

## Investigation of Tobacco and Tobacco Product Use and Nicotine Dependence Level of Physicians

### Hekimlerin Tütün ve Tütün Ürünleri Kullanımı ve Nikotin Bağımlılığı Düzeylerinin Araştırılması

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#### ABSTRACT

**Aim:** The World Health Organization called tobacco use a "tobacco epidemic" and identified it as the number one preventable cause of death. This study aimed to investigate the tobacco product use and dependence levels of physicians who are role models for society.

**Methods:** The study was conducted with physicians working at Alanya Research and Training Hospital using an online survey between March and September 2024. Sociodemographic data, tobacco product use status, nicotine dependence levels, and attitudes toward quitting smoking among physicians were questioned. Their dependence levels were measured with the Fagerstrom Test for Nicotine Dependence.

**Results:** A total of 218 physicians participated in the study, 61.5% of whom were male, and 38.5% were female. While 63.30% of the participants were under the age of 40, 51.4% were married, and 48.6% were single. The rate of men using tobacco products (37.6%) was higher than that of women (13.3%). The difference between the rates of men (25.5%) and women (64.3%) who quit tobacco products was statistically significant. The relationship between marital status and tobacco product use was statistically significant ( $p=0.039$ ). Nicotine dependence levels were higher in the participants over 50 years of age than in those under 30 years of age.

**Conclusion:** The tobacco product use frequency of the physicians who participated in this study was similar to the frequency in the general population. Raising awareness among physicians about the harms of tobacco use before and after their graduation may contribute to reducing their frequency of tobacco product use.

**Key Words:** Physician, tobacco, smoking cessation, nicotine dependence

#### ÖZ

**Amaç:** Dünya Sağlık Örgütü, tütün kullanımını "tütün salgını" olarak nitelendirmiş ve önlenabilir ölümlerin bir numaralı nedeni olarak belirlemiştir. Bu çalışma, toplum için rol model olan hekimlerin tütün ürünü kullanım ve bağımlılık düzeylerini araştırmayı amaçlamaktadır.

**Yöntem:** Çalışma, Mart-Eylül 2024 tarihleri arasında Alanya Araştırma ve Eğitim Hastanesi'nde çalışan hekimlerle çevrimiçi anket yöntemi kullanılarak gerçekleştirilmiştir. Hekimlerin sosyodemografik verileri, tütün ürünü kullanım durumları, nikotin bağımlılık düzeyleri ve sigarayı bırakmaya yönelik tutumları sorgulanmıştır. Bağımlılık düzeyleri Fagerstrom Nikotin Bağımlılığı Testi ile ölçülmüştür.

**Bulgular:** Çalışmaya toplam 218 hekim katılmıştır; %61,5'i erkek, %38,5'i kadındır. Katılımcıların %63,30'u 40 yaşın altındayken, %51,4'ü evli ve %48,6'sı bekarlıdır. Erkeklerin (%37,6) tütün ürünleri kullanma oranı, kadınların (%13,3) oranından daha yüksekti. Tütün ürünlerini bırakan erkeklerin (%25,5) ve kadınların (%64,3) oranları arasındaki fark istatistiksel olarak anlamlıydı. Medeni durum ile tütün ürünü kullanımı arasındaki ilişki istatistiksel olarak anlamlıydı ( $p=0,039$ ). Nikotin bağımlılığı düzeyleri, 50 yaş üstü katılımcılarda, 30 yaş altındakilere göre daha yüksekti.

**Sonuç:** Bu çalışmaya katılan hekimlerin tütün ürünü kullanım sıklığı, genel popülasyondaki sıklığa benzerdi. Hekimlerin mezuniyet öncesi ve sonrası tütün kullanımının zararları konusunda farkındalıklarının artırılması, tütün ürünü kullanım sıklıklarının azaltılmasına katkıda bulunabilir.

**Anahtar Kelimeler:** Hekim, tütün, sigarayı bırakma, nikotin bağımlılığı

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## Introduction

The tobacco plant is in the *Nicotiana* genus of the Solanaceae family whose homeland is the American continent. Its leaves are dried and consumed in cigarettes, cigars, pipes, hookahs, and other products [1]. Tobacco smoke contains thousands of chemicals such as formaldehyde, cyanide, ammonia, carbon monoxide, naphthalene, cadmium (also found in batteries), and acetone (nail polish remover). Chemicals such as arsenic, benzene, and vinyl chloride are carcinogenic [2]. Nicotine, the psychotropic substance in tobacco, has addictive properties. For this reason, two types of dependence are seen in tobacco users: physical and psychogenic dependence. Nicotine is effective in physical dependence and when the nicotine levels in the blood decrease, complaints such as headache, restlessness, and lack of concentration are experienced [3].

According to the World Health Organization (WHO) data, there were more than 1.1 billion tobacco product users in the world, men used more tobacco products than women, and although the frequency of use was decreasing worldwide, it was increasing in member countries in the Eastern Mediterranean region and the African continent. WHO identified tobacco use as the world's largest preventable cause of death in 2008. The organization used the term "tobacco epidemic" for the widespread use of tobacco in 2022 [4].

