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RESEARCH ARTICLE

# THE EFFECT OF SOCIOECONOMIC STATUS AND ENVIRONMENTAL FACTORS ON HEALTH TECHNICIAN STUDENTS' USE OF TOBACCO PRODUCTS

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## ABSTRACT

**Purpose:** This study was conducted to investigate health technician students' behaviors regarding the use of tobacco and tobacco products and levels of tobacco dependence and to reveal the effects of socioeconomic and environmental factors on the use of these products.
**Material and Methods:** The study consisted of 1118 first- and second-year students from Dokuz Eylül University Vocational School of Health Services in the 2021-2022 academic year. These students were applied a questionnaire that was developed to determine their sociodemographic, individual, family characteristics, habits, and opinions on tobacco use and the Fagerström Test for Nicotine Dependence (FTND).
**Results:** It was determined that 34.5% of the students used tobacco products, 14.0% smoked water pipe (WTS), 3.0% used electronic cigarettes (EC), and that the average age of starting smoking was 15.6±2.4 years. Of the students, 18.1% stated that they wanted to quit smoking and 1.9% had received professional help to quit smoking. It was found that 64.5% did not want tobacco product advertisements to be banned and that 61.9% did not want a smoking ban in public/indoor areas. According to 64.0% of the students, university education had no effect on tobacco use. The mean score of smokers on the FTND was 3.43±2.20, and 3.9% of them had a high level of dependence. It was determined that a low level of tobacco addiction was more prevalent in students whose mothers had low education and who lived with their parents ($p<0.05$). However, a high level of tobacco addiction was found to be more prevalent in those who started smoking at the age of ≤16 ($p<0.01$).
**Conclusion:** Our research indicated the factors that affected the health technician students' behaviors of tobacco and tobacco product use, level of tobacco dependence, and desire to quit smoking. It was also found that the age of starting smoking, maternal education level, and family unity played a role in students' smoking behavior.

**Keywords:** environmental factors, smoking behavior, socioeconomic status, students

## INTRODUCTION

The use of tobacco and tobacco products is one of the most important causes of death globally, in addition to its unfavorable effects on health and the economy (1-2). According to the data of research conducted worldwide in 2019, the use of tobacco and

tobacco products accounts for 15.4% of deaths (3). These products are widely used in Turkey as well as all over the world and are seen as a critical public health problem (4). According to the data of the global adult tobacco survey conducted in Turkey in 2016, 31.6% of the society uses tobacco products, and 25.4% of this proportion consists of young people between the ages of 15 and 24 (4-6). According to the World Health Organization (WHO), the prevalence of smoking in adults older than 15 years is 26.0% globally and 35.3% in Europe (7). Although it is stated that the age of starting to use tobacco and tobacco products is decreasing in developing countries(4,8), studies have indicated that the rate of smoking among university students is increasing rapidly and that young people whose friends smoke are more likely to start smoking over time(9,10). In addition, socio-demographic, environmental, and psychosocial characteristics, parental smoking, low parental education, and media advertisements have been shown to be contributing factors (11,12).

Although there are different types of tobacco and tobacco products, cigarettes are the most widely used form of tobacco (5). Since tobacco is highly addictive, quitting is very difficult and most of those who try smoking can become addicted in a short time (4). As age and the number of cigarettes smoked increases, the severity of tobacco dependence increases, as well (4,5,13). Conducting interventions for smoking cessation at an early age is critical in terms of reducing the risk of diseases, such as lung cancer, chronic obstructive pulmonary disease, ischemic heart disease, and cerebrovascular disease, and death due to these diseases (14).

Turkey's fight against the use of tobacco and tobacco products continues in line with evidence-based tobacco control measures and policies determined to be effective by the WHO (5,6). According to studies conducted in our country, people generally start smoking during their youth (4,6,8). For this reason, preventive studies are needed. It is necessary to examine young people's attitudes toward smoking addiction to plan preventive studies. In the literature, there are studies on smoking behaviors and addiction levels of university students studying health. (15-17). Smoking by health professionals is one of the biggest barriers to community participation in ongoing tobacco control efforts. In this context, it is important to determine the factors related to smoking frequency, desire to quit, and tobacco dependence of health technician students, who will be a part of the health team in the future in the fight against smoking. The university education period for health technician students is two years. Evaluation of students' tobacco dependence levels and their desire to quit smoking during this period is very important in terms of shedding light on the planning of primary prevention interventions before graduation.

