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Prevalence of Electronic Cigarette Use Among University Students: Predictors and Mediators

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Main Points

- Everyday e-cigarette users constituted 5.4% of the students, while 26.3% stated that they had used e-cigarettes at least once or for a determined period.
- The rate of hearing about e-cigarettes was 93.5%, and the most important sources of information were friends and social media.
- The most common sources of e-cigarettes were reported as tobacco shops and the internet.
- While 52% of the students did not consider e-cigarettes as a tobacco products, 17.4% did not know whether they might be harmful to health or not.
- The risk of e-cigarette use was 2.16 times higher in men and 3.73 times higher in everyday smokers. It was found that the risk of continuous e-cigarette use increased 7.91 times in the presence of traditional smokers in the family and 4.66 times in the presence of e-cigarette users in the family.

Abstract

This study aimed to determine the prevalence and factors affecting the use of electronic cigarettes among university students. This cross-sectional study included 987 participants. The prevalence of electronic cigarette use among students was 5.4%, and the prevalence of trying electronic cigarettes at least once was 26.3%. Nicotine dependence levels of students who smoked electronic cigarettes were significantly high. Everyday electronic cigarette smokers commonly perceive traditional cigarettes to be more harmful. The rates of electronic cigarette use were significantly higher in males, those with high household income, those with a family history of traditional or electronic cigarette smoking, those who had smoked traditional cigarettes at least once in their lives, and those who were everyday cigarette smokers. Male sex and family history of electronic cigarette use were direct and effective predictors of everyday electronic cigarette use. The risk of everyday electronic cigarette use increased 7.91 times in the presence of electronic or traditional cigarette smokers in the family and 4.66 times in the presence of e-cigarette users in the family. The rates of electronic cigarette use and attempted electronic cigarette use were found to be high among university students. Awareness training and increased inspections and sanctions on the places where electronic cigarettes were purchased might prevent the growth of this problem.
Keywords: Cigarette, electronic nicotine delivery systems, young adult

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Introduction

Electronic cigarettes (e-cigarettes) are devices that can vaporize liquids mixed with nicotine solution. The first record of the idea of e-cigarettes dates back to 1963 when Herbert A. Gilbert registered a patent on "smoke-free tobacco cigarettes." Chinese pharmacist Hon Lik invented the e-cigarette in its present form in 2003. Electronic cigarettes were first introduced to the market in 2004, and since then, they have become more accessible and their use has increased rapidly (Schraufnagel et al., 2014). Although the number of studies reporting the negative effects of e-cigarettes on health is increasing day by day, their use is gradually increasing in the world due to the tobacco industry's "less harmful"

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discourse and touting them as a "smoking cessation method" (Cheng, 2014; Özge & Çetinkaya, 2022). In the United States, e-cigarette use among high school students increased from 1.5% in 2011 to 19.6% in 2020 (World Health Organization, 2021). In 2016, it was reported that e-cigarettes were the most common tobacco product used among secondary and high school students in the United States (Tsai et al., 2018). A wide range of chemicals, including in addition to artificial flavors and nitrosamines known to be carcinogenic, have been detected in e-cigarettes (Özge & Çetinkaya, 2022).

The rate of electronic cigarette use continues to increase significantly among smokers and non-smokers (Rathakrishnan et al., 2021). Prospective studies have reported that e-cigarette use increases the risk of smoking initiation among adolescents who have never smoked (Bunnell et al., 2015). Experts consider this increased risk an important public health problem. In a systematic review of prospective studies conducted among adolescents and young adults, it was shown that the likelihood of smoking initiation was higher in e-cigarette users (Soneji, 2018; Soneji et al., 2017). Electronic cigarette use increases the risk of nicotine addiction among non-smokers, which may lead to the use of traditional tobacco products; in other words, it constitutes a transition pathway to traditional tobacco use. Estimating the risk of increased e-cigarette use is important to determine the potential for e-cigarette use among adolescents and young adults. This study aimed to determine the prevalence of e-cigarette use and the factors affecting e-cigarette use among students studying in the field of health at Çukurova University in Türkiye.

