most common reasons for starting to smoke were personal and family reasons (37.5%), curiosity (30%), and peer influence (22.5%). The daily number of cigarettes smoked was generally between 10 and 20 for 55% of the participants. Only 5% reported smoking more than 20 cigarettes a day. Half of the participants (50%) had been smoking for over six years, and the other half (50%) stated that they had smoked prior to university. After the education on smoking cessation methods in medical school, only 22% of smokers attempted to quit.

The 40 students who smoked were evaluated using the Smoking Decision Balance Scale (SDBS). In the 24-item questionnaire, the statements with the highest agreement among students were: "smoking is harmful to health" (100%), "smoking is harmful to the health of others" (97.5%), and "the smoke and odor of cigarettes disturb people around" (90%). When evaluating the results of the Smoking Decision Balance Scale (SDBS), the average benefit score was 33.7 ± 6.2 (ranging from 14 to 47), while the average harm score was 39.2 ± 4.1 (ranging from 33 to 53). The total SDBS score was -5.5

± 6.5 (ranging from -30 to 7). The total SDBS score was negative for 85% of the smoking students and positive for 15%.

The total score of the Fagerström Test for Nicotine Dependence (FTND) among smoking students was 2.7 ± 1.5 (ranging from 1 to 7). According to the FTND scale, the level of dependence was low in 72.5% of the students, moderate in 25%, and high in 2.5% (Figure 1).

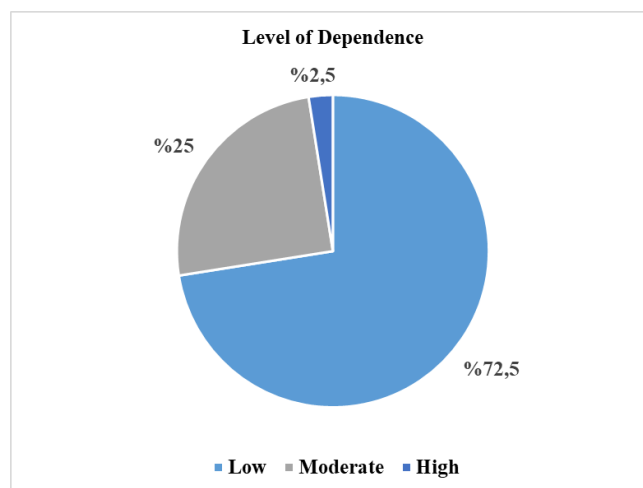


Figure 1: The level of nicotine dependence among smoking students according to the Fagerström Test for Nicotine Dependence (FTND).

The benefit and harm scores of the Smoking Decision Balance Scale (SDBS) were compared based on the smoking history of students. Those who smoked more than 10 cigarettes per day had a higher SDBS benefit score than those who smoked between 1 and 10 cigarettes daily. Students who had smoked for 6 years or more had a higher SDBS benefit score than those who had smoked for 0-5 years. Additionally, students who smoked before university had a higher SDBS benefit score than those who started smoking in university (Table 1).

The Fagerström Test for Nicotine Dependence (FTND) scores of smoking students were compared based on smoking-related characteristics. Students with a family history of smoking had higher FTND scores than those without ($p=0.012$). Additionally, those who started smoking between the ages of 13 and 18 had higher FTND scores than those who started at 19 or older ($p<0.001$) (Table 2).

The correlation analysis among smokers revealed a significant positive correlation between the SDBS benefit score and the FTND score (Table 3).

Table 1: Comparison of the benefit and harm scores of the smoking decision balance scale (SDBS) according to smoking-related characteristics of smokers