This study was carried out to investigate the tobacco and tobacco products use behaviors of health technician students and their tobacco dependence levels and to reveal the effects of socioeconomic and environmental factors on the use of these products. Socioeconomic and environmental factors less studied in Turkiye addressed studies. One of the aim of this study is this.

**Research hypotheses:**

H0 Hypothesis: There is no significant difference between the students' sociodemographic and family characteristics and the level of their tobacco dependence.

H0 Hypothesis: There is no significant difference between the students' cigarette and waterpipe tobacco smoking (WTS) habits and the level of their tobacco dependence.

H0 Hypothesis: There is no significant difference between the students' sociodemographic and family characteristics and their desire to quit smoking.

H1 Hypothesis: There is a significant relationship between the gender and age of the students and their tobacco use habits.

## MATERIAL AND METHODS

### Design and Sample of the Study

The population of the research consisted of 1392 first- and second-year students in Dokuz Eylül University (DEU), Vocational School of Health Services (VSHS) in the 2021-2022 academic year. The study was carried out in the VSHS between November 1, 2021 and December 31, 2021. In this study, it was aimed to reach the entire population, so no sample selection procedure was carried out. Data were collected using a questionnaire (Data Form) created by the researchers following a review of the literature (15,16,18) and the Fagerström Test for Nicotine Dependence. The questionnaire was applied to 1118 (80.3%) students who agreed to participate in the study and gave consent. The questionnaires did not involve any questions about the names or identities of the students. The students filled out the

**Table 1.** Students' characteristics regarding the use of tobacco and tobacco products (n=1118)

| Characteristics | | n | % |
|---|---|---|---|
| **Tobacco smoking status *** | Non-smokers | 732 | 65.5 |
| | Smoking cigarettes | 386 | 34.5 |
| | Hookah smoker | 157 | 14.0 |
| | Electronic cigarette smoker | 33 | 3.0 |
| **Reason for e-cigarette smoking (n=33)** | To quit smoking | 8 | 24.2 |
| | Envy and curiosity | 14 | 42.4 |
| | Peer influence | 2 | 6.1 |
| | The impact of electronic cigarette advertisements | 9 | 27.3 |
| **Age of starting smoking (n=386)** (Mean±SD=15.59±2.39) min= 10 max=25 | ≤16 | 245 | 63.5 |
| | ≥17 | 141 | 36.5 |
| **Reason for starting smoking (n=386)** | Envy and curiosity | 133 | 34.5 |
| | Peer influence | 155 | 40.2 |
| | Environmental pressure | 18 | 4.6 |
| | Other | 80 | 20.7 |
| **Smoking duration (n=386)** (Mean±SD=4.45±2.27) min= 1 max= 17 | ≤5 years | 255 | 66.1 |
| | ≥6 years | 131 | 33.9 |
| **Number of cigarettes smoked per day (n=386)** | ≤10 | 192 | 49.7 |
| | 11-20 | 169 | 43.8 |
| | 21-30 | 19 | 1.7 |
| | ≥31 | 6 | 1.6 |
| **Smoking in a friendly environment** | Never | 231 | 20.7 |
| | Occasionally | 517 | 46.2 |
| | Always | 370 | 33.1 |
| **Smokers in the family *** | No smokers | 380 | 34.0 |
| | Father | 481 | 43.0 |
| | Mother | 238 | 21.3 |
| | Siblings | 200 | 17.9 |
| | Grandpa/Grandma | 35 | 3.1 |
| **Smoking place at home** | No field | 317 | 28.4 |
| | In the House | 117 | 10.4 |
| | Open balcony | 684 | 61.2 |

*Students marked more than one option. All those who smoked other products were cigarette smokers.

questionnaires in the classroom under the supervision of the researchers.

### Data collection tools and variables

*The data form*

This form consisted of 25 questions about students' sociodemographic, individual, and family characteristics and their tobacco use habits and opinions.

*The Fagerström Test for Nicotine Dependence (FTND)*

This scale was developed by Fagerström (18) in 1989 to determine the level of physical dependence on smoking. High scores on the scale indicate a high level of tobacco dependence. The Turkish validity and reliability study of the six-item scale was conducted in 2004 by Uysal et al. (19), and Cronbach's alpha coefficient was calculated as 0.56. Two of the items on the scale are scored between 0 and 3 and four items are scored between 0 and 1, and the range of total scores on the scale varies between 0 and 10. According to the total scale score, tobacco dependence is classified into five groups: very low dependence (0-2 points), low dependence (3-4 points), moderate dependence (5 points), high dependence (6-7 points), and very high dependence (8-10 points) (18).

### Research variables

The dependent variables of the study are i) use of tobacco products, ii) tobacco addiction level and iii) desire to quit smoking. The independent variables are

**Table 2.** The relationship between some sociodemographic characteristics of students and their use of tobacco products (n=1118)

| | | Using Tobacco Products | No Tobacco Products | p# |
|---|---|---|---|---|
| | | n (%) | n (%) | |
| Gender | Male | 163 (52.4)* | 148 (47.6) | **<0.001** |
| | Female | 223 (27.6) | 584 (72.4) | |
| Year | 1st year | 184 (33.3) | 369 (66.7) | 0.383 |
| | 2nd year | 202 (35.8) | 363 (64.2) | |
| Place of residence | City | 200 (36.3) | 351 (63.7) | 0.170 |
| | Town | 137 (34.7) | 258 (65.3) | |
| | Village | 49 (28.5) | 123 (71.5) | |
| Father's education | Literate | 23 (50.0)* | 23 (50.0) | **0.003** |
| | Primary education | 197 (30.9) | 440 (69.1) | |
| | High school | 121 (36.1) | 214 (63.9) | |
| | University | 45 (45.0) | 55 (55.0) | |
| Mother's education | Literate | 55 (40.4) | 81 (59.6) | **<0.001** |
| | Primary education | 213 (29.8) | 502 (70.2) | |
| | High school | 101 (45.5)* | 121 (54.5) | |
| | University | 17 (37.8) | 28 (62.29) | |
| Employment status of the father | Employed | 224 (31.8)* | 481 (68.2) | **0.041** |
| | Retired | 114 (39.2) | 177 (60.8) | |
| | Unemployed | 48 (39.3) | 74 (60.7) | |
| Employment status of the mother | Employed | 103 (38.6) | 164 (61.4) | 0.273 |
| | Retired | 16 (34.8) | 30 (65.2) | |
| | Unemployed | 267 (33.2) | 538 (66.8) | |
| Coexistence of mother and father | Together | 302 (32.5)* | 628 (67.5) | **0.005** |
| | Separated | 55 (43.7) | 71 (56.3) | |
| | One of the parents is dead | 29 (46.8) | 33 (53.2) | |
| Family monthly income | Below minimum wage | 41 (27.9) | 106 (72.1) | 0.184 |
| | Minimum wage | 172 (36.0) | 306 (64.0) | |
| | Above minimum wage | 173 (35.1) | 320 864.9) | |

#Pearson's Chi-square test. *The group that makes the difference. Significant p values were shown in bold.

the student's age, gender, school year, place of residence during childhood, parents' education, their status of employment and living together, economic status of the family, family history of smoking, smoking status of the student, age at onset of smoking, the reason for starting smoking, number of daily cigarette consumption, type of tobacco smoked, length of the smoking experience, trying quitting smoking, getting help to quit smoking, and opinions about tobacco control policies and the use of tobacco.

**Inclusion and exclusion criteria**

This study included students who were aged ≥18 years, continued their education at VSHS in the spring semester of the 2021-2022 academic year, and agreed to participate in the research. Those who were under the age of 18 and did not agree to fill out the questionnaire were excluded from the study.

**Statistical analysis**

Statistical analysis was performed using IBM SPSS 22.0 statistical software package. For descriptive findings, categorical variables were presented with frequency and percentage values, and continuous variables with mean, standard deviation, minimum and maximum values. Kolmogorov-Smirnov test of normality was used to determine whether the data showed a normal distribution. As our data were not normally distributed ($p<0.05$), we used non-parametric tests. Categorical variables were summarized using percentages and compared using the Pearson's chi-square test.