Material and Methods

The cross-sectional study was conducted on students at Çukurova University in in Adana, Türkiye in 2023. Permission for the study was obtained from the Çukurova University Faculty of Medicine's Non-interventional Clinical Research Ethics Committee (meeting number: 140, dated January 4, 2024; decree number: 30). The population of the study consisted of students from the Faculty of Medicine, Faculty of Health Sciences, and Vocational School of Health (including approximately 2000 people). The minimum sample size to be reached was calculated to be 795 people based on a study reporting the prevalence of e-cigarette use as 16% (Kim & Shin, 2013), with a power of 90%, a confidence interval of 95%, and an effect size of 0.04. The sample was increased by 15%, reaching 987 people, using a convenience sampling method. All participants were asked to electronically confirm informed consent before starting the survey. The students were reached by sending an online questionnaire through WhatsApp groups. Demographic data, smoking history, e-cigarette use history, and information about e-cigarettes were collected from those who agreed to participate in the study.

Data Collection Form

The study questionnaire consists of three parts: a sociodemographic form, the Fagerström nicotine dependence test, and questions about knowledge and use of e-cigarettes. "Everyday smoker" defines an adult who has smoked and now smokes every day. This was previously called a "regular smoker." After 1991, "current smoker" was replaced by "everyday smoker" or "somedays smoker" (CDC—Centers for Disease Control and Prevention, 2017).

The sociodemographic form

Included age, sex, educational status, occupation, number of people in the family, place of residence, income, smoking, family tobacco product use, and previous smoking cessation experience.

Fagerström Nicotine Dependence Test

The Fagerström nicotine dependence test is a six-question test used to assess smoking dependence (Heatherton et al., 1991). It includes questions such as, "How long after you wake up in the morning do you smoke your first cigarette of the day?" "Do you find it difficult not to smoke in places where smoking is prohibited?" "Which cigarette of the day is more difficult for you to give up?" "How many cigarettes do you smoke per day?", "Do you smoke more in the morning than at other times of the day?" "Do you smoke when you are sick enough to lie down?" Scores of 0 – 2 indicate very mild addiction, 3 – 4 mild addiction, 5 moderate addiction, 6 – 7 severe addiction, and 8 – 10 very severe addiction (Bozkurt & Bozkurt, 2016; Uysal et al., 2004).

Knowledge and Use of E-cigarettes

This third section included questions measuring the level of knowledge about whether e-cigarettes were known or not, and if known, the source of information; the status, duration, and frequency of using e-cigarettes; and the content and health effects of e-cigarettes.

Statistical Analysis

JAMOVI (Jamovi Org, 2023) and IBM SPSS Statistics for Windows®, version 20.0 (IBM SPSS Corp.; Armonk, NY, USA) programs were used in the analyses. Shapiro – Wilk test was used to test for normal distribution. *T*-test, Mann – Whitney *U* test, chi-square test, binary logistic regression analysis, and mediation analysis were used to analyze the data. $p < .05$ was considered statistically significant.

Results

The mean age of 987 students included in the study was 20.62 ± 2.68 years (min. 17 and max. 35), with 59.8% being female. When basic demographic factors and addiction levels were compared according to e-cigarette use status, statistically significant differences were found. The age and dependency levels of students who smoked e-cigarettes were significantly higher. It was found that the rates of e-cigarette usage were significantly higher in males, those whose household income was above the poverty line (CDC (Centers for Disease Control and Prevention), 2017), those living in families in which traditional or e-cigarettes were smoked, those who smoked traditional cigarettes at least once in their lives, and those who were everyday smokers (Table 1).

