

# The prevalence of cigarette, alcohol, and substance use among Kütahya Health Sciences University students and its influencing factors

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## Abstract

University students may begin using substances like tobacco, alcohol, and drugs due to individual and environmental factors, such as stress, academic pressures, and increased responsibilities. Given the public health relevance of this issue and the fact that this is the first study of its kind in Kütahya, this study investigates the prevalence of tobacco, alcohol, and substance use among university students and associated factors. The sample size was calculated as 1,008 based on a 95% confidence level, a prevalence rate of 7.8%, and a margin of error of 1.5%. The study was completed with 1,043 participants. Results showed that 23.5% of participants smoked, while 20.9% consumed alcohol. The primary reason for starting smoking was alcohol consumption, and peer influence was the second most common reason for initiating alcohol use. A statistically significant difference was found between genders regarding smoking ( $p=0.030$ ), with smoking being more common among males. A significant association was also observed between family alcohol consumption and alcohol use ( $p<0.001$ ), with participants whose families consumed alcohol showing higher alcohol use rates. Although smoking was more prevalent among men (28.3%), it is noteworthy that a substantial proportion of women also smoked (21.8%). The family plays a critical role as a model, influencing individual behavior. Campus activities addressing addiction could strengthen social relationships and contribute to addiction prevention.

**Keywords:** alcohol consumption, cigarette smoking, drug use, university, students

## Main points

- It was found that one in four students smokes cigarettes.
- It was found that one in five students consumes alcohol.
- Peer influence and curiosity are significant factors contributing to the initiation of substances such as tobacco, alcohol, and drugs.
- It was observed that the smoking and alcohol use behaviors of family members influence individuals' use of these products.
- The current study provides information and perspectives on university students' use of cigarettes, alcohol, and other substances, as well as the factors influencing these behaviors.

## Introduction

Addiction is defined as a condition in which an individual loses control over engaging in certain behaviors or using specific substances, to the extent that it may cause harm. While addiction is commonly associated with gambling, drugs, alcohol, and cigarettes, it is possible to develop an addiction to almost anything (National Health Service [NHS], 2024).

Cigarettes, alcohol, and substances have significant biological, psychological, and social effects on various parts of the human body (Coşkun et al., 2019). Though these products are often used to alleviate stress and anxiety in daily life, providing a temporary sense of well-being, they may also have detrimental effects on the functioning of organs and systems in the body over time. These effects may include disruptions in academic progress, problems in social relationships, and

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negative impacts on mental health. In later stages of life, the use of tobacco and tobacco products can lead to serious health issues such as lung cancer, emphysema, chronic bronchitis, and cardiovascular diseases (Serrano Gotarredona et al., 2022). Substance use may also result in memory issues, behavioral issues, and central nervous system disorders, including psychosis (Testai et al., 2022).

University years are a complex period of social and cognitive transformation, marking the transition into early adulthood. During this time, individuals not only pursue an academic career and prepare for professional life but also begin to establish new social relationships. It is a period in which individuals assume greater responsibility, become more independent of their families, gain numerous experiences, and interact with others in society (Özlük & Karaaslan, 2017). This period is also influenced by various factors such as anxiety, stress, social environment, cultural norms, lifestyle, family relationships, and economic capacity, all of which can contribute to the initiation of tobacco, alcohol, and substance use (Buakate et al., 2022; Şahan, 2022).

In Turkey, the rate of daily tobacco and tobacco product use among individuals aged 15-24 in 2022 was reported as 19.3%, whereas in the European Union (EU), the corresponding rate for the same age group was 15%. This indicates that tobacco and tobacco product use among the 15-24 age group is higher in Turkey than in EU countries (T.C. Sağlık Bakanlığı, 2023). When evaluating per capita alcohol consumption among individuals over the age of 15, the EU reports a value of 10.1 liters, whereas Turkey's consumption is 1.6 liters. Despite this lower consumption rate, alcohol use is increasing among the young university-age population. According to the World Health Organization's (WHO) 2024 Global Status Report on Alcohol and Health and the Treatment of Substance Use Disorders, younger individuals have been disproportionately affected by alcohol consumption. Furthermore, alcohol-related deaths represented the highest proportion (13.0%) of all deaths among individuals aged 20-39 in 2019 (T.C. Sağlık Bakanlığı, 2023; World Health Organization, 2024a).