According to the bulletin of the 2022 Health Survey published by the Turkish Statistical Institute (TURKSTAT) on 01.06.2023 which was conducted by visiting 10,028 households and interviewing 29,761 people between September and December 2022 in Türkiye, the general rate of individuals aged 15 and over who used tobacco products every day was 28.3% [5]. When the known risk factors for all deaths worldwide are ranked according to 2019 data, it is seen that high systolic blood pressure comes first at 19.2%, and tobacco-related diseases come second at 15.4% [6]. It is known that tobacco use is a risk factor for ischemic heart disease, cerebrovascular disease, lower respiratory tract infections, chronic obstructive pulmonary disease (COPD), tuberculosis, and lung cancer [7]. In 2003, WHO member states accepted the WHO

Framework Convention on Tobacco Control (WHO FCTC), which sets out actions to reduce global tobacco product use [8]. While comprehensive smoke-free zone laws covered only 5% of the world's population in 2008, by 2020, they covered more than 25% [4]. The public, civil society, and healthcare personnel are all responsible for tobacco control. Physicians can play a major role in tobacco control by being role models in society and providing professional support in quitting tobacco use. Tobacco use is a disease with a diagnostic criterion in DSM-5 [Diagnostic and Statistical Manual of Mental Disorders (DSM), Fifth Edition] and a diagnosis code (Z72.0 Tobacco Use) in ICD 11 [International Classification of Diseases (ICD), Eleventh Revision]. Its treatment is performed by certified physicians in smoking cessation clinics. Physicians should evaluate tobacco dependence as a disease and question their patients about their tobacco use status. If the patient does not want to use tobacco products and feels ready to quit, the 5A (ask, advise, assess, assist, and arrange) approach should be followed. In this context, the approach of asking the patient about tobacco use, advising the patient to quit tobacco use, assessing the patient's desire to quit tobacco use, planning treatment to quit tobacco use, assisting the patient, and monitoring and following up their use to prevent relapses should be followed [9]. Measuring the dependence levels of patients is important in choosing treatment option. One of the frequently used scales to measure nicotine dependence is the Fagerstrom Test for Nicotine Dependence (FTND), which consists of six questions. Pharmacological treatment for quitting tobacco use is provided by nicotine replacement therapy (NRT), Bupropion, and Varenicline [10,11]. Heated tobacco products (HTP) are aerosol products containing nicotine and toxic chemicals that are inhaled by heating tobacco or through a device containing tobacco. Although many toxic substances found in tobacco smoke are at lower levels in HTP, HTP aerosols can sometimes contain higher concentrations of toxic substances than tobacco smoke, including substances such as glycidol, pyridine, dimethyl trisulfide, acetoin, and methylglyoxal [12].

In our study, the tobacco product usage status and nicotine dependence levels of physicians were investigated.

## Material and Method

The population of the study consisted of physicians actively working at Alanya Research and Training Hospital on 15.12.2023. The sample size was determined as 205 participants, taking 50% prevalence within a 95% confidence interval and with a 0.05 margin of error. Physicians on permanent staff at Alanya Research and Training Hospital were included in the study, while physicians on unpaid leave and those arriving from other institutions for temporary duty were excluded.

In this study, planned with a cross-sectional design, an online survey (e-survey) was applied to physicians working at the Hospital between March and September 2024. The e-survey questioned physicians regarding their sociodemographic characteristics such as gender, age, marital status, specialty, total years of working in the profession, and their tobacco use status. If they use tobacco products, they were asked which ones they used, for how many years they had used them, whether they were considering quitting tobacco use, whether they questioned patients about their tobacco use when taking their medical history, and whether they offered advice and guidance to their patients who used tobacco products to help them quit.

Additionally, those who were considering quitting tobacco use were asked about their reasons for quitting, whether they had received support from a certified physician, if so, which specialty the certified physician was in, and which method they used during the quitting process. The nicotine dependence levels of physicians using tobacco products were measured using FTND. FTND was developed by Karl O. Fagerstrom and adapted to Turkish by Uysal et al. [10,13]. The total score of FTND varies between 0 and 10, and according to this score, people are grouped as very slightly dependent (0-2 points), slightly dependent (3-4 points), moderately dependent (5 points), highly dependent (6-7 points), or very highly dependent (8-10 points) [14].

**Ethics Committee Approval:** This cross-sectional and descriptive study was conducted in accordance with the guiding principles of the Declaration of Helsinki. After receiving institutional

permission from Alanya Research and Training Hospital with the decision date 22.12.2023 and number 232335665, ethical approval was received from the Faculty of Medicine Clinical Research Ethics Committee with the decision date 28.12.2023 and number 19-08. The participants were informed about the purpose of the study by the researchers before they started answering the survey questions, and informed consent was obtained from the participants before administering the survey.

**Statistical analysis:** The statistical analyses of the data were performed using SPSS version 27.0 (IBM SPSS Statistics for Windows, Version 27.0. Armonk, NY: IBM Corp). The categorical variables are summarized using frequency (n) and percentage (%) values, and a box (bar) plot was drawn. The relationships between the categorical variables were analyzed using chi-squared tests. The results of the appropriate test, among chi-squared, Fisher's Exact, or likelihood ratio test statistics, were used. The statistical significance threshold for all comparisons was accepted as  $p < 0.05$ .

## Results

Two hundred and eighteen physicians participated in the study, while 61.5% were women, and 38.5% were men. It was found that 43.6% of the participants were under 30 years of age, 19.7% were 30-39 years old, 22.50% were 40-49 years old, and 14.2% were 50 years of age or older. It was determined that 51.4% of the participants were married, and 48.6% were single. The overall tobacco product use frequency of the participants was 28.2%.