Pearson's chi-square test was used to determine the relationship between some sociodemographic characteristics of students and their use of tobacco products, and to determine the relationship between tobacco addiction level and desire to quit according

**Table 3.** Attitudes and behaviors of smoker students toward quitting (n= 386)

| Characteristics | | n | % |
|---|---|---|---|
| **Wanting to quit smoking (n= 386)** | Yes | 70 | 18.1 |
| | No | 316 | 81.9 |
| **Trying to quit smoking (n= 386)** | Yes | 257 | 66.6 |
| | No | 129 | 33.4 |
| **How many times have you tried to quit smoking (n= 257)** | 1 | 147 | 57.2 |
| | 2 | 87 | 33.9 |
| | ≥3 | 23 | 8.9 |
| **Professional help when quitting smoking (n= 257)** | Received | 5 | 1.9 |
| | Not received | 252 | 98.1 |

**Table 4.** Opinions of students who smoked on tobacco products and applications (n= 386)

| Opinions | Yes n (%) | No n (%) |
|---|---|---|
| Does electronic cigarette contain nicotine? | 45 (11.7) | 341 (88.3) |
| Do you think the studies against smoking are edequate? | 58 (15.0) | 328 (85.0) |
| Do you support banning advertising of tobacco products? | 137 (35.5) | 249 (64.5) |
| Do you support banning of smoking tobacco products in public/indoor areas? | 147 (38.1) | 239 (61.9) |
| Do you think your university education has an effect on tobacco use? | 139 (36.0) | 247 (64.0) |
| Do you think smoking cessation techniques should be taught in university education? | 166 (43.0) | 220 (57.0) |
| Would you like to receive professional support to quit smoking during your university education? | 76 (19.7) | 310 (80.3) |

to the sociodemographic and smoking characteristics of smokers. The statistical significance level was accepted as $p<0.05$. The level of students' tobacco dependence was evaluated in 5 groups (very low dependence, low dependence, moderate dependence, high dependence, and very high dependence) based on their total scores on the FTND. However, they were evaluated in 3 groups (low, moderate, and high) in analyses.

### Ethical approval

Written permission was obtained from the Non-Interventional Research Ethics Committee of DEU (Date: 27/05/2021, Decision no: 2021/16-07) to conduct this study. Before the data collection process was initiated, the students were informed about the purpose of the study and that participation was voluntary. They were also informed that the data would be kept confidential within the scope of the research, and then their informed consent was obtained.

## RESULTS

The mean age of participants was 19.9±1.9 (min= 18 and max= 39), 50.5% of them were second-year students, the place of the longest residence of 49.3% was a province, and 34.5% stated that they used tobacco products. In addition, 14.0% of the students smoked WTS and 3.0% smoked electronic cigarettes (EC).

Regarding the reason for starting smoking, 84.9% of EC smokers and 40.9% of cigarette smokers had started smoking out of curiosity and 40.2% started using tobacco products or EC due to peer influence. The mean age at starting smoking was 15.6±2.4 years (min= 10 and max= 25), and the average smoking time was 4.5±2.3 years (min: 1 max: 17). Of the participants in the research, 34.0% stated that there was no smoker in their family, 43.0% stated that their father, 21.3% their mother, and 17.9% their siblings smoked. A large proportion of those who stated that they smoked at home (61.2%) stated that they smoked on the open balcony of the house (Table 1).

The relationship between some sociodemographic characteristics of the students and their use of tobacco products was shown in Table 2. The use of tobacco products was significantly higher in male students than in female students ($p<0.001$). The use of tobacco products is higher in students with uneducated fathers and students whose mothers have a high school education ($p<0.01$). The use of tobacco products is lower in students whose fathers work and whose parents live together ($p<0.05$) (Table 2).

When the attitudes and behaviors of students who smoked toward quitting were evaluated, only 18.1% said that they wanted to quit smoking. Of the students, 66.6% had tried quitting before, 42.8% had tried quitting more than once, and only 1.9% of those who had tried quitting had received professional help while quitting smoking (Table 3).

According to the findings, 88.3% of the students stated that EC did not contain nicotine, 85.0% did not find campaigns and studies against smoking

**Table 5.** Level of tobacco dependence and desire to quit according to the sociodemographic and smoking characteristics of smoker students

| Characteristics (n=386) | | Level of tobacco dependence | | | | Desire to quit smoking | | |
|---|---|---|---|---|---|---|---|---|
| | | Low n (%) | Moderate n (%) | High n (%) | p# | Yes n (%) | No n (%) | p# |
| Gender | Male | 111 (68.1) | 20 (12.3) | 32 (19.6) | 0.199 | 39 (17.5) | 184 (82.5) | 0.700 |
| | Female | 166 (74.4) | 16 (7.2) | 41 (18.4) | | 31 (19.0) | 132 (81.0) | |
| Age | ≤20 | 194 (72.9) | 20 (7.5) | 52 (19.5) | 0.188 | 49 (18.4) | 217 (81.6) | 0.828 |
| | ≥21 | 83 (69.2) | 16 (13.3) | 21 (17.5) | | 21 (17.5) | 99 (82.5) | |
| Year | 1st year | 136 (73.9) | 17 (9.2) | 31 (16.8) | 0.600 | 33 (17.9) | 151 (82.1) | 0.922 |
| | 2nd year | 141 (69.8) | 19 (9.4) | 42 (20.8) | | 37 (18.3) | 165 (81.7) | |
| Place of residence | City | 143 (71.5) | 16 (8.0) | 41 (20.5) | 0.744 | 36 (18.0) | 164 (82.0) | 0.676 |
| | Town | 97 (70.8) | 16 (11.7) | 24 (17.5) | | 23 (16.8) | 114 (83.2) | |
| | Village | 37 (75.5) | 4 (8.2) | 8 (16.3) | | 11 (22.4) | 38 (77.6) | |
| Father's education | ≤Primary | 96 (73.8) | 16 (12.3) | 18 (13.8) | 0.237 | 30 (23.1) | 100 (76.9) | 0.190 |
| | Middle | 63 (70.0) | 9 (10.0) | 18 (20.0) | | 15 (16.7) | 75 (83.3) | |
| | ≥High | 118 (71.1) | 11 (6.6) | 37 (22.3) | | 25 (15.1) | 141 (84.9) | |
| Mother's education | ≤Primary | 141 (72.3) | 25 (12.8) | 29 (14.9) | **0.044** | 37 (19.0) | 158 (81.0) | 0.901 |
| | Middle | 49 (67.1) | 6 (8.2) | 18 (24.7) | | 13 (17.8) | 60 (82.2) | |
| | ≥High | 87 (73.7)* | 5 (4.2) | 26 (22.0) | | 20 (16.9) | 98 (83.1) | |
| Employment status of the father | Employed | 161 (71.9) | 22 (9.8) | 41 (18.3) | 0.884 | 33 (14.7) | 191 (85.3) | 0.051 |
| | Unemployed | 116 (71.6) | 14 (8.6) | 32 (19.8) | | 37 (22.8) | 125 (77.2) | |
| Employment status of the mother | Employed | 226 (70.6) | 28 (8.8) | 66 (20.6) | 0.142 | 59 (18.4) | 261 (81.6) | 0.734 |
| | Unemployed | 51 (77.3) | 8 (12.1) | 7 (10.6) | | 11 (16.7) | 55 (83.3) | |
| Coexistence of mother and father | Together | 226 (74.8)* | 26 (8.6) | 50 (16.6) | **0.036** | 55 (18.2) | 247 (81.8) | 0.940 |
| | Separated/Dead | 51 (60.7) | 10 (11.9) | 23 (27.4) | | 15 (17.9) | 69 (81.2) | |
| Family monthly income | Below minimum wage | 30 (73.2) | 2 (4.9) | 9 (22.0) | 0.817 | 9 (22.0) | 32 (78.0) | 0.724 |
| | Minimum wage | 121 (70.3) | 17 (9.9) | 34 (19.8) | | 32 (18.6) | 140 881.4) | |
| | Above minimum wage | 126 (72.8) | 17 (9.8) | 30 (17.3) | | 29 (16.8) | 144 (83.2) | |
| Age of starting smoking | ≤16 | 159 (64.9) | 22 (9.0) | 64 (26.1) | **0.001** | 40 (16.3) | 205 (83.7) | 0.224 |
| | ≥17 | 118 (83.7)* | 14 (9.9) | 9 (6.4) | | 30 (21.3) | 111 (78.7) | |
| Smoking duration (years) | ≤5 | 192 (75.3) | 22 (8.6) | 41 (16.1) | 0.087 | 52 (20.4) | 203 (79.6) | 0.108 |
| | ≥6 | 85 (64.9) | 14 (10.7) | 32 (24.2) | | 18 (13.7) | 113 (86.3) | |
| Try to quit smoking | Yes | 184 (71.6) | 29 (11.3) | 44 (17.1) | 0.107 | 56 (21.8)* | 201 (78.2) | **0.009** |
| | No | 93 (72.1) | 7 (5.4) | 29 (22.5) | | 14 (10.9) | 115 (89.1) | |