Characteristic (n=40)	SDBS benefit score	p-value	SDBS harm score	p-value
	Mean $\pm$ SD		Mean $\pm$ SD	
Presence of smoking in the living area		0.133 [†]		0.438 [†]
Yes	34.8 $\pm$ 4.4		39.4 $\pm$ 4.1	
No	27.1 $\pm$ 10.5		38.0 $\pm$ 4.1	
Family history of smoking		0.443 [†]		0.649 [†]
Yes	34.1 $\pm$ 5.5		39.4 $\pm$ 4.4	
No	32.4 $\pm$ 3.0		38.7 $\pm$ 3.0	
Age of starting smoking		0.088 [†]		0.376 [†]
13-18 years	35.5 $\pm$ 8.0		39.8 $\pm$ 4.7	
≥ 19 years	32.0 $\pm$ 3.1		38.6 $\pm$ 3.4	
Daily cigarette consumption		0.024 [†]		0.280 [†]
1-10 cigarettes	30.8 $\pm$ 4.2		38.1 $\pm$ 3.6	
>10 cigarettes	35.1 $\pm$ 6.4		39.4 $\pm$ 3.5	
Duration of smoking		0.048 [†]		0.573 [†]
0-5 years	31.8 $\pm$ 5.3		39.6 $\pm$ 3.7	
≥ 6 years	35.6 $\pm$ 6.5		38.8 $\pm$ 4.5	
Smoking before university		0.018 [†]		0.736 [†]
Yes	36.0 $\pm$ 6.6		39.4 $\pm$ 4.9	
No	31.4 $\pm$ 4.9		39.0 $\pm$ 3.2	
Attempt to quit smoking after education on cessation methods		0.054 [†]		0.067 [†]
Yes	37.2 $\pm$ 7.0		41.4 $\pm$ 5.5	
No	32.7 $\pm$ 5.6		38.5 $\pm$ 3.4	

[†]Student t-test

Discussion

Smoking is one of the leading preventable causes of chronic diseases, reduced quality of life, and early death. It is estimated that the use of tobacco products, primarily cigarettes, is responsible for 64.2% of deaths due to trachea, bronchus, and lung cancers; 48.5% of deaths due to chronic obstructive pulmonary disease; 40.8% of deaths due to esophageal cancer; 32.6% of deaths due to cerebrovascular diseases; and 7.8% of deaths due to diabetes [8].

The frequency of smoking among university students is a significant problem in terms of the cumulative harms of smoking, especially because of their young age. Despite this, one in four university students in the United States,

and globally, one in five university students use tobacco products [9,10]. In medical schools, these rates should be lower due to the importance of physicians in smoking cessation. In our study, it was observed that the smoking frequency among final-year medical students was 40%. This rate can be considered quite high.

In a study conducted by Seven and Günay in 2024 in İzmir, the smoking frequency among first-year and fifth-year students was reported to be 34.1%. It was stated that 29.8% of first-year students and 40.8% of fifth-year students smoked [11]. These rates were very close to those found in our study evaluating sixth-year students. In a study conducted by Karabiber et al. in Hatay, the smoking frequency among medical

Table 2. Comparison of Fagerström Test for Nicotine Dependence (FTND) Scores According to Smoking-Related Characteristics of Smokers.

Characteristic (n=40)	FNND Score	p-value
	Mean $\pm$ SD	
Presence of smoking in the living area		0.469 [†]
Yes	2.8 $\pm$ 1.6	
No	2.3 $\pm$ 1.2	
Family history of smoking		0.012[†]
Yes	3.1 $\pm$ 1.6	
No	1.7 $\pm$ 0.9	
Age of starting smoking		<0.001[†]
13-18 years	3.6 $\pm$ 1.5	
≥ 19 years	1.9 $\pm$ 1.1	
Duration of smoking		<0.001[†]
0-5 years	1.9 $\pm$ 1.0	
≥ 6 years	3.6 $\pm$ 1.5	
Smoking before university		<0.001[†]
Yes	3.8 $\pm$ 1.5	
No	1.7 $\pm$ 0.7	
Attempt to quit smoking after education on cessation methods		0.007[†]
Yes	4.0 $\pm$ 1.7	
No	2.4 $\pm$ 1.3	

students was reported to be 27%. In this study, which included first-year, fourth-year, and sixth-year students, the smoking frequency for only sixth-year students was stated to be 33.3% [12]. These findings also indicate that the smoking frequency tends to increase in the later years of medical school.

There are also studies that report higher rates of smoking. However, these studies are often conducted in countries with lower levels of development. In a study conducted by Jarelnape et al. in 2023 in Sudan, the smoking frequency among medical students was reported to be 48.8% [13].

There are also studies reporting much lower smoking rates among medical students. In the 2023 study by Babjakova et al., the smoking frequency among 783 medical students was reported to be 11.4%. The fact that the students in this study were primarily those who had just begun medical school may have contributed to the

lower rates [14].