In the classification of the participants based on their specialties, it was seen that 4.1% were specialists in basic medical sciences, 57.8% were specialists in internal medical sciences, 28.4% were specialists in surgical medical sciences, and 9.6% were general practitioners. The rate of participants with less than 10 years of experience working in the profession was 58.3%, the rate of those with 11-20 years of experience was 20.6%, the rate of those with 21-30 years of experience was 12.8%, and the rate of those with 31 years or more experience was 8.3% (Table 1).

Table 1. Sociodemographic characteristics of participants

|                                                                                              | n   | (%)  |
|----------------------------------------------------------------------------------------------|-----|------|
| <b>Gender</b>                                                                                |     |      |
| Male                                                                                         | 134 | 61.5 |
| Female                                                                                       | 84  | 38.5 |
| <b>Age</b>                                                                                   |     |      |
| Under 30                                                                                     | 95  | 43.6 |
| 30-39                                                                                        | 43  | 19.7 |
| 40-49                                                                                        | 49  | 22.5 |
| 50 or above                                                                                  | 31  | 14.2 |
| <b>Specialty</b>                                                                             |     |      |
| Basic Medical Sciences                                                                       | 9   | 4.1  |
| Internal Medicine                                                                            | 126 | 57.8 |
| Surgical Medical Sciences                                                                    | 62  | 28.4 |
| General Practice                                                                             | 21  | 9.6  |
| <b>Years of working in the profession</b>                                                    |     |      |
| ≤10                                                                                          | 127 | 58.3 |
| 11-20                                                                                        | 45  | 20.6 |
| 21-30                                                                                        | 28  | 12.8 |
| >31                                                                                          | 18  | 8.3  |
| <b>Do you ask about tobacco use habits when taking medical history from patients?</b>        |     |      |
| Yes                                                                                          | 188 | 89.5 |
| No                                                                                           | 22  | 10.5 |
| <b>Do you use tobacco and/or tobacco products?</b>                                           |     |      |
| Yes                                                                                          | 61  | 28.2 |
| No                                                                                           | 118 | 54.6 |
| Quit                                                                                         | 37  | 17.1 |
| <b>Type of tobacco product used</b>                                                          |     |      |
| Cigarettes                                                                                   | 60  | 65.2 |
| Cigarettes and/or other tobacco products                                                     | 32  | 34.8 |
| <b>Have you tried quitting tobacco products?</b>                                             |     |      |
| Yes                                                                                          | 65  | 75.6 |
| No                                                                                           | 21  | 24.4 |
| <b>Were you able to quit tobacco products?</b>                                               |     |      |
| Yes                                                                                          | 22  | 33.8 |
| No                                                                                           | 43  | 66.2 |
| <b>Did you receive support from a certified physician when quitting tobacco product use?</b> |     |      |
| Yes                                                                                          | 15  | 15.8 |
| No                                                                                           | 80  | 84.2 |
| <b>What was the specialty of the certified physician you received support from?</b>          |     |      |
| Family Physician                                                                             | 5   | 31.3 |
| Pulmonology                                                                                  | 7   | 43.8 |
| Other (psychiatrist, general practitioner, acquaintances)                                    | 4   | 25.0 |
| <b>What was your reason for quitting tobacco products?</b>                                   |     |      |
| Legal reasons                                                                                | 4   | 5.9  |
| Financial reasons                                                                            | 5   | 7.4  |
| Health-related reasons                                                                       | 45  | 66.2 |
| Social reasons                                                                               | 14  | 20.6 |

Table 1. Continued

|                                                            |    |      |
|------------------------------------------------------------|----|------|
| <b>What was your method for quitting tobacco products?</b> |    |      |
| Medication                                                 | 16 | 25.8 |
| Behavioral method                                          | 27 | 43.5 |
| No method                                                  | 19 | 30.6 |

There was a significant difference between the male and female participants in terms of their tobacco product use and tobacco product quitting statuses ( $p<0.05$ ). The rate of men using tobacco products (37.6%) was significantly higher than that of women (13.3%). The rate of men (25.5%) who were able to quit tobacco products was significantly lower than that of women (64.3%). It was observed that female physicians were able to quit tobacco products more easily (Table 2). The relationship between marital status and tobacco product use was statistically significant ( $p=0.039$ ). Additionally, the relationship between marital status and duration of tobacco use, its effect on tobacco product use quitting experiences, and tobacco product quitting methods were also statistically significant ( $p<0.001$ ;  $p=0.044$ ;  $p<0.001$ , respectively) (Table 2).

No statistically significant relationship was found between tobacco use status and the specialties of the participants ( $p=0.424$ ). The nicotine dependence levels of the participants according to their FTND scores are shown in Figure 2, and the rates of those classified by their dependence levels showed statistically significant differences ( $p<0.0001$ ). The rate of participants slightly dependent on nicotine (47.9%) was higher than the rate of those who were very highly dependent (5.5%) (Figure 2).