**Table 5.** Level of tobacco dependence and desire to quit according to the sociodemographic and smoking characteristics of smoker students (continue)

| Characteristics (n=386) | | Level of tobacco dependence | | | | Desire to quit smoking | | |
|---|---|---|---|---|---|---|---|---|
| | | Low n (%) | Moderate n (%) | High n (%) | p# | Yes n (%) | No n (%) | p# |
| Paternal smoking | Yes | 122 (68.2) | 18 (8.7) | 39 (21.8) | 0.324 | 31 (17.3) | 148 (82.7) | 0.699 |
| | No | 155 (74.9) | 18 (8.7) | 34 (16.4) | | 39 (18.8) | 168 (81.2) | |
| Maternal smoking | Yes | 69 (65.1) | 9 (8.5) | 28 (26.4) | 0.068 | 26 (24.5)* | 80 (75.5) | **0.045** |
| | No | 208 (74.3) | 27 (9.6) | 45 (16.1) | | 44 (15.7) | 236 (84.3) | |
| Sibling smoking | Yes | 68 (71.6) | 9 (9.5) | 18 (18.9) | 0.998 | 26 (27.4)* | 69 (72.6) | **0.007** |
| | No | 209 (71.8) | 27 (9.3) | 55 (18.9) | | 44 (15.1) | 247 (84.9) | |

#Pearson's Chi-square test. *The group that makes the difference. Significant p values were shown in bold.

adequate, 64.5% did not support the banning of advertisements of tobacco products, 61.9% did not support the prohibition of smoking in public/indoor areas, 64.0% stated university education had no effect on tobacco use, 57.0% stated that there was no need to teach smoking cessation techniques during university education, and 80.3% did not want to receive professional support for quitting smoking during university education (Table 4).

The mean score of the students on the FTND was 3.43±2.20 (min= 0, max= 10), and according to the cut-off point of the scale, the tobacco dependence rates were as follows: 34.5%, very low dependence; 37.3%, low dependence; 9.3%, moderate dependence; 15.0%, high dependence; 3.9% very high dependence (data not shown).

There was no significant relationship between the smoking and hookah smoking (WTS) habits of the students and their tobacco dependence levels (not shown in the tables). Students whose mothers had high school or higher education and who lived with their parents had a low level of tobacco dependence ($p<0.05$). Students who started smoking at the age of ≥17 had a lower level of tobacco dependence than those with a smoking initiation age of ≤16 ($p<0.01$) (Table 5).

The desire to quit smoking was higher in students who had tried quitting smoking before ($p<0.05$). It was higher in students whose mothers and siblings smoked ($p<0.05$) (Table 5).

## DISCUSSION

Our research revealed health technician students' tobacco and tobacco product use behaviors and tobacco dependence levels. It was shown that the age at starting smoking, the education level of the mother, and the family unity played a role in students' smoking behaviors. In studies conducted among university students in our country, the rate of smoking was found between 27.9 and 35.9% (4,8,15,16), and it was found as 34.5% in our study. The rate of smoking was found as 52.4% in male students and 27.6% in female students. Studies with university students indicated that male students smoked more (15,20). However, recent studies have shown that the rate of smoking in female students has approached that of male students (16). Sharapova et al. (21) reported that men and women tried tobacco products at similar ages. It was also determined in our study that female students smoked at a high rate.

In addition to cigarette smoking, WTS (11-40%) (22-24) and EC (1.5-20%) (25-27) are quite common among university students. Although the prevalence varies by country, WTS and EC are gaining popularity among adolescents and university students around the world. In our study, the rate of smoking WTS and EC among students was found as 14.0% and 3.0%, respectively. Despite the prohibition of EC production and trade in our country, the fact that the usage rates are at a remarkable level even in this group suggests that necessary precautions should be taken to prevent the use of this product in the future. It is widely believed that EC is less harmful than combusted cigarettes, does not contain nicotine, and helps smokers to quit (25,27). It is also seen that EC is becoming more popular among young people than combusted cigarettes day by day, which is due to its visuality, technological design, taste suitable for

young people, and free of use in non-smoking areas. It is also becoming widespread among those with good economic status, and it is stated that even non-smokers use EC (25-27). In our study, since more than 50% of the students had an economic status at or below the minimum wage, the rate of EC use was found to be 3.0%, and 88.3% of the students stated that EC did not contain nicotine. The absence of odor in EC makes e-cigarettes look less harmful than traditional ones (25,26). We think that health professionals should give accurate information about the dangers of using EC and that the importance of raising awareness should be emphasized with comprehensive education programs. In addition, it is important to prevent online sales sites and the like, which are a means of illegally procuring EC.