Local studies on tobacco and alcohol use among university students in Turkey indicate high levels of smoking and alcohol consumption (Canbulat Şahiner et al., 2020; Kılıç et al., 2020). The prevalence of smoking among students at a health sciences faculty at a university in Turkey was reported as 27.3% (Canbulat Şahiner et al., 2020), while a study examining alcohol use among university students in Turkey reported that 47.4% of students consume alcohol (Kılıç et al., 2020).

The use of products such as cigarettes, alcohol, and substances represents a significant public health issue due to their high prevalence and the serious health problems they cause. University students, who form a significant portion of society, are also affected by these products. Thus, examining the factors related to the frequency of cigarette, alcohol, and substance use among university students can provide valuable insights in the fight against addiction. This study will be the first of its kind in Kütahya, as there is no prior research investigating the use of cigarettes, alcohol, and substances

among university students in the city. The aim of this study is to explore the frequency of smoking, alcohol use, and substance use, as well as the related factors, among students at Kütahya Health Sciences University.

## Methods

This descriptive cross-sectional study was conducted between April 1 and April 30, 2024. The study population consisted of a total of 5,650 students from Kütahya Health Sciences University, including 893 students from the Faculty of Medicine, 461 students from the Faculty of Dentistry, 2,121 students from the Faculty of Health Sciences, 316 students from the Faculty of Natural Sciences, 173 students from Kütahya Vocational School, 669 students from Gediz Vocational School of Health Services, 631 students from Simav Vocational School of Health Services, and 385 students from Tavşanlı Vocational School of Health Services.

The sample size was determined to be 1,008 based on a calculation with a confidence level of 95%, a prevalence rate of 7.8%, and a margin of error of 1.5%. The prevalence rate was selected as 7.8% because it represents the lowest prevalence for substance addiction (Demirci & Eker, 2017). Considering a non-response rate of 15%, the sample size was adjusted to 1,188. Stratified sampling was applied by faculty and vocational school, with the number of participants determined based on the weight of each stratum. The allocation was as follows: 15.8% of students from the Faculty of Medicine were selected, resulting in 200 participants; 8% of the Faculty of Dentistry students were selected, resulting in 101 participants; 37.5% of the Faculty of Health Sciences students were selected, resulting in 473 participants; 5.6% of the Faculty of Natural Sciences students were selected, resulting in 71 participants; 3% of Kütahya Vocational School students were selected, resulting in 40 participants; 22.6% of Gediz Vocational School of Health Services students were selected, resulting in 151 participants; 11.2% of Simav Vocational School of Health Services students were selected, resulting in 141 participants, and 6.8% of Tavşanlı Vocational School of Health Services students were selected, resulting in 86 participants. Participants were selected through systematic random sampling using class lists. The inclusion criteria for the study were being an associate or bachelor's degree student at Kütahya Health Sciences University and volunteering to participate.

## Data Collection Tool

Data were collected using a questionnaire developed by the researchers based on existing literature, which included questions regarding sociodemographic characteristics, smoking, alcohol use, and substance use, including amount, duration, and frequency (Bilecen et al., 2021; Canbulat Şahiner et al., 2020; Kılıç et al., 2020). The survey form consisted of 26 questions grouped into four sections. The first section included seven questions assessing the demographic characteristics of the participants. The second section included six questions related to smoking status.

The third section contained six questions regarding alcohol use, and the fourth section included six questions related to substance use. Additionally, the questionnaire included 16 questions assessing participants' knowledge about alcohol consumption and its effects on health, as well as a control question to evaluate the reliability of responses. Use of cigarettes, alcohol, or substances—regardless of frequency, amount, or duration— was classified as use of the respective substance. Students' relationships with their families were classified as "good," "medium," or "bad" based on participants' subjective assessments. Academic success was classified as "good," "medium," or "bad" based on participants' subjective assessments (Bilecen et al., 2021).