In our country, according to current data, the smoking frequency in the general population (aged 15 and above) has been reported to be 45.8%, with 27.2% of the population smoking daily [15]. In the European Union, however, smoking rates are lower (less than 25%) [16]. These findings may be related to stronger anti-smoking policies in EU countries. By improving existing regulations related to smoking and closely monitoring their implementation, it may be possible to achieve lower smoking rates in both the general population and among medical students.

A wide variety of reasons for starting smoking have been identified in the literature. In our study, personal and family issues, curiosity, and peer influence were found to be prominent reasons, while the desire for pleasure and social acceptance were noted as quite rare reasons. In the

Table 3: Correlation analyses among age, Smoking Decision Balance Scale (SDBS) scores, and Fagerström Test for Nicotine Dependence (FTND) scores among smokers

		Age	SDBS benefit	SDBS harm	FTND
Age	Rho/r	-	-0.012	-0.196	0.210
	p-value	-	0.940	0.225	0.194
SDBS benefit	Rho/r	-0.012	-	0.240	0.536
	p-value	0.940	-	0.135	<0.001
SDBS harm	Rho/r	-0.196	0.240	-	0.078
	p-value	0.225	0.135	-	0.633
FTND	Rho/r	0.210	0.536	0.078	-
	p-value	0.194	<0.001	0.633	-

study by Seven and Günay, the most common reasons mentioned were reducing stress levels, seeking pleasure, and curiosity [11].

Determining a smoker's readiness to quit in advance can be beneficial for creating personalized cessation programs. Selecting suitable candidates for smoking cessation treatments and assessing their levels of addiction are important. For this purpose, numerous assessment methods have been developed. In our study, when evaluated using the FNBT scale, it was found that only 2.5% of smoking students had a high level of addiction. The majority of the students had low levels of addiction. These findings suggest that the success rate of smoking cessation methods among medical students could be high.

The Decision-Making Balance Scales were actually developed to predict behavioral changes and identify individuals who are open to change. These scales have been used to assess individuals' attitudes toward necessary behavioral changes in various diseases, such as hypertension and obesity [17,18]. Considering that quitting smoking is also an important behavioral change, the scales have been adapted for smoking cessation. The necessary stages of change for quitting smoking, like other decisions, depend on the relationship between the benefits and harms that the change will bring [19]. For those contemplating quitting, their thoughts on the harms of smoking outweigh their thoughts on its benefits. In our study, we attempted to identify students who were likely to quit smoking using the Decision-Making Balance Scale. It was found that the harm scores of the majority of sixth-year students were higher than their

benefit scores. The high harm scores indicate that these smoking students are primarily focused on the harms of smoking and are potential candidates for quitting. To our knowledge, there is no study that has identified smoking cessation candidates among medical students using the Decision-Making Balance Scales. However, university students have been previously assessed with these scales. In the 2023 study by Çakmak and Gökder, 425 university students were evaluated using the Decision-Making Balance Scales, and it was stated that their harm scores were higher than their benefit scores, indicating that these students were potential candidates for quitting smoking [20].

Our study indicated that, although the smoking frequency among medical students is quite high, their levels of addiction are low, and they primarily focus on the harms of smoking. This suggests that the success rate of properly planned smoking cessation interventions could be high. Another significant finding of our study was that only 22% of smokers attempted to quit after receiving smoking cessation treatment methods in medical school. Optimizing smoking cessation education, expanding the content of the training, and starting education on smoking in the early years of medical school could enhance the success rates of smoking cessation programs.

Our study had certain limitations. The sample size was relatively small, and it was a single-center study. Therefore, it may not represent all medical students.

Conclusion

Given that medical students will also be responsible for implementing smoking cessation treatments in addition

to their own health, necessary measures should be taken to reduce the smoking frequency among them. The medical school curriculum includes the harms of tobacco and tobacco products, prevention and treatment of smoking-related diseases, and smoking cessation methods. However, the results of our study indicate that the existing measures are insufficient. When considering students' approaches to tobacco products individually, the focus should first be on preventing students from starting to smoke, and then identifying those who smoke and are willing to quit, followed by the implementation of individualized treatments to reduce smoking rates. For students with a high level of addiction, nicotine replacement therapy (NRT) and pharmacological treatments can be recommended.

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