In our study, although 64.0% of the students stated that university education did not affect the use of tobacco and tobacco products, the rate of those who started smoking at the age of ≥17 was found to be 36.5%. Erdogan N and Erdogan I (16) stated that students starting university saw smoking as a part of their socialization experience, like drinking tea and coffee. Although the majority of the students (85.0%) stated that studies against smoking were inadequate, the rate of those who did not support the prohibition of tobacco product advertisements (64.5%) and smoking in public/indoor areas (61.9%) was quite high. In addition, 80.3% of the smokers stated that they did not want to receive support for quitting. These conflicting views show us the students' indecision about quitting tobacco products. Aho et al. (28) defined the fear of losing social status and exclusion from a group with similar values and attitudes as barriers to quitting smoking although the harms of smoking are known among students.

In our study, there was a relationship between the level of parents' education and smoking. Some studies suggest that the effect of the mother's education level on smoking status may be greater than that of the father's, which is due to the mother's spending more time on the child's discipline (4). It was found that our students who lived with their parents smoked less. Similar to our findings, many researchers have determined a lower rate of smoking in those living with their parents (4,10). This is because parents are more effective in protecting their children from smoking and the student cannot smoke comfortably due to the environment they live in.

The level of dependence in smokers is very important for quitting success. Considering that most of the students in this study had very low (34.5%), low (37.3%), and moderate (9.3%) tobacco dependence, it can be said that the success of smoking cessation will be high in this group when necessary interventions are implemented. In addition, the rate of those with high scores on the FTND among female and male smokers was quite low. However, those who started smoking before the age of ≤16 were found to have higher scores on the FTND. Our findings are consistent with studies on adolescents who stated that they tried smoking for the first time at the age of ≤16 (21,29). In this study, only 18.1% of smokers stated that they wanted to quit, while 66.6% of smokers stated that they tried quitting once or more. It has been stated that delaying the age at starting tobacco and tobacco products is the most important factor in the prevention of their use and will reduce the level of tobacco dependence (21). Brain cells with high neuroplasticity in childhood and adolescence show an ability to quickly learn and respond to stimuli. Therefore, it has been stated that exposure to nicotine at an early age may lead to the development of nicotine dependence more rapidly in young people than in adults 21,29-31). Although smoking cessation and the continuation of smoking cessation behavior are related to the individual's desire and determination, studies have shown that reducing the visibility of use in the student's environment, smoking-free university policies, and prohibiting smoking throughout the campus prevent students from starting smoking and make it easier to quit (14,16,17). We think that some strategies, such as increasing the price of tobacco products, raising the household income above the hunger limit, developing smoke-free policies and norms throughout the country, restricting advertising and promotions, prohibition of the production and sale of tobacco products, public education at a national level, and media campaigns against smoking, should be developed to reduce the use of tobacco products by young people.

**Strengths and Limitations**

This study has several limitations. For example, the data were collected based on students' self-reports. Some of the smokers refrained from reporting their smoking status. Also, all of the students included in the study were enrolled in a public university in Izmir. Therefore, the present findings cannot be generalized to the entire population. More research is needed to determine the prevalence, level of dependence, and

willingness to quit smoking among public and private university students. Despite these limitations, our results give a strong message to universities so that they can develop and adopt protocols for the prevention of the use of tobacco products before health technician students start working as health professionals.

Since usage of tobacco is more common in socioeconomically and educationally disadvantaged groups, giving importance to increase the welfare level of the society will be an important intervention to reduce tobacco dependence. In addition, adding courses on tobacco addiction and tobacco control to the curriculum will contribute to increasing students' awareness.

## CONCLUSION

In this study, it was determined that one-third of the students used tobacco products and that about one-fifth of them had a high level of tobacco dependence. Students' gender, age, and parents' low education level had an effect on the use of tobacco products. Most of the students thought that studies against the use of tobacco products were not enough. In line with these findings, taking students' views on the development of new and promising strategies that can help reduce the use of tobacco products by young people and involving them in the fight against smoking can play an active role in success. It is recommended to regularly monitor students in terms of tobacco dependence and to provide counseling services for quitting smoking at universities. Intervention programs that will help students to quit smoking can be planned and students with a very high level of dependence can be directed to smoking cessation outpatient clinics.

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