Consent was obtained from all participants before administering the survey. Data collection was conducted both online and in person. The study was carried out with 1,066 participants who agreed to participate. Twenty-three individuals who provided incorrect responses to the control question were excluded from the study, resulting in a final sample of 1,043 participants.

The study's purpose was explained to the participants prior to data collection. They were informed that their participation was entirely voluntary and that they could withdraw from the study at any time. Both written and verbal consent were obtained. Face-to-face data collection took place in classrooms during 45-minute sessions on days permitted by school administrations, and during students' free hours. Any unclear questions were explained by the researcher.

### Data Analysis

Data were analyzed using the IBM SPSS version 25.0 (IBM Corp., Armonk, NY, USA) package program. Descriptive statistics were used, with continuous data expressed as means, medians, standard deviations, and minimum and maximum values, while categorical variables were presented as frequencies and percentages. The Mann-Whitney U test and the Kruskal-Wallis test were used to compare continuous variables, while the chi-square test was employed to compare categorical variables. The Monte Carlo correction was applied to adjust for multiple categorical variables. A p-value of <0.05 was considered statistically significant.

### Ethics Committee

The study was conducted in accordance with the principles of the Declaration of Helsinki. Prior to the initiation of the research, approval was obtained from the Kütahya Health Sciences University Non-Interventional Clinical Research Ethics Committee (2024/04-33), institutional permission was obtained from the Kütahya Health Sciences University Rectorate, and informed consent was obtained from the participants.

**Table 1.** Sociodemographic characteristics of participants

	Number (n)	Percent (%)
Faculty/Vocational School (n=1043)		
Faculty of Medicine	187	17.9
Faculty of Dentistry	116	11.1
Faculty of Health Sciences	231	22.1
Faculty of Natural Sciences	45	4.3
Kütahya Vocational School	28	2.7
Gediz Vocational School of Health Services	151	14.5
Simav Vocational School of Health Services	138	13.2
Tavşanlı Vocational School of Health Services	82	7.9
Unspecified	65	6.2
Gender (n=1041)		
Male	265	25.5
Female	776	74.5
Mother's education status (n=1043)		
Illiterate and Primary Education	649	62.2
High School	227	21.8
University and above	167	16.0
Father's education status (n=1043)		
Illiterate and Primary Education	440	42.2
High School	322	30.9
University and above	281	26.9
Family Income Level (n=1041)		
Income is Less Than Expenses	127	12.2
Income Equals Expense	680	65.3
Income is More Than Expense	234	22.5
Family Relationship (n=1043)		
Good	763	73.2
Medium	268	25.7
Bad	12	1.2
Educational Success (n=1043)		
Good	361	34.6
Medium	630	60.4
Bad	52	5.0
	Mean ± SD	Median (Min-Max)
Age (n=1024)	20.94 ± 2.17	21 (18-43)

SD: Standard Deviation, Min: Minimum, Max: Maximum.

### Results

In this study, 1,043 students participated. The distribution of participating students according to some characteristics is shown in Table 1.

Among participants, 23.5% (n = 245) reported smoking. Participants' smoking status and smoking characteristics are shown in Table 2.

Among participants, 20.9% (n = 218) reported consuming alcohol. In Table 3, the participants' alcohol use status and alcohol use characteristics are shown.

**Table 2.** Smoking status and smoking characteristics of participants

	Number (n)	Percent (%)
Smoking status (n=1043)		
Yes	245	23.5
No	798	76.5
Number of cigarettes per day (n=244)		
1-5 cigarettes	75	30.7
6-10 cigarettes	69	28.3
11-20 cigarettes	75	30.7
More than 20 cigarettes	25	10.2
Reasons for starting to smoke (n=244)		
Influence from friends	100	41.0
Curiosity	49	20.1
Influence from family	7	2.8
Other	88	36.1
Attempts to quit smoking (n = 244)		
Yes	148	60.7
No	96	39.3
Smoking in the family (n=983)		
Yes	600	61.0
No	383	39.0
	Mean ± SD	Median (Min-Max)
Duration of smoking (n=233)	3.88 ± 2.50	3 (1-13)

SD: Standard Deviation, Min: Minimum, Max: Maximum.