No statistically significant relationship was found between the nicotine dependence levels of the participants and their gender, marital status, or specialty ( $p>0.05$ ). On the other hand, a statistically significant relationship was found between nicotine dependence levels and age ( $p=0.004$ ) (Figure 3). Among the participants who were very slightly dependent, the proportion of the <30 age group (65.4%) was found to be significantly higher than the rate of the >50 age group (9.1%), and among those who were highly dependent, the rate of the >50 age group (36.4%) was significantly higher than the rate of the <30 age group (3.8%) (Table 3). The duration for

Table 2. Relationships between tobacco use status and gender, marital status, and other sociodemographic characteristics

|                                                          | Gender         |      |        |      | p      |
|----------------------------------------------------------|----------------|------|--------|------|--------|
|                                                          | Male           |      | Female |      |        |
|                                                          | n              | %    | n      | %    |        |
| Do you use tobacco and/or tobacco products?              |                |      |        |      |        |
| Yes                                                      | 50             | 37.6 | 11     | 13.3 | <0.001 |
| No                                                       | 61             | 45.9 | 57     | 68.7 |        |
| Quit                                                     | 22             | 16.5 | 15     | 18.1 |        |
| Were you able to quit tobacco products?                  |                |      |        |      |        |
| Yes                                                      | 13             | 25.5 | 9      | 64.3 | 0.01   |
| No                                                       | 38             | 74.5 | 5      | 35.7 |        |
|                                                          | Marital Status |      |        |      |        |
|                                                          | Married        |      | Single |      |        |
| Do you use tobacco and/or tobacco products?              |                |      |        |      |        |
| Yes                                                      | 25             | 22.7 | 36     | 34.0 | 0.039  |
| No                                                       | 60             | 54.5 | 58     | 54.7 |        |
| Quit                                                     | 25             | 22.7 | 12     | 11.3 |        |
| For how many years have you been using tobacco products? |                |      |        |      |        |
| Less than 1                                              | 4              | 10.0 | 7      | 15.6 | <0.001 |
| 1-5                                                      | 3              | 7.5  | 16     | 35.6 |        |
| 10-20                                                    | 11             | 27.5 | 6      | 13.3 |        |
| More than 20                                             | 15             | 37.5 | 3      | 6.7  |        |
| 5-10                                                     | 7              | 17.5 | 13     | 28.9 |        |
| Have you tried quitting tobacco products?                |                |      |        |      |        |
| Yes                                                      | 35             | 85.4 | 30     | 66.7 | 0.044  |
| No                                                       | 6              | 14.6 | 15     | 33.3 |        |
| What was your method for quitting tobacco products?      |                |      |        |      |        |
| Medication                                               | 11             | 29.7 | 5      | 20.0 | <0.001 |
| Behavioral method                                        | 9              | 24.3 | 18     | 72.0 |        |
| No method                                                | 17             | 45.9 | 2      | 8.0  |        |

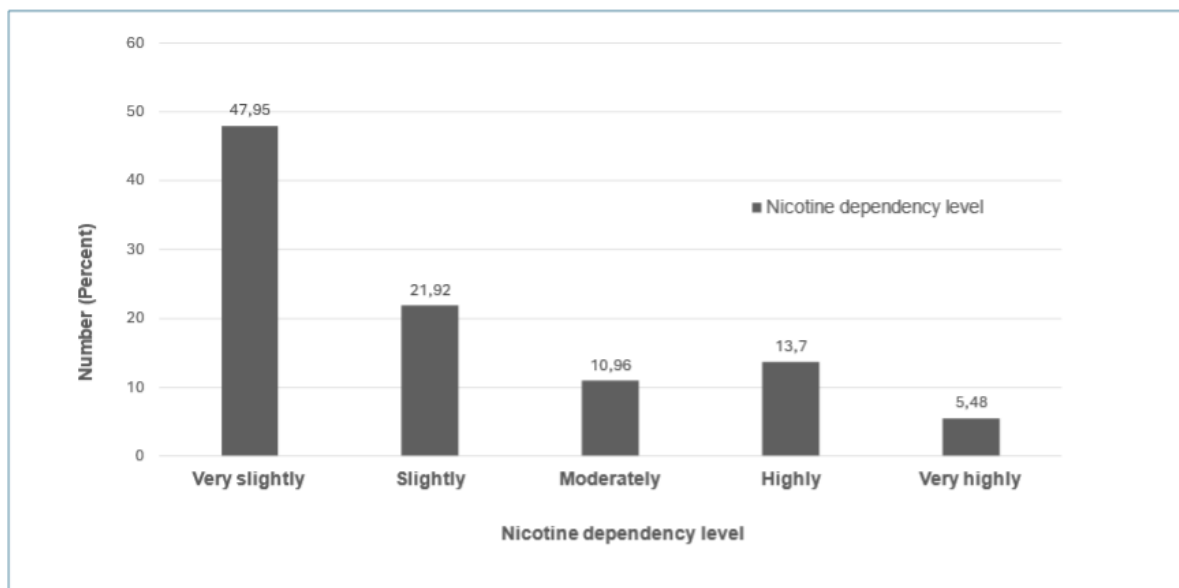


Figure 1. Nicotine dependence levels of participants using tobacco products

Table 3. Relationships between dependence levels and sociodemographic characteristics