Everyday e-cigarette users constituted 5.4% of the students, and 26.3% stated that they had used e-cigarettes at least once or for a determined period. The rate of hearing about e-cigarettes was 93.5%, with the most important source of information being friends and social media. The most common sources of e-cigarettes were reported as tobacco shops and the internet. While 52% of the students did not consider e-cigarettes as a tobacco product, 17.4% did not know whether they might be harmful to health or not. Additionally, 38.8% reported that they did not know about the harm of e-cigarettes compared to traditional cigarettes, and half of the students did not know that e-cigarettes contained nicotine (Table 2).

Table 1.
Comparison of Sociodemographic Characteristics and Nicotine Dependence According to E-cigarette Use Status

	E-cigarette Use Number (Column %)		
	Yes (*n* = 53)	**No (*n* = 934)**	***p***
Age	22.17 ± 3.15	20.53 ± 2.62	<.001
Sex			
Male (*n* = 397; 40.2%)	30 (56.6)	367 (39.3)	.018
Female (*n* = 590; 59.8%)	23 (43.4)	567 (60.7)	
Education level			
Undergraduate or graduate (*n* : 943, 95.5%)	52 (98.1)	891 (95.4)	.508
Master's degree or doctorate (44(4.5%)	1 (1.9)	43 (4.6)	
Household income			
10,360 and below (*n* = 217; 22%)	9 (17)	208 (22.3)	.048
10,361 – 28,875 (*n* = 439; 44.5%)	18 (34.0)	421 (45.1)	
28,875 and above (*n* = 331; 33.1%)	26 (49.1)	305 (32.7)	
Smoking in the family			
Yes (*n* = 527; 53.4%)	36 (67.9)	491 (52.6)	.033
No (*n* = 460; 46.6%)	17 (32.1)	443 (47.4)	
E-cigarette use in the family			
Yes (*n* = 187; 18.9%)	27 (50.9)	160 (17.1)	<.001
No (*n* = 800; 81.1%)	26 (49.1)	774 (82.9)	
If ever smoked			
Yes (*n* = 389; 39.4%)	53 (100.0)	336 (36.0)	<.001
No (*n* = 598; 60.6%)	0 (0)	598 (64.0)	
Everyday smoker			
Yes (*n* = 193; 19.6%)	38 (71.7)	155 (16.6)	<.001
No (*n* = 794; 80.4%)	15 (28.3)	779 (83.4)	
Fagerström nicotine dependence test score of smokers	3.64 ± 2.76	2.83 ± 2.61	.044
Fagerstrom dependence level of smokers			
Low (*n* = 124; 62.6%)	19 (51.4)	105 (65.2)	.273
Moderate (*n* = 47; 23.7%)	12 (32.4)	35 (21.7)	
High (*n* = 27; 13.6%)	6 (16.2)	21 (13.0)	

Everyday e-cigarette users reported that they perceived traditional cigarettes as more harmful in comparison to e-cigarettes (Table 3).

Two logistic regression models were found to be significant: Model 1 in predicting the likelihood of using/trying e-cigarettes at least once in a lifetime or for a determined period, and Model 2 in predicting the likelihood of everyday e-cigarette use by students. The same independent variables were included in both models: age, sex, household income, traditional cigarette smoking in the family, e-cigarette use in the family, lifetime smoking status (at least once or for a determined period and everyday smoking). Among the variables included in the models, for Model 1 (trying e-cigarettes), sex and being an everyday smoker made a significant contribution to the model: the risk of e-cigarette use was 2.16 times higher in men and 3.73 times higher in everyday smokers. In Model 2, it was found that the risk of continuous e-cigarette use increased 7.91 times in the presence of traditional smokers in the family and 4.66 times in the presence of e-cigarette users in the family (Table 4).

The mediating effect of nicotine addiction on the everyday use of e-cigarettes was examined through mediation analysis. The variables of the model were sex, age, traditional cigarette smoking, and e-cigarette use in the family, with the mediator variable being nicotine dependence level. When direct and indirect effects were analyzed, it was found that nicotine dependence level was not an important mediator in e-cigarette use. However, when direct and component effects were examined, it was found that sex had a direct effect on nicotine dependence, being lower in females. Considering the total effect, it was found that male sex and the presence of e-cigarette use in the family were positively associated with e-cigarette use (Table 5).

Table 2.
Level of Knowledge About E-cigarettes and Usage Status

	n	%
Have you heard of e-cigarettes?		
Yes	923	93.5
No	64	6.5
Source of information		
Friend environment	604	61.2
Social media	502	50.9
Family atmosphere	58	5.9
Other	10	1.0
Are e-cigarettes a type of tobacco product?		
I don't know (no idea)	349	35.4
Yes	474	48.0
No	164	16.6
Do e-cigarettes constitute a form of smoking cessation method?		
I don't know (no idea)	274	27.8
Yes	99	10.0
No	614	62.2
Is there nicotine in e-cigarettes?		
I don't know (no idea)	458	46.4
Yes	496	50.3
No	33	3.3
Are e-cigarettes harmful?		
I don't know (no idea)	172	17.4
Yes	806	81.7
No	9	0.9
Which are more harmful: traditional cigarettes or e-cigarettes?		
I don't know (no idea)	383	38.8
Traditional cigarettes	272	27.6
E-cigarettes	167	16.9
The harms are equal	165	16.7
Have you ever smoked e-cigarettes?		
No	727	73.7
Yes	260	26.3
Are you currently an everyday e-cigarette smoker?		
No	934	94.6
Yes	53	5.4
Where do you buy e-cigarettes?		
My friends	1	.1
Internet	14	1.4
Tobacco shop	65	6.6
Abroad	1	.1

Discussion

E-cigarettes are intensively marketed as an aid to smoking cessation, claiming to be less harmful and more socially acceptable than traditional cigarettes (Cetinkaya et al., 2022). In this study, the aim was to determine the prevalence of e-cigarette use among university students attending health science faculties/schools and the factors affecting e-cigarette use. The prevalence of everyday e-cigarette smokers among the students was found to be 5.4%, while 26.3% stated that they used e-cigarettes at least once or for a determined period. The most important sources for getting acquainted with e-cigarettes were friends and social media. The most common environments where e-cigarettes were obtained were reported as tobacco shops and the Internet. Students who smoked e-cigarettes were older, and their addiction levels were significantly higher. The rates of e-cigarette use were found to be significantly higher in males, those with higher household incomes, those with a family history of smoking or using e-cigarettes, those who have smoked at least once in their lives, and everyday smokers. The likelihood of trying e-cigarettes was 2.16 times higher in men and 3.73 times higher in everyday smokers. The risk of everyday e-cigarette use was found to have increased 7.91 times in the presence of a family history of traditional smoking and 4.66 times in the presence of a family history of e-cigarette use.

In a study conducted by Ogan et al. among university students, 11.5% of the students reported that they had tried e-cigarettes, and approximately 1% reported that they regularly smoked e-cigarettes. The proportion of male students who tried e-cigarettes was found to be higher (Ogan et al., 2019). Kurtuluş et al. reported that the rate of e-cigarette use among young people was 1.02% and the rate of trying e-cigarettes at least once was 15.2%. Trying e-cigarettes showed a positive correlation with tobacco use and age (Kurtulus & Can, 2022). In the study conducted by Göney et al., e-cigarette users were found to have a high income and smoking addiction, with the majority of them being male (Goney et al., 2019). Mutlu et al. reported a frequency of e-cigarette use of 2.1% among 2477 university students, with e-cigarette use rates being higher among previous traditional smokers (Mutlu et al., 2023).

Recent studies conducted in the United States. and some European countries showed a significant increase in the use of e-cigarettes and nicotine delivery systems among young people (Cullen et al., 2018; Perikleous et al., 2018). In the study conducted by Kapan et al., it was found that the prevalence of e-cigarette use in European societies varied between 0.2% and 27%. The proportion of those who have tried at least once or used e-cigarettes for a while varied between 5.5% and 56.6%, while the proportion of everyday users varied between 1% and 2.9%. Among traditional cigarette smokers, e-cigarette use had the highest rates, ranging from 20.4% to 83.1%. The second highest rates of e-cigarette use were reported among ex-smokers, ranging from 7% to 15%. In European countries, the prevalence of e-cigarette use was found to be higher among men, adolescents, and young adults, traditional smokers, and ex-smokers (Kapan et al., 2020).

In a study conducted by Bostean et al., the prevalence of e-cigarette use in secondary and high school students in California was found to be 12.9%. Non-tobacco users, males, and older students were found to be more likely to use e-cigarettes (Bostean et al., 2015). In a prospective study conducted by Leventhal et al., a positive relationship was reported between the initiation of using e-cigarettes and combustible tobacco products. The use of any combustible tobacco product in the last 6 and 12 months was found to be higher in e-cigarette users compared

Table 3.
Perception of Harm of Smoking According to E-cigarette Use Status

			E-cigarettes Use			
			Never Smoked	**Tried At Least Once**	**Everyday Smoker**	***p***
Are traditional cigarettes or e-cigarettes more harmful?	I don't know	*n*	322	54	7	<.001
		%	44.3	26.1	13.2	
	Traditional cigarettes	*n*	165	81	26	
		%	22.7	39.1	49.1	
	E-cigarettes	*n*	101	55	11	
		%	13.9	26.6	20.8	
	The harms are equal	*n*	139	17	9	
		%	19.1	8.2	17.0	

Table 4.
Logistic Regression Analyses Predicting Trying to Use or Being an Everyday E-cigarette User

Model 1 (Trying E-cigarette)				**Model 2 (Everyday E-cigarette user)**			
Variable	***B* (SE)**	***p***	**OR (95% CI)**	**Variable**	***B* (SE)**	***p***	**OR (95% CI)**
Sex (ref: male)	0.77 (0.31)	.015	2.16 (1.16 – 4.04)	Smoking in the family (Ref: no)	2.06 (0.54)	<.001	7.91 (2.71 – 23.10)
Cigarette use (ref: non-everyday smoker)	1.31 (0.55)	.017	3.73 (1.26 – 11.0)	E-cigarette use in the family (Ref: no)	1.54 (0.50)	.002	4.66 (1.74 – 12.49)
Constant	0.22 (0.27)	.407		Constant	−8.35 (2.2)	<.001	
Omnibus test $p = .001$ Accuracy 70.7 Step 1 Nagelkerke *R*-squared %5 Step 2 Nagelkerke *R*-squared 9.1				Omnibus test $p < .001$ Accuracy 81.3 Step 1 Nagelkerke *R*-squared 6.2% Step 2 Nagelkerke *R*-squared 14.5			

Note: B = Estimated coefficient; OR = Odds ratio.

to non-users (30.7% vs. 8.1%), and the results were similar at the 12-month follow-up (25.2% vs. 9.3%, respectively). Baseline e-cigarette use was associated with the likelihood of using any combustible tobacco product during two follow-up periods (odds ratio of 4.27 with 95% C.I. between 3.19 and 5.71) (Leventhal et al., 2015). In our cross-sectional study, a similar result was observed: a positive association between traditional tobacco use and e-cigarette use, indicating causality between traditional cigarettes and e-cigarettes, albeit weak. Young people who used e-cigarettes were exposed to nicotine, which might have long-term effects on the developing brain. In addition, since the use of tobacco products usually started during adolescence, there was a risk of nicotine dependence (World Health Organization et al., 2020). Moreover, in some settings, there was evidence that the risk of starting smoking at a later age increased at least two-fold if never-smoker young individuals had used e-cigarettes (Berry et al., 2019; Chaffee et al., 2018). In the study conducted by Bullen et al., it was emphasized that e-cigarette use led to a lower smoking cessation success, rendering its place in tobacco control uncertain (Bullen et al., 2013). In the study conducted by Primack et al., the rate of e-cigarette use in adolescents was found to be 2.3%, and among them, 61% reported having started smoking traditional cigarettes within 1 year (Primack et al., 2015). On the contrary, Wills et al. found that e-cigarette use did not cause a significant change in smoking frequency at the end of the 1-year follow-up. Among students who never used e-cigarettes at the beginning age, ethnicity, lower parental education and parental support, higher tendency to be rebellious, and perception that e-cigarettes were healthier showed association with starting to use e-cigarettes (Wills et al., 2017). In the study conducted by Barrington-Trimis et al., smoking initiation at the end of the 16-month follow-up period occurred in 40.4% of e-cigarette users and 10.5% of never-users. It was reported that e-cigarette users were 6.17 times more likely to start smoking than never-e-cigarette users (Barrington-Trimis et al., 2016). In the study conducted by Spindle et al., participants who reported that they had never smoked were followed up for one year. At the end of the first year, those who had tried e-cigarettes or were still using e-cigarettes were found to be more likely to try and smoke compared to individuals who did not use e-cigarettes. In addition, the probability of trying e-cigarettes at the end of one year was found to be increased in males and among those who had previously used marijuana (Spindle et al., 2017). In the study conducted by Miech et al., it was found that among young people who had never smoked until the 12th grade, the probability of smoking in the follow-up period increased 4.78 times in those who used e-cigarettes in this period (Miech et al., 2017). The use of e-cigarettes among teenagers and young adults in the United States tripled in recent years, and one in six high school students was reported to currently use e-cigarettes (Murthy, 2017). In the study of Yoong et al., in which 69 countries and regions were represented, including data from the last 20 years, the prevalence

Table 5.
Mediation Analysis of Nicotine Dependence, Sex, Smoking in the Family, and E-cigarette Use

Indirect and Total Effects								
				95% C.I. (a)				
Type	**Effect**	**Estimate**	**SE**	**Lower**	**Upper**	**β**	***z***	***p***
Indirect	Sex1 ⇒ Nicotine addiction ⇒ E-cigarette	0.0128	0.011	-0.008	0.034	0.016	1.156	0.248
	E-cigarette in family1 ⇒ Nicotine addiction ⇒ E-cigarette	0.0087	0.008	-0.008	0.025	0.010	1.015	0.310
	Smoke in family1 ⇒ Nicotine addiction ⇒ E-cigarette	0.0018	0.006	-0.011	0.015	0.001	0.265	0.791
	Age ⇒ Nicotine addiction ⇒ E-cigarette	-0.0014	0.001	-0.004	0.001	-0.011	-1.049	0.294
Component	Sex1 ⇒ Nicotine addiction	-0.9799	0.370	-1.705	-0.254	-0.183	-2.646	0.008
	Nicotine addiction ⇒ E-cigarette	-0.0131	0.010	-0.033	0.006	-0.089	-1.286	0.199
	E-cigarette in family1 ⇒ Nicotine addiction	-0.6690	0.404	-1.461	0.123	-0.121	-1.654	0.098
	Smoke in family1 ⇒ Nicotine addiction	-0.1390	0.512	-1.144	0.865	-0.020	-0.271	0.786
	Age ⇒ Nicotine addiction	0.1102	0.060	-0.008	0.229	0.126	1.814	0.070
Direct	Sex1 ⇒ E-cigarette	-0.0225	0.054	-0.128	0.083	-0.028	-0.416	0.677
	E-cigarette in family1 ⇒ E-cigarette	0.1708	0.058	0.055	0.285	0.210	2.915	0.004
	Smoke in family1 ⇒ E-cigarette	-0.2794	0.073	-0.424	-0.134	-0.276	-3.787	<0.001
	Age ⇒ E-cigarette	-0.0141	0.008	-0.031	0.003	-0.109	-1.600	0.110
Total	Sex1 ⇒ E-cigarette	0.0309	0.014	0.003	0.058	0.067	2.171	0.030
	E-cigarette in family1 ⇒ E-cigarette	0.1103	0.019	0.072	0.148	0.191	5.701	<0.001
	Smoke in family1 ⇒ E-cigarette	-0.0035	0.015	-0.033	0.026	-0.007	-0.232	0.816
	Age ⇒ E-cigarette	-0.0103	0.002	-0.015	-0.005	-0.122	-3.958	<0.001

Note: Confidence intervals (CIs) were computed with the Standard (Delta) Method; betas (β) were completely standardized effect sizes, and categorical independent variables (factors) were represented by contrast indicators. For variable "Sex," the contrasts were: Sex1 = Female – Male. For variable "E-cigarette use in the family," the contrasts were: E-cigarette in family1 = No – Yes. For variable "Smoking in the family," the contrasts are: Smoking in family1 = No – Yes.

of e-cigarette use at any time in children and adolescents aged between 8 and 20 years was reported as 17.2%, while the current use rate was reported as 7.8%. The highest prevalence of e-cigarette use was found in geographical regions with high-income levels (Yoong et al., 2021). In our study, e-cigarette use rates were found to be higher in young people living in families with high-income levels too, suggesting that increased income might be a factor facilitating access to e-cigarettes. In the study conducted by Gorukanti et al., it was shown that young people who used cigarettes and/or e-cigarettes had more positive attitudes towards e-cigarettes than non-users. This study showed that young people were aware of some risks of e-cigarettes, but many of them had misperceptions and more positive attitudes towards e-cigarettes than cigarettes (Gorukanti et al., 2017). In our study, there was a perception that e-cigarettes were less harmful in the majority of young people and the perception that traditional cigarettes were more harmful was higher among e-cigarette users. These results showed the need to explain to young people the content, and risks and that e-cigarettes were not a kind of smoking cessation method. The studies conducted showed a significant variability in the prevalence of e-cigarette use among children and adolescents according to the income status of the countries. The possible reason for these differences might be the differences in legal regulations (like differences in market accessibility and control systems). In Türkiye, legal regulations cover e-cigarette tobacco products as well as tobacco and tobacco products, and it is forbidden to sell them in electronic media such as the Internet and to transport them by cargo. In addition, the Ministry of Health considers e-cigarette cartridges as medicines and e-cigarette devices as medical devices due to the high nicotine content. Therefore, they are not subject to free trade. Despite all these measures, unfortunately, there is e-cigarette use in Türkiye as a result of sales via the Internet or other illegal means and the use is gradually increasing (Turan et al., 2021).

The fact that our study was conducted online (high sample variation), and collected based on self-reporting declaration (informational bias), are limitation of our study. Therefore, our results should be interpreted with caution regarding their generalizability.

The results of our study indicate that the prevalence of e-cigarettes among young people is increasing compared to the few studies conducted in Türkiye. One out of every four young people has tried e-cigarettes, and 5.4% use them every day. It is evident that there is a lack of information about the harms and addiction related to e-cigarettes. It was found that male sex and being a traditional cigarette smoker were important predictors of trying e-cigarettes, and the presence of traditional cigarette or e-cigarette users in the family and male sex were important predictors of being an everyday smoker. The most important sources of access to e-cigarettes are tobacco shops and the Internet. E-cigarettes seem to be an important public health problem among young people. We recommend that training on the harms of e-cigarettes should be organized for young people and adolescents, inspections on the internet and tobacco shops should be tightened, and the fight against tobacco should be continued in the strictest way, considering the relationship between traditional tobacco use and e-cigarette use.

Ethics Committee Approval: This study was approved by the Non-interventional Clinical Research Ethics Committee of Cukurova University (approval number: 140/30; date: January 4th, 2024).

Informed Consent: Written informed consent was obtained from the participants who agreed to take part in the study.

Peer-review: Externally peer-reviewed.

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