In this study, 0.6% of participants (n = 6) reported substance use. One substance user reported using substances 1-2 times per month, one reported using substances 1-2 times per year, and four reported using substances less frequently. They attributed their initiation of substance use to curiosity (n = 3), peer influence, and other reasons (n = 1). Furthermore, one student among the substance users reported a previous attempt to quit substance use. The mean duration of substance use among the substance users was calculated as 2.00 ± 0.00 years.

According to our study results, the highest alcohol consumption was found in the Faculty of Medicine, and the highest smoking rate was found in Tavşanlı Vocational School of Health Services. Among the participants, smoking and alcohol consumption were found to be higher among men than among women. Table 4 shows a comparison of participants' cigarette and alcohol use status across various sociodemographic characteristics.

Statistically significant differences were found between department, gender, mother's education level, and number of cigarettes smoked per day. No significant differences were found between number of cigarettes smoked per day and father's education level, household income level, family relationships, academic success, family smoking, or age. A significant association was found between alcohol use among family members and the frequency of alcohol use (p=0.015), with individuals having a family history of alcohol use reporting

**Table 3.** Alcohol use status and alcohol use characteristics of participants

	Number (n)	Percent (%)
Alcohol use (n=1043)		
Yes	218	20.9
No	825	79.1
Frequency of alcohol use (n=218)		
Every day	2	0.9
1-2 times a week	15	6.9
1-2 times a month	107	49.1
1-2 times a year	68	31.2
Rarely	26	11.9
Reasons for starting to drink alcohol (n=217)		
Influence from friends	41	18.9
Curiosity	98	45.2
Influence from family	13	5.9
Other	65	30.0
Trying to quit drinking alcohol (n=214)		
Yes	28	13.1
No	186	86.9
Alcohol use among family members (n=1024)		
Yes	181	17.7
No	843	82.3
	Mean ± SD	Median (Min- Max)
Duration of alcohol use (n=197)	3.76 ± 2.14	4 (1-10)

SD: Standard Deviation, Min: Minimum, Max: Maximum.

a higher frequency of alcohol consumption (once a month or more). No significant differences were found between the frequency of alcohol use and department, gender, mother's education level, father's education level, household income level, family relationship, academic success, or age (Table 5).

### Discussion

Tobacco, alcohol, and substance use constitute a significant public health concern, with numerous biological, social, and psychological implications. These effects are particularly pronounced when use begins during university years or earlier, influencing subsequent stages of life. This study investigates the prevalence of cigarette, alcohol, and substance use among students at Kütahya Health Sciences University, as well as the factors associated with their use.

The findings indicate that the prevalence of smoking among students at Kütahya Health Sciences University is 23.5%. A study conducted among medical students in a region of India reported a smoking prevalence of 27.1% (Patel et al., 2016). Similarly, research conducted across six faculties of a university in Turkey found that 30.7% of students were smokers (Bilecen et al., 2021). These findings are comparable to the smoking prevalence observed in our study, suggesting that approximately one in four university students engages in smoking.

**Table 4.** Comparison of participants' smoking and alcohol use status with various sociodemographic characteristics

	Smoking				X <sup>2</sup> (p)	Alcohol use				X <sup>2</sup> (p)
	Yes		No			Yes		No		
	Number (%)	Number (%)	Number (%)	Number (%)		Number (%)	Number (%)	Number (%)	Number (%)	
Faculty/Vocational School (n=978)										
Faculty of Medicine	42 (22.5)	145 (77.5)			15.587 (0.049)	60 (32.1)	127 (67.9)			44.601 (<0.001)
Faculty of Dentistry	20 (17.2)	96 (82.8)				27 (23.3)	89 (76.7)			
Faculty of Health Sciences	53 (22.9)	178 (77.1)				45 (19.5)	186 (80.5)			
Faculty of Natural Sciences	10 (22.2)	35 (77.8)				12 (26.7)	33 (73.3)			
Kütahya Vocational School	7 (25.0)	21 (75.0)				4 (14.3)	24 (85.7)			
Gediz Vocational School of Health Services	36 (23.8)	115 (76.2)				12 (7.9)	139 (92.1)			
Simav Vocational School of Health Services	27 (19.6)	111 (80.4)				16 (11.6)	122 (88.4)			
Tavşanlı Vocational School of Health Services	32 (39.0)	50 (61.0)				22 (26.8)	60 (73.2)			
Unspecified	18 (27.7)	47 (72.3)				20 (30.8)	45 (69.2)			
Gender (n=1041)										
Male	75 (28.3)	190 (71.7)			4.685 (0.030)	71 (26.8)	194 (73.2)			7.351 (0.007)
Female	169 (21.8)	607 (78.2)				147 (18.9)	629 (81.1)			
Mother's education status (n=1043)										
Illiterate and primary education	146 (22.5)	503 (77.5)			1.167 (0.558)	96 (14.8)	553 (85.2)			39.942 (<0.001)
High school	59 (26.0)	168 (74.0)				66 (29.1)	161 (70.9)			
University and above	40 (24.0)	127 (76.0)				56 (33.5)	111 (66.5)			
Father's education status (n=1043)										
Illiterate and primary education	93 (21.1)	347 (78.9)			2.371 (0.306)	65 (14.8)	375 (85.2)			20.342 (<0.001)
High school	82 (25.5)	240 (74.5)				73 (22.7)	249 (77.3)			
University and above	70 (24.9)	211 (75.1)				80 (28.5)	201 (71.5)			
Household income level (n=1041)										
Income is less than expenses	44 (34.6)	83 (65.4)			10.854 (0.004)	22 (17.3)	105 (82.7)			2.831 (0.243)
Income equals expense	144 (21.2)	536 (78.8)				138 (20.3)	542 (79.7)			
Income is more than expense	55 (23.5)	179 (76.5)				57 (24.4)	177 (75.6)			
Family relationship (n=1043)										
Good	155 (20.3)	608 (79.7)			16.578 (<0.001)	141 (18.5)	622 (81.5)			10.339 (0.006)
Medium	85 (31.7)	183 (68.3)				73 (27.2)	195 (72.8)			
Bad	5 (41.7)	7 (58.3)				4 (33.3)	8 (66.7)			
Educational success (n=1043)										
Good	61 (16.9)	300 (83.1)			18.979 (<0.001)	56 (15.5)	305 (84.5)			15.263 (<0.001)
Medium	163 (25.9)	467 (74.1)				143 (22.7)	487 (77.3)			
Bad	21 (40.4)	31 (59.6)				19 (36.5)	33 (63.5)			
Smoking in the family (n=983)										
Yes	180 (30.0)	420 (70.0)			22.126 (<0.001)	133 (22.2)	467 (77.8)			0.936 (0.333)
No	64 (16.7)	319 (83.3)				75 (19.6)	308 (80.4)			
Alcohol use (n=1043)										
Yes	120 (55.0)	98 (45.0)			152.703 (<0.001)					
No	125 (15.2)	700 (84.8)								
Alcohol use among family members (n=1024)										
Yes						104 (57.5)	77 (42.5)			171.650
No						114 (13.5)	729 (86.5)			(<0.001)
Substance Use (n=1038)										
Yes	6 (100.0)	0 (0.0)			<0.001	6 (100.0)	0 (0.0)			<0.001
No	236 (22.9)	796 (77.1)				212 (20.5)	820 (79.5)			
	Mean ± SD	Median (Min-Max)	Mean ± SD	Median (Min-Max)	Z (p)	Mean ± SD	Median (Min-Max)	Mean ± SD	Median (Min-Max)	Z (p)
Age (n=1024)	21.20 ± 2.04	21 (18-32)	20.86 ± 2.20	21 (18-43)	-2.962 (0.003)	21.26 ± 1.91	21 (18-29)	20.85 ± 2.22	21 (18-43)	-3.719 (<0.001)

SD: Standard Deviation, Min: Minimum, Max: Maximum, X<sup>2</sup>: Chi-Squared Test, Z: Mann Whitney U Test.

**Table 5.** Comparison of the number of cigarettes smoked by smokers and the frequency of alcohol consumption by alcohol users with sociodemographic characteristics

	Number of Cigarettes Smoked Daily				X <sup>2</sup> (P)	Frequency of Alcohol Use				X <sup>2</sup> (p)
	Numbers 10 and below		Numbers 11 and above			1 or More Per Month	Once a Year or Less			
	Number (%)	Number (%)	Number (%)	Number (%)						
Faculty/Vocational School (n=226)										
Faculty of Medicine	18 (42.9)	24 (57.1)			16.274 (0.039)	37 (61.7)	23 (38.3)			(0.469)
Faculty of Dentistry	12 (63.2)	7 (36.8)				12 (44.4)	15 (55.6)			
Faculty of Health Sciences	38 (71.7)	15 (28.3)				26 (57.8)	19 (42.2)			
Faculty of Natural Sciences	4 (40.0)	6 (60.0)				10 (83.3)	2 (16.7)			
Kütahya Vocational School	7 (100.0)	0 (0.0)				2 (50.0)	2 (50.0)			
Gediz Vocational School of Health Services	19 (52.8)	17 (47.2)				5 (41.7)	7 (58.3)			
Simav Vocational School of Health Services	18 (66.7)	9 (33.3)				10 (62.5)	6 (37.5)			
Tavşanlı Vocational School of Health Services	17 (53.1)	15 (46.9)				12 (54.5)	10 (45.5)			
Unspecified	11(61.1)	7 (38.9)				10 (50.0)	10 (50.0)			
Gender (n=243)										
Male	32 (43.2)	42 (56.8)			10.699 (<0.001)	44 (62.0)	27 (38.0)			1.113 (0.291)
Female	111 (65.7)	58 (34.3)				80 (54.4)	67 (45.6)			
Mother's education status (n=244)										
Illiterate and primary education	97 (66.4)	49 (33.6)			10.695 (0.005)	49 (51.0)	47 (49.0)			2.658 (0.265)
High School	32 (54.2)	27 (45.8)				42 (63.6)	24 (36.4)			
University and above	15 (38.5)	24 (61.5)				33 (58.9)	23 (41.1)			
Father's education status (n=244)										
Illiterate and primary education	59 (63.4)	34 (36.6)			2.844 (0.241)	36 (55.4)	29 (44.6)			0.085 (0.959)
High School	50 (61.0)	32 (39.0)				42 (57.5)	31 (42.5)			
University and above	35 (50.7)	34 (49.3)				46 (57.5)	34 (42.5)			
Household income level (n=242)										
Income is less than expenses	32 (72.7)	12 (27.3)			4.973 (0.083)	13 (59.1)	9 (40.9)			0.282 (0.868)
Income equals expense	83 (58.0)	60 (42.0)				77 (55.8)	61 (44.2)			
Income is more than ex-pense	28 (50.9)	27 (49.1)				34 (59.6)	23 (40.4)			
Family Relationship (n=244)										
Good	91 (59.1)	63 (40.9)			0.862 (0.720)	82 (52.2)	59 (41.8)			(0.879)
Medium	51 (60.0)	34 (40.0)				40 (54.8)	33 (45.2)			
Bad	2 (40.0)	3 (60.0)				2 (50.0)	2 (50.0)			
Educational Success (n=244)										
Good	42 (68.9)	19 (31.1)			3.900 (0.142)	28 (50.0)	28 (50.0)			1.577 (0.456)
Medium	92 (56.8)	70 (43.2)				84 (58.7)	59 (41.3)			
Bad	10 (47.6)	11 (52.4)				12 (63.2)	7 (36.8)			
Smoking in the family (n=243)										
Yes	105 (58.3)	75 (41.7)			0.247 (0.620)					
No	39 (61.9)	24 (38.1)								
Alcohol use among family members (n=218)										
Yes						68 (65.4)	36 (34.6)			5.864 (0.015)
No						56 (49.1)	58 (50.9)			
	Mean ± SD	Median (Min-Max)	Mean ± SD	Median (Min-Max)	Z (p)	Mean ± SD	Median (Min-Max)	Mean ± SD	Median (Min-Max)	Z (p)
Age (n=1024)	21.06 ± 1.82	21 (18-30)	21.37 ± 2.29	21 (18-32)	- 0.896 (0.370)	21.31± 1.95	21 (18-26)	21.18 ± 1.86	21 (18-29)	- 0.286 (0.775)

SD: Standard Deviation, Min: Minimum, Max: Maximum, X<sup>2</sup>: Chi-Squared Test, Z: Mann Whitney U Test.

In our study, smoking prevalence was found to be significantly higher among male participants. Similarly, a study conducted in Istanbul on the smoking status of university students reported a significantly higher prevalence of smoking among men, which aligns with our findings (Oğuz et al., 2018). According to data from the World Health Organization (WHO), the global prevalence of smoking among males aged 15 and older in 2020 was 35.5%, whereas it was 7.9% among females (World Health Organization, 2024b). These findings indicate that smoking is more prevalent among men than women, supporting the results of our study. However, despite the higher smoking prevalence among men, smoking remains common among women, likely due to the widespread accessibility and availability of tobacco products.

Additionally, our study found that smoking was more prevalent among participants with a family history of smoking. This finding is consistent with previous research, including a study on smoking behavior among students at a foundation university (Doğan et al., 2022), a study examining the factors influencing smoking status and the impact of the tobacco control action plan in a university hospital (Yakar et al., 2020), and a study on tobacco use among medical students in Nepal (Adhikari et al., 2024). The influence of family members on an individual's smoking behavior may stem from parents or other relatives who serve as role models for smoking initiation and maintenance.

In our study, peer influence was identified as the most common reason for initiating smoking, with 41.0% of participants citing it as a determining factor. Similarly, a study conducted among medical students on attitudes and behaviors related to tobacco use reported that 47.9% of participants started smoking due to peer influence (Turan et al., 2022), which is consistent with our findings. The social circle plays a crucial role in smoking initiation, as individuals who spend time with friends who smoke may be more likely to adopt this behavior. Additionally, shared activities and prolonged exposure to smoking environments may contribute to both the initiation and an increase in cigarette consumption (Kuzu & Asqarova, 2024).

Furthermore, our study found that cigarette use was significantly higher among participants who also consumed alcohol and other substances. This finding aligns with the study conducted by Delgado-Lobete et al., which examined individual and environmental factors related to cigarette, alcohol, and illicit substance use among university students, concluding that smoking prevalence was significantly higher among alcohol and substance users (Delgado-Lobete et al., 2020). The concurrent use of cigarettes, alcohol, and drugs, rather than their isolated consumption, may not only lead to an increase in overall substance use but also amplify their effects on individuals (Apcacioğlu & Ünübol, 2020). In our study, the prevalence of alcohol consumption among participants was found to be 20.9%.

A meta-analysis investigating alcohol use and related factors among high school and university students in Ethiopia reported an alcohol consumption rate of 26.19% among students

(Amare & Getinet, 2020). Similarly, a study examining alcohol consumption among university students in Australia found a significantly higher prevalence, with 82.0% of students consuming alcohol (Tanudjaja et al., 2021). Compared to university students in the United States, Australia, and European countries, the rate of alcohol consumption in our study is relatively lower. This difference may be attributed to sociocultural variations among societies, as well as differences in policies and regulations regarding alcohol sales and consumption.

In our study, alcohol consumption was found to be significantly higher among male participants. Similarly, a study conducted among university students in a particular province reported that the likelihood of alcohol use among male students was 1.704 times higher than that of female students (Coşkun et al., 2019). However, a study examining alcohol consumption and healthcare utilization patterns among university students in Spain found no significant association between high alcohol consumption and gender. In the same study, a significant difference was observed between alcohol consumption and age, with higher alcohol consumption reported among students aged 17–20 compared to those aged 21–24 and 25 years or older (Romero-Rodríguez et al., 2022). This finding suggests that younger university students may be more susceptible to uninformed or risky alcohol consumption, particularly in the early years of university life.

In our study, while alcohol consumption was not significantly influenced by gender, it was found to be affected by age. This may indicate that although the likelihood of initiating alcohol use differs between male and female students, consumption patterns become similar after initiation, with alcohol use increasing over time in both genders. Additionally, our study found that alcohol consumption was significantly higher among individuals with a family history of alcohol use. This finding is consistent with a study examining the prevalence and risk factors of alcohol consumption among university students in Myanmar, which reported an increased likelihood of alcohol use among those with a family history of alcohol consumption (Htet et al., 2020). These results align with our study, highlighting the influence of familial factors on alcohol use behaviors among university students.

In our study, alcohol consumption was found to be significantly higher among individuals whose mothers and fathers had attained a university degree or higher level of education. Similarly, a study conducted by Güner (2019) on substance use among university students in a particular province reported a significant association between alcohol consumption and parental educational status (Güner, 2019). The study found that alcohol use was more prevalent among individuals whose mothers were high school graduates and fathers were university graduates. This suggests that an increase in parental education levels may influence the family's traditional mindset, potentially leading to a more permissive attitude toward alcohol consumption. Consequently, young individuals may perceive alcohol use as a socially acceptable behavior within their family environment and may develop drinking habits accordingly. Furthermore, in our study, 49.1%

of participants reported consuming alcohol 1–2 times per month. In contrast, a study examining alcohol and cigarette use among women at two universities in the United States found that 50.7% of participants consumed alcohol 2–3 times per week (Angelini et al., 2017). These findings highlight differences in alcohol consumption patterns across different cultural and educational contexts.

### Limitations and Directions/Suggestions for Future Research

This study was conducted at Kütahya Health Sciences University and does not represent the entire Kütahya province or the faculties and vocational schools of other universities in the region. Furthermore, the targeted number of participants was not reached due to insufficient volunteers in some faculties and colleges. This is a significant limitation of the study. As the study relied on a survey, the data are subjective and may have been influenced by recall bias.

In our study, it was determined that one-fifth of the students consumed alcohol, while one-fourth were smokers. The proportion of participants who reported substance use was found to be lower than that of smoking and alcohol consumption. When interpreting these findings, it is important to consider the possibility that participants may have underreported their smoking, alcohol, or substance use due to fear of stigmatization.

The most common reason for initiating smoking was peer influence, highlighting the significance of peer and friendship relationships in the social environment. Regarding alcohol use, curiosity was the primary motivating factor, followed by peer influence. Given that peer influence plays a crucial role in university students' initiation of smoking, alcohol, and substance use, it may be beneficial to incorporate addiction-related activities into all student club events aimed at strengthening social relationships. Additionally, conducting research on factors that influence students, particularly in their efforts to cope with alcohol use, both on campus and in their social lives, may be advisable.

### Author contributions

Conception: M.Y., Ö.F.T., İ.A.; Design: M.Y., M.A.B., Ö.F.T., M.F.D., Ö.S., Ç.S., İ.A.; Data acquisition: M.Y., M.A.B., M.F.D., Ö.S., Ç.S.; Data analysis: M.Y., M.A.B., M.F.D., Ö.S., Ç.S.; Data interpretation: M.Y., Ö.F.T., İ.A.; Drafting of the manuscript: M.Y., M.A.B., M.F.D., Ö.S., Ç.S.; Critical revision of the manuscript: M.Y., Ö.F.T., İ.A. All authors reviewed the results, approved the final version of the manuscript, and agreed to be accountable for all aspects of this study.

### Ethical approval

This study was approved by the Kütahya Health Sciences University Non-Interventional Clinical Research Ethics Committee (Date: March 19, 2024, Decision/Protocol No:

2024/04-33). Informed consent was obtained from all participants involved in this study.

### Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

### Conflict of interest

The authors declare that this study was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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The authors declare that this study received no funding.

### Generative AI statement

The authors declare that no generative AI or AI-assisted technologies were used in the writing or preparation of this study. AI-assisted tools (ChatGPT, OpenAI) were used for minor language editing only.

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