|                                    | Dependence levels based on FTND scores |      |          |      |            |       |        |      |             |       |       |
|------------------------------------|----------------------------------------|------|----------|------|------------|-------|--------|------|-------------|-------|-------|
|                                    | Very slightly                          |      | Slightly |      | Moderately |       | Highly |      | Very highly |       | p     |
|                                    | n                                      | %    | n        | %    | n          | %     | n      | %    | n           | %     |       |
| Gender                             |                                        |      |          |      |            |       |        |      |             |       | 0.06  |
| Male                               | 24                                     | 68.6 | 15       | 93.8 | 6          | 75.0  | 9      | 90.0 | 4           | 100.0 |       |
| Female                             | 11                                     | 31.4 | 1        | 6.3  | 2          | 25.0  | 1      | 10.0 | 0           | 0.0   |       |
| Age                                |                                        |      |          |      |            |       |        |      |             |       | 0.004 |
| <30                                | 17                                     | 48.6 | 4        | 25.0 | 4          | 50.0  | 1      | 10.0 | 0           | 0.0   |       |
| 30-39                              | 9                                      | 25.7 | 3        | 18.8 | 4          | 50.0  | 1      | 10.0 | 1           | 25.0  |       |
| 40-49                              | 8                                      | 22.9 | 5        | 31.3 | 0          | 0.0   | 4      | 40.0 | 1           | 25.0  |       |
| >50                                | 1                                      | 2.9  | 4        | 25.0 | 0          | 0.0   | 4      | 40.0 | 2           | 50.0  |       |
| Marital Status                     |                                        |      |          |      |            |       |        |      |             |       | 0.09  |
| Married                            | 12                                     | 34.3 | 9        | 56.3 | 0          | 0.0   | 7      | 70.0 | 3           | 75.0  |       |
| Single                             | 23                                     | 65.7 | 7        | 43.8 | 8          | 100.0 | 3      | 30.0 | 1           | 25.0  |       |
| Years of working in the profession |                                        |      |          |      |            |       |        |      |             |       | 0.003 |
| ≤10                                | 25                                     | 71.4 | 7        | 43.8 | 7          | 87.5  | 2      | 20.0 | 0           | 0.0   |       |
| 11-20                              | 7                                      | 20.0 | 3        | 18.8 | 1          | 12.5  | 3      | 30.0 | 1           | 25.0  |       |
| 21-30                              | 3                                      | 8.6  | 3        | 18.8 | 0          | 0.0   | 3      | 30.0 | 1           | 25.0  |       |
| >31                                | 0                                      | 0.0  | 3        | 18.8 | 0          | 0.0   | 2      | 20.0 | 2           | 50.0  |       |
| Specialty                          |                                        |      |          |      |            |       |        |      |             |       | 0.941 |
| Basic Medical Sciences             | 1                                      | 2.9  | 0        | 0.0  | 0          | 0.0   | 0      | 0.0  | 0           | 0.0   |       |
| Internal Medicine                  | 19                                     | 54.3 | 9        | 56.3 | 4          | 50.0  | 3      | 30.0 | 2           | 50.0  |       |
| Surgical Medical Sciences          | 11                                     | 31.4 | 6        | 37.5 | 3          | 37.5  | 6      | 60.0 | 2           | 50.0  |       |
| General Practitioner               | 4                                      | 11.4 | 1        | 6.3  | 1          | 12.5  | 1      | 10.0 | 0           | 0.0   |       |

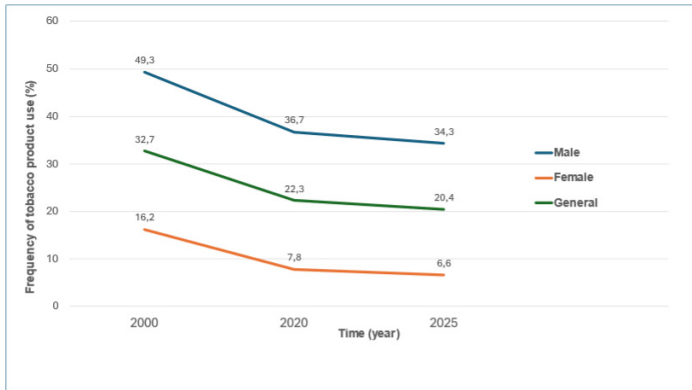


Figure 2. Change in global tobacco product use prevalence over the years according to WHO data.

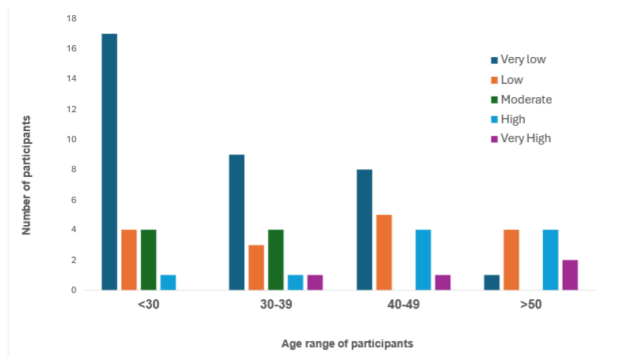


Figure 3. Nicotine dependence levels of participants using tobacco products by age

which the participants who were using tobacco products had worked in the profession increased, their levels of dependence increased ( $p=0.003$ ). In the highly dependent group, the rate of those with a career duration of  $\leq 10$  years (4.9%) was significantly lower than those with an experience of 21-30 years (30%) or  $>30$  years (28.6%) in the profession. The rate of those with a career duration of 11-20 years (20%) was significantly lower than those of participants with 21-30 years of experience (30%) and participants with  $>30$  years of experience (28.6%). The prevalence of high nicotine dependence (30%) was higher in those with a career duration of 21-30 years than those in the other career duration categories (Table 3).

The relationships between the ages of the participants and their tobacco product use status, duration of tobacco product use, tobacco product quitting method, and nicotine dependence levels were also statistically significant ( $p=0.02$ ;  $p=0.01$ ;  $p=0.01$ ;  $p=0.004$ , respectively).

## Discussion

The tobacco product usage rates of the physicians who participated in our study were 28.2% overall, while these rates were 37.6% in men and 13.3% in women. The male participants had a tobacco product usage rate of approximately three times that of the female participants. The overall tobacco product usage rate in our study was very close to the general rate of tobacco product usage reported in the 2022 Turkish Health Survey (28.3%). According to WHO 2016 data, while the mean frequency of tobacco use worldwide was 32.7% overall, 49.3% in men, and 16.2% in women in 2000, these rates were 22.3% overall, 36.7% in men, and 7.8% in women in 2020. For 2025, the rates of tobacco use worldwide are predicted to be 20.4% overall, 34.3% for men, and 6.6% for women [7] (Figure 1).

It was thought that the rates in WHO data were lower than those in our study because their data were collected from the general populations of all member countries. According to the 2022 Turkish Health Survey data, the rates of individuals at or over the age of 15 who were using tobacco products every day were 41.3% in men and 15.5% in women. These values were close to those found in our study, indicating that the tobacco product

usage rates of men are approximately three times those of women. The rate of the participants of our study who had used tobacco products before but later quit was 17.1%, which was higher than the rate reported in the general population in Türkiye (8.8%). This situation shows that physicians may have a stronger will to quit tobacco products and that they can quit tobacco products more easily if they wish.

The rate of quitting tobacco products in our study was 1.5 times higher in the female participants than in the male participants. This may suggest that female physicians are more sensitive to the harmful effects of smoking than male physicians. This is because using tobacco products can lead to sex-specific outcomes in women such as early menopause, reduced fertility, and pregnancy and neonatal complications [15].

The prevalence of tobacco product usage is decreasing worldwide with the global policies of WHO. In a study conducted by Zorlu with 121 physicians (including dentists), the tobacco use rates of physicians were 42.15% overall, 40.21% in men, and 48.27% in women, whereas the rate of those who quit using tobacco products was 26.44%, and the rate of those who never used tobacco products was 31.41% [1]. The values in the study carried out by Zorlu were higher than those in our study, and this difference may be attributed to the fact that their study included dentists. In the same study, the tobacco product use rate of dentists alone was found to be 68.4%.

In a study conducted by Atayoğlu et al. in 2019 with 237 physicians, the general tobacco use rate of physicians was found to be 21.1%, their rate of quitting tobacco product use was 20.5%, and the rate of those who never used tobacco products was 58.4% [16]. In the literature review performed by Nilan et al. based on original studies published between 2000 and 2016, the tobacco use rates of healthcare workers were 21% overall, 31% in men, and 17% in women. While this rate was between 35% and 45% in male doctors, it was between 21% and 25% in female nurses [17].

In a study carried out by Ünüvar et al. in 2015 with 869 students from Aydın Adnan Menderes University Faculty of Medicine, the tobacco product use rate of prospective physicians was

found to be 26% (n:225) [18]. In a multicenter study conducted by Baltacı et al. in 2011 with 1233 physicians, the rates of tobacco product use were 34.1% overall, 36.4% in men, and 30.4% in women. The rate of those who never used tobacco products was 51.1%, and the rate of those who had used tobacco products before but quit later was 14.8% [19].

According to the results of a study conducted by Öztürk et al. in 2014 with 151 assistant physicians, the tobacco use rates of physicians were 15.9% overall, 25.4% in men, and 7.5% in women [20]. In the study performed by Tekin et al. in 2019 with 218 physicians, the tobacco use rates of physicians were 29% in general, 30% in men, and 25.9% in women [21]. In an electronic survey study of 156 physicians conducted by Demirel (2017), the prevalence of tobacco product usage among physicians was 45%, which was higher than the rates determined in our study [22].

As seen in the studies cited above, the frequency of tobacco product use by physicians may vary by region and time. However, in all studies conducted in Türkiye, including ours, the use rates of men were found to be higher than those of women. Further controlled studies are needed to understand why male physicians have higher rates of tobacco product usage. Physicians should apply the 5A strategy for patients who visit them for treatment and are smokers. In our study, the majority of the participants (89.5%) questioned their patients about tobacco product use habits when taking their medical history. However, only 40% of them referred patients who used tobacco products to smoking cessation clinics or the ALO 171 smoking cessation counseling line.

Tekin et al. reported that almost all physicians who participated in their study questioned their patients about their tobacco product use habits (89.6%). However, it was found that only 20% of physicians had knowledge about the 5A practice, which is a new strategy for quitting tobacco product use. It was also noted that 70.4% of physicians regularly advised their patients to quit smoking, 22.9% occasionally advised them, and 6.7% did not give their patients any advice or recommendations. According to the results of the same study, 36.4% of physicians regularly assisted patients in quitting

tobacco product use (Assist), 45.3% occasionally assisted patients, and 18.4% did not provide any support to their patients. No significant difference was found between the smoking cessation practices of physicians and their gender or marital status [21].

In our study, more than half of the participants who used tobacco products (65.2%) used only cigarettes. The rate of those who smoked cigarettes and/or other tobacco products such as cigars and hookahs was approximately 1/3 (34.8%) of the overall rate of tobacco product users. More than half of the participants (58.8%) had been using tobacco products for  $\leq 10$  years. Atayoğlu et al. reported this rate as 51.6%, which was similar to the value in our study [16]. In our study, 75% of the participants who used tobacco products tried to quit, and 34% quit. More than half of the participants who used tobacco products (57.1%) also wanted to quit. In the study conducted by Atayoğlu et al., almost all physicians (91.3%) wanted to quit using tobacco products. The rate of those who said they could not quit was 8.7%, which was considerably lower than the value in our results. In our study, more than half of the participants who quit using tobacco products (57.1%) stated that they received support from a certified physician, and the specialties of the certified physicians in question were Chest Diseases in the first place (43.8%) and Family Medicine in the second place (31.3%). More than half of the participants (66.2%) who quit using tobacco products cited health-related reasons as their reasons for quitting.

Behavioral methods (43.5%) were the most frequently used methods to quit tobacco product use, and similarly, deciding to quit smoking without any medical support (86.9%) was the most frequently used method in the study conducted by Baltacı et al. [19].

According to the mean FTND scale score [participant score  $\leq 4$  points (69.8%)], the level of nicotine dependence was low in the participants of this study who used tobacco products. The rate of nicotine dependence in the participants aged 50 or older who used tobacco products was significantly higher than the rate of those under 30 years of age ( $p=0.004$ ). According to these results, if tobacco

product use continues in physicians aged 50 or older, the likelihood of nicotine dependence also increases. Approximately 75% of the participants who used tobacco products had an FTND score of  $\leq 4$  and were slightly dependent.

Öztürk et al. reported a mean FTND score of  $3.21 \pm 2.93$ , while Atayoğlu et al. reported a median FTND value of 3.0, with ranges of 0-2 points (42.9%), 3-7 points (44.9%), and 8-10 points (12.2%). In the study conducted by Baltacı et al., the mean FTND score was  $3.7 \pm 2.6$ , and most tobacco users were found to be slightly (46.2%) and moderately (35%) nicotine dependent. Baltacı et al. grouped their participants as slightly dependent (0-3 points), moderately dependent (4-6 points), and highly dependent (7-10 points), whereas Atayoğlu et al. grouped their participants as slightly dependent (0-2 points), moderately dependent (3-7 points), and highly dependent (8-10 points) [16,19,20].

Since the dependency criteria in the examples above were made according to different scores, direct comparisons to our results could not be made. In our study, physicians were grouped according to their FTND scale scores as very slightly dependent (0-2 points), slightly dependent (3-4 points), moderately dependent (5 points), highly dependent (6-7 points), and very highly dependent (8-10 points). Similar FTND scoring was only seen in the study conducted by Zorlu, and the rates of participants in these categories were stated as very slightly dependent (37.25%), slightly dependent (15.68%), moderately dependent (5.88%), highly dependent (17.64%), and very highly dependent (23.52%). In the study conducted by Zorlu, the high and very high dependency rates (FTND score  $> 6$ ) in tobacco product users was 41.16%, which was higher than the rate in our study (19.2%) [1]. The difference between the results of studies may be explained by the fact that 76% of the participants of the aforementioned study were men. Men are known to have higher rates of nicotine dependency. The tobacco epidemic harms health, the economy, and nature above all else. As healthcare professionals, physicians are primarily expected not to use tobacco products themselves because they act as role models, question the tobacco use of people who visit them for examinations, explain

the negative health effects of tobacco products to their patients using tobacco products and advise them to quit, play a supportive role in changing people's behaviors with follow-up appointments, and refer them to the relevant units for treatment [16].

Being a role model in preventing the tobacco epidemic, and within this framework, displaying the behaviors and image of a physician who does not use tobacco products in the eyes of society is of critical importance in preventing the tobacco epidemic.

In the last two decades, in Türkiye, laws prohibiting the usage of tobacco products in enclosed spaces and common living spaces have been put into effect, and multiple resources that would help smokers quit have been mobilized. These efforts include smoking cessation outpatient clinics and the 171 smoking cessation counseling line. The strength of our study is that it examined the effects of all these efforts in a sample of physicians, and the sample included only physicians, excluding dentists and other healthcare personnel.

**Limitations:** Since our study was cross-sectional, our sample consisted only of physicians working at a Research and Training Hospital. Our sample did not include family physicians, physicians working in secondary care (state and private hospitals), physicians working in district health institutions, or those working in community health centers.

## Conclusion

In this study, the frequency of tobacco product use among physicians was found to be similar to the frequency in the general population. It is unacceptable that the rate of tobacco product use of physicians, who play an important role in the tobacco product quitting process of users, is close to the rate of the general population. This problem can be solved primarily by developing policies to reduce the tobacco product use frequency of physicians. Courses on this subject should be added to medical education curricula before graduation, and after graduation, physicians should ask their patients about their smoking habits, advise their patients who smoke to quit smoking, and motivate their patients with follow-up appointments. This form of behavioral model will

have positive effects not only on the patient who consults the physician but also on the physician who becomes a role model in society.

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#### REFERENCES

- Zorlu D. Cigarette addiction among doctors: A cross-sectional study from Anatolia. *Ahi Evran Med J*. 2022;6(3):234-41. doi: 10.46332/aemj.881850.
- Republic of Turkey Ministry of Health, General Directorate of Public Health, Harms of Tobacco Smoke. <https://havanikoru.saglik.gov.tr/sagligimiza-etkileri/tutun-dumaninin-zararlari.html>. accessed:22.01.2024
- Tan Selçuk K, Avcı D, Mercan Y. Smoking Addiction among University Students and the Willingness and Self-Efficacy to Quit Smoking. *Clin Exp Health Sci*. 2018;8:36-43. doi: 10.5152/clinexphealthsci.2017.420
- WHO global report on trends in prevalence of tobacco use 2000-2025, fourth edition. Geneva: World Health Organization; 2021. Licence: CC BY-NC-SA 3.0 IGO.
- Turkish Statistical Institute (TSI) Türkiye Health Survey, 2022. <https://data.tuik.gov.tr/Bulten/Index?p=Turkiye-Saglik-Arastirmasi-2022-49747>. accessed:18.11.2024
- Christopher JL, Aravkin AY, Zheng P, Abbafati C, Abbas KM, Abbasi-Kangevari M et al. GBD 2019 Risk Factors Collaborators. Global burden of 87 risk factors in 204 countries and territories, 1990-2019: a systematic analysis for the Global Burden of Disease Study 2019. *Lancet*. 2020;396(10258):1223-49. doi: 10.1016/S0140-6736(20)30752-2.
- WHO Library Cataloguing-in-Publication Data. Toolkit for delivering the 5A's and 5R's brief tobacco interventions in primary care. ISBN 978 92 4 150695 3, WHO; 2014.
- WHO Framework Convention on Tobacco Control. Geneva: World Health Organization; 2005 <http://apps.who.int/iris/bitstream/10665/428111/1/9241591013>, accessed: 17.11.2024.
- Chai W, Zou G, Shi J, Chen W, Gong X, Wei X, et al. Evaluation of the effectiveness of a WHO-5A model based comprehensive tobacco control program among migrant workers in Guangdong, China: a pilot study. *BMC Public Health*. 2018;18(1):296. doi: 10.1186/s12889-018-5182-6.
- Heatherton TF, Kozlowski LT, Frecker RC, Fagerström KO. The Fagerström Test for Nicotine Dependence: a revision of the Fagerström Tolerance Questionnaire. *Br J Addict*. 1991;86(9):1119-27. doi: 10.1111/j.1360-0443.1991.tb01879.x.
- Ebbert JO, Croghan IT, Sood A, Schroeder DR, Hays JT, Hurt RD. Varenicline and bupropion sustained-release combination therapy for smoking cessation. *Nicotine Tob Res*. 2009;11(3):234-9. doi: 10.1093/ntr/ntn031.
- Standard operating procedure for determination of nicotine, glycerol and propylene glycol content in the tobacco of heated tobacco products. WHO TobLabNet Official Method SOP15. Geneva: World Health Organization; 2023. Licence: CC BY-NC-SA 3.0 IGO.
- Uysal MA, Kadakal F, Karşıdağ Ç, et al. Fagerstrom test for nicotine dependence: Reliability in a Turkish sample and factor analysis. *Journal of Tuberculosis and Thorax*. 2004;52:115-21.
- Sağlam L. Clinical evaluation of nicotine addiction. *Current Chest Diseases Series*. 2017;4(1):78-89. doi: 10.5152/ggshs.2016.011.
- Szkup M, Jurczak A, Karakiewicz B, Kotwas A, Kopeć J, Grochans E. Influence of cigarette smoking on hormone and lipid metabolism in women in late reproductive stage. *Clin Interv Aging*. 2018;13:109-15. doi: 10.2147/CIA.S140487.
- Atayoğlu AT, Tokaç M, Doğan S, Güner AE, Kocayığıt E, Güner M. Smoking Status of Family Physicians and Their Attitude on Smoking Cessation. *Anatol J Family Med*. 2021;4(1):85-91. doi: 10.5505/anatoljfm.2021.08760
- Nilan K, McKeever TM, McNeill A, Raw M, Murray RL. Prevalence of tobacco use in healthcare workers: A systematic review and metaanalysis. *PLoS One*. 2019;14(7):e0220168. doi: 10.1371/journal.pone.0220168.
- Ünür EM, Dişçigil G. Factors affecting success in smoking cessation attempts - Example of physician candidates. *Jour Turk Fam Phy*. 2017;08 (3):57-65. doi: 10.15511/tjtfp.17.00357.
- Baltacı D, Bahcebasi T, Aydın LY, Öztürk S, Set T, Eroz R, et al. Evaluation of smoking habits among Turkish family physicians. *Toxicol Ind Health*. 2014;30(1):3-11. doi: 10.1177/0748233712448113.
- Öztürk O, Öztürk G, Yazıcıoğlu B, Yalcin BM, Unal M. Smoking frequency, cessation knowledge, attitudes and beliefs among internal and surgery residents. *J Exp Clin Med*. 2015;32(4):171-5. doi: 10.5835/jecm.omu.32.04.006.
- Tekin C, Gunes G, Nacar E, Mete B, Ünver E. Smoking patterns and cessation counselling practices among physicians in Turkey. *Med Science*. 2019;8(1):81-7. doi: 10.5455/medscience.2018.07.8867.
- Demirel, B. Smoking Habits and Attitudes of Physicians. *The Journal of Clinical Medicine Family Medicine*. 2017;9(5), 14-17.