

Journal of Substance Use

ISSN: 1465-9891 (Print) 1475-9942 (Online) Journal homepage: www.tandfonline.com/journals/ijsu20

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To cite this article: Gunay Kirkim, Esin Ergönül, Gülser Kılınç, Ayşe Pınar Erçetin & Merve Aliye Akyol (14 Jun 2026): Attitudes regarding cigarette smoking addiction and related factors in healthcare students: a cross-sectional study, Journal of Substance Use, DOI: 10.1080/14659891.2026.2657860

To link to this article: https://doi.org/10.1080/14659891.2026.2657860

Published online: 14 Jun 2026.

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JOURNAL OF SUBSTANCE USE
https://doi.org/10.1080/14659891.2026.2657860

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Attitudes regarding cigarette smoking addiction and related factors in healthcare students: a cross-sectional study

Gunay Kirkim[a], Esin Ergönül[b], Gülser Kılınç[c], Ayşe Pınar Erçetin[d], and Merve Aliye Akyol[e]

[a]Program of Audiometry, Faculty of Health Sciences, Izmir Tinaztepe University, Izmir, Türkiye; [b]Program of Medical Documentation and Secretariat, Vocational School of Health Services, Dokuz Eylul University, Izmir, Türkiye; [c]Department of Pediatric Dentistry, Division of Clinical Sciences, Faculty of Dentistry, Dokuz Eylul University, Izmir, Türkiye; [d]Institute of Health Sciences, Dokuz Eylul University, Izmir, Türkiye; [e]Department of Internal Medicine Nursing, Faculty of Nursing, Dokuz Eylul University, Izmir, Türkiye

ABSTRACT

Background: Cigarette smoking is a significant public health concern with extensive implications for future health outcomes. This study aimed to examine attitudes regarding cigarette smoking addiction and to identify factors associated with these attitudes.

Methods: This cross-sectional study was conducted with students of vocational school of healthcare (n=389) in Turkiye. Data was collected with the descriptive characteristics form, The Fagerstrom test for nicotine dependence, attitudes towards smoking addiction scale (ASAS), and Live Free-Tobacco Free smoking compliance survey. The data were analyzed using descriptive statistics and multiple binary logistic regression.

Results: ASAS mean scores of the students were 49.64±12.87 (range 28-88). The multiple binary logistic regression analysis revealed that age (β = –.635, OR = .53), sex (female vs male β = –1.190, OR = 0.30), and attitudes regarding the implementation of smoke-free airspaces (β = 0.125, OR = 1.13) were significant predictors of attitudes regarding smoking addiction. The model was statistically significant (Omnibus Test of Model Coefficients = 20.93, $p < .001$), and explained 24.5% of the variance (Nagelkerke $R^2 = 0.245$).

Conclusion: Students' attitudes regarding smoking addiction were significantly associated with age, sex and their perceptions of smoke-free airspace implementation. These insights are crucial for developing targeted smoking cessation interventions that consider age- and sex-specific differences in attitudes and behaviors.

ARTICLE HISTORY
Received 20 November 2024
Accepted 27 March 2026

KEYWORDS
Attitudes; cigarette; students; smoking cessation

Introduction

Cigarette smoking remains a significant public health concern worldwide, especially among the youth (Centers for Disease Control and Prevention, 2024; Chirtkiatsakul et al., 2022; Pierce et al., 2018; World Health Organization, 2023). Smoking is one of the most fatal forms of tobacco use, which causes 8 million deaths globally (World Health Organization, 2023). In Turkiye, more than 100,000 people die due to smoking or diseases caused by tobacco use (2018). Tobacco products, particularly cigarettes, are commonly used addictive substances in Turkiye (Unver, 2025) as well as globally. They are among the leading causes of preventable diseases such as cancer, cardiovascular diseases, chronic obstructive pulmonary disease, and premature death.

The initiation of smoking typically occurs during adolescence, with studies indicating that many individuals begin smoking around the age of 13 (U.S. Department of Health and Human Services, 2012). This early onset is significant as it not only increases the likelihood of developing a long-term addiction but also establishes a sustained customer base for tobacco companies (Bektas et al., 2014). Research on university students' smoking habits in Turkey has reported rates ranging from 27.9% to 35.9% (Avci et al., 2024; Celikel et al., 2009; Fakili et al., 2024; Karadogan et al., 2018; Kilinc et al., 2016; Oncel et al., 2011; Ozkaya & Arica, 2019). There is a noted increase in smoking rates among university students in developing countries (Avci et al., 2024; Karadogan et al., 2018; Oncel et al., 2011). Understanding the factors that contribute to smoking initiation and continuation among young adults is essential for developing effective prevention strategies.

The formation of attitudes regarding cigarette smoking addiction is critical, as these attitudes can significantly influence smoking initiation and continuation. The perception of addiction to cigarettes, primarily driven by nicotine, plays a crucial role in how individuals understand their smoking habits and the challenges associated with quitting. Wang et al. (2018) demonstrated that students' perspectives on the harms of smoking play a decisive role in their approach to cigarettes. Research indicates that many smokers do not perceive themselves as addicted, despite experiencing withdrawal symptoms and cravings, which are hallmark signs of addiction (Berg et al., 2013; Loud et al., 2022). This disconnect between self-perception and the physiological realities of nicotine dependence complicates cessation efforts and highlights the need for effective public health messaging that addresses these misconceptions (Kuschner et al., 2011; Lazard et al., 2018). Furthermore, qualitative research has revealed that many young smokers hold optimistic beliefs about their ability to quit, often

CONTACT Gunay Kirkim gunaykirkim@gmail.com
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underestimating the addictive nature of smoking (Donaldson et al., 2017). This optimism can lead to a lack of urgency in seeking cessation support, as individuals may not recognize the severity of their addiction until they attempt to quit and face significant challenges. The stigma associated with smoking and addiction also plays a role in shaping attitudes; smokers may experience shame and isolation, which can hinder their willingness to seek help (Pfeffer et al., 2018).

Smoke-Free Zone (SFZ) policies have been implemented in various jurisdictions as a means to protect individuals from the harms of tobacco smoke also secondhand smoke exposure and to reduce overall consumption rates. The implementation of SFZ policies has been shown to lead to a decrease in smoking prevalence and developing nicotine dependence, particularly among youth (Karakas et al., 2024; Lazard et al., 2018; Thomas et al., 2013, Wang et al., 2018). Research indicates that when young individuals are less exposed to smoking behaviors in their environment, they are less likely to initiate tobacco use (Kuschner et al., 2011).

Since 2008, Turkey has made notable advancements in its efforts to combat tobacco use, driven by comprehensive policy frameworks and public health initiatives. The ratification of the World Health Organization Framework Convention on Tobacco Control (WHO FCTC) in 2004 laid the groundwork for Turkey's robust tobacco control measures, which culminated in the enactment of a law banning smoking in all indoor public places in 2008. This legislation was a significant milestone, as it positioned Turkey as a leader in implementing the MPOWER strategies – Monitor, Protect, Offer, Warn, Enforce, and Raise-at the highest level by 2013 (Baltaci et al., 2024; World Health Organization, 2021). The National Tobacco Control Strategy Document and Action Plan of 2018 further exemplified Turkiye's commitment to reducing tobacco use. This plan aimed to enhance public awareness regarding the harms of tobacco, increase smoking cessation rates to over 50%, and eliminate all forms of tobacco advertising (2018).

The adoption and implementation of the WHO's MPOWER policies within university settings not only contribute to the overall reduction of tobacco use but also enhance the university's role as a leader in public health advocacy. This study aimed to examine attitudes regarding cigarette smoking addiction and to identify factors associated with these attitudes among healthcare students at a university where the MPOWER criteria are implemented. Additionally, we sought to understand their perspectives on the SFZ practices, which are a part of the WHO's MPOWER initiatives, and to explore how the gathered information can be utilized to reduce tobacco use among the youth.

Materials and methods

Study design

A cross-sectional and descriptive study design was utilized. Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist was used during the reporting.

Study population and sample

A 2-year program is required for undergraduate vocational school of healthcare education in Turkiye. There are nine programs in the vocational school of healthcare: (1) medical documentation and secretariat, (2) medical imaging techniques, (3) medical laboratory techniques, (4) radiotherapy, (5) first and emergency aid technician (6) anesthesia, (7) audiometry, (8) nuclear medicine techniques, (9) mouth and dental health. The study sample frame was comprised of students enrolled in a state university during 2022–2023 (n = 912). Data collection was carried out between May and June 2023. The study's sample comprised 389 students (42.65%). A post-hoc power analysis was performed using the G*Power 3.1.9.4 software. Based on a medium effect size ($f^2 = 0.15$), a significance level of 0.05, a sample size of 389, and six predictors included in the model, the statistical power of the study was calculated to be 99.9%. A purposive sampling method was used. Students aged 18 years and more who consent to participate were included in this study. The study excluded students who were repeating a semester or were not Turkish nationals. A descriptive characteristics form and three different scales assessing students' nicotine dependence, attitude toward smoking addiction and smoke-free zone.

Data collection tools

Data were collected using the descriptive characteristics form, the Fagerstrom Test for Nicotine Dependence (FTND), Attitudes Toward Smoking Addiction Scale (ASAS), and Live Free-Tobacco Free Smoking Compliance Survey.

Descriptive characteristics form

This form composed of closed-ended questions about students' descriptive characteristics, such as age, sex, academic year, academic program, smoking status etc.

The Fagerstrom test for nicotine dependence (FTND)

The Fagerstrom Test for Nicotine Dependence (FTND), which was developed in 1989 by Fagerström (Heatherton et al., 1991), is a widely utilized instrument designed to assess the degree of physical dependence on nicotine among smokers. The FTND consists of six items that evaluate various aspects of smoking behavior, including the intensity and frequency of smoking, as well as the difficulty in refraining from smoking in specific situations. The Turkish version of this six-item scale was validated and its reliability confirmed in 2004 by Uysal et al., with a reported Cronbach's Alpha coefficient of 0.56. Possible scores range between 0 and 10. A higher score indicates a greater dependence on cigarettes (Uysal et al., 2004).

Attitudes toward smoking addiction scale (ASAS)

The 28-item scale, developed by Sagar & Gencdogan in 2014, is designed to measure individuals' attitudes regarding smoking and nicotine dependence (Sagar & Gencdogan, 2014). Understanding these attitudes is essential for developing effective smoking cessation programs and interventions. This 4-point Likert type scale comprised seven subscales: advantages of smoking (items 1, 2, 3, 4, 5, 6, 7), profile of smokers

(items 8, 9, 10, 11, 12), the view on smoking (items 13, 14, 15, 16), the harms of smoking (items 17, 18, 19, 20), the moral and religious view on smoking (items 21, 22, 23), the myths about smoking (items 24, 25, 26), the positive view on smoking (items 27, 28). As the scores obtained from the advantages of smoking subscale of the scale decrease, the attitude toward the disadvantages of smoking increases, and as the scores obtained from the other subscales increase, the attitude toward the harms of smoking also increases. The lowest score that can be obtained from the scale is 28, the highest score is 112.

Live free-tobacco free smoking compliance survey

Live free-tobacco free smoking compliance survey, which was developed in 2009 by Ferré et al. is used to examine the attitudes of individuals toward smoke-free airspace implementation (Ferré et al., 2009). The Turkish version of this 12-item scale was validated and its reliability confirmed in 2011 by Banoglu, with a reported Cronbach's Alpha coefficient of 0.87. The scale is a 5-point Likert type. Items 3, 4, 9, and 12 are reverse-scored items (Banoglu 2011). Possible scores range between 12 and 60. Higher scores indicate more positive attitudes, while lower scores indicate more negative attitudes regarding restriction.

Data analysis

The data of the study were analyzed using the IBM SPSS Statistics 25.0 software package. The normality test, including skewness, kurtosis, and histograms, were employed to assess the normal distribution of numerical variable scores. Descriptive statistics and percentages were employed to assess the students' descriptive characteristics.

The multiple binary logistic regression analysis was performed to identify the independent factors associated with attitudes regarding cigarette smoking addiction; including age, sex, parents' smoking status, nicotine dependence, and attitudes toward smoke-free airspace implementation scores. The total score of the Attitudes Towards Smoking Addiction Scale (ASAS) ranges from 28 to 112, with higher scores indicating a more negative attitude toward smoking addiction. For the purpose of the regression analysis and to improve interpretability from a public health perspective, the total ASAS score was transformed into a dichotomous variable using the median value (46) as the cutoff point, as there was no predefined cutoff for the scale. Participants scoring above the median were classified as having a negative attitude toward smoking addiction, while those scoring at or below the median were classified as having a more favorable attitude toward smoking. The analysis employed the "enter" method, whereby all selected variables were entered into the model simultaneously. The multiple binary logistic regression was conducted to estimate odds ratios (ORs) and corresponding 95% confidence intervals (CIs) for the predictive variables. Prior to the analysis, the assumptions of normality and multicollinearity were evaluated. Variables were retained in the model based on multicollinearity diagnostics, which demonstrated acceptable levels – specifically, a variance inflation factor (VIF) below 10, and a tolerance value greater than 0.20. The significance level was established at less than 0.05.

Ethical considerations

The research adhered to the principles set out in the Helsinki Declaration. Approval from one vocational school where this research was conducted, and the university's ethics committee (decision number: 2023/14–24, date: May 3, 2023) was received. The students approved an informed consent form for their participation in this study. Permission to utilize the measures was granted by the authors who had conducted the validity and reliability assessments granted.

Results

A total of 389 students participated in the study (response rate: 42.65%) out of 912 students in the study sample frame. The mean age of the students was 20.27 ± 1.52, 74.0% of them were female and 50.6% were first-year students. 31.9% were smokers, 62.5% reported their parents were smokers, and 91.0% reported their close friends were smokers (Table 1).

The FTND mean score of the students was 3.41 ± 2.68 (min: 0 max: 10). This result shows that nicotine dependences condition is moderate. Students' attitudes regarding smoking and nicotine dependence (ASAS) were 49.64 ± 12.87 (range 28–88). Advantages of smoking were 8.81 ± 2.42 (range 7–24), profile of smokers were 8.34 ± 3.84 (range 5–20), view on smoking 8.21 ± 3.55 (range 4–16), harms of smoking 10.64 ± 3.68 (range 4–16), moral and religious view on smoking 4.56 ± 2.26 (range 3–12), myths about smoking 6.25 ± 1.89 (range 3–12), positive view on smoking 2.80 ± 1.09 (range 2–8). This result shows that students' attitudes regarding cigarette smoking addiction subscales is slightly moderate. Attitudes of students toward smoke-free airspace implementation were 36.46 ± 9.38 (min: 12 max: 56) (Table 2).

Table 3 presents the results of the multiple binary logistic regression analysis examining factors associated with attitudes toward cigarette smoking addiction. The overall model was statistically significant (Omnibus test: $\chi^2 = 20.93$, $p < .001$), demonstrated good fit to the data (Hosmer–Lemeshow test: $\chi^2 = 8.69$, $p = .370$), and explained 24.5% of the variance in attitudes toward smoking addiction (Nagelkerke $R^2 = .245$). Increasing age was associated with significantly lower odds of exhibiting negative attitudes toward smoking addiction (OR = .53, 95% CI: .31–.90, $p < .05$). Sex was also a significant predictor, with female students showing higher odds of negative attitudes toward smoking addiction compared with males (OR = .30, 95% CI: .10–.90, $p < .05$). Higher scores on attitudes regarding smoke-free airspace implementation were significantly associated with increased odds of negative attitudes toward smoking addiction (OR = 1.13, 95% CI: 1.06–1.22, $p < .001$). Parents' smoking status and nicotine dependence score were not significantly associated with attitudes toward smoking addiction in the multivariable model ($p > .05$).

Table 1. Descriptive characteristics of the students (n = 389).

	n	%
Sex		
Female	288	74.0
Male	101	26.0
Academic year		
1st year	197	50.6
2nd year	192	49.4
Programs		
Medical documentation and secretariat	22	5.7
Medical imaging techniques	19	4.9
Medical laboratory techniques	49	12.6
Radiotherapy	87	22.4
First and emergency aid technician	48	12.3
Anesthesia	51	13.1
Audiometry	30	7.7
Nuclear medicine techniques	65	16.7
Mouth and dental health	18	4.6
Cigarette smoking status		
Yes	124	31.9
No	265	68.1
Parents smoking status (at least one)		
Yes	243	62.5
No	146	37.5
Close friends' smoking status		
Yes	354	91.0
No	35	9.0
	X ± SD	**min-max**
Age	20.27 ± 1.52	18–32
Smoking duration (months) (n = 124)	45.45 ± 31.72	1–132

SD: Standard deviation, min: minimum, max:maximum.

Table 2. Average scores of the students in the ASAS scale (n = 389).

	X±SD	min–max
Advantages of smoking	8.81 ± 2.42	7–24
Profile of smokers	8.34 ± 3.84	5–20
View on smoking	8.21 ± 3.55	4–16
Harms of smoking	10.64 ± 3.68	4–16
Moral and religious view on smoking	4.56 ± 2.26	3–12
Myths about smoking	6.25 ± 1.89	3–12
Positive view on smoking	2.80 ± 1.09	2–8
ASAS Total	49.64 ± 12.87	28–88

ASAS: Attitudes toward Smoking Addiction Scale SD: Standard deviation, min: minimum, max:maximum.

Table 3. Factors affecting attitudes regarding smoking addiction of students: multiple binary logistic regression analysis (n = 389).

	Beta		Wald	OR	p	95% CI	
Variables		S. E.				Lower	Upper
Age	−.635	.267	5.646	.530	**<0.05**	.314	.895
Sex male/female (reference: female)	−1.190	.553	4.625	.304	**<0.05**	.103	.900
Parents' smoking status (no/yes reference: yes)	.303	.591	.263	1.354	NS	.425	4.310
Nicotine dependence	.157	.102	2.353	1.170	NS	.957	1.429
Attitudes regarding smoke-free airspace implementation	.125	.036	12.137	1.133	**<.001**	1.056	1.216
Constant	7.515	5.206	2.084	1835. 552	.149		

Omnibus Test of Model Coefficients : 20.926, p < .001.
Hosmer and Lemeshow test: x2:8.685, p: 0.370.
Nagelkerke R2: .245.
NS: Not Significant, B: Beta-Regression coefficient, S.E.: Standart Error, Wald: Wald chi-square test for significance, OR: Odds Ratio, CI: Confidence Interval for the OR, *the bold values highlight the "statistically significant" p values (i.e., p & lt; 0.05).

Discussion

Tobacco products, particularly cigarettes, are a significant public health concern in Turkiye and globally, contributing to a range of preventable diseases, such as cancer, cardiovascular diseases, and chronic obstructive pulmonary disease (COPD) (World Health Organization, 2023). The prevalence of cigarette use in Turkiye is alarming, with reports indicating that approximately 47% of the population has used cigarette at some point in their lives, and 31% reported use in the past month (Levent et al., 2023). This recent study indicates that cigarette use is notably prevalent (31.9%) among university students in Turkiye. The finding that prevalence of our

students use cigarette does not differ from other studies in the literature (Celikel et al., 2009; Karadogan et al., 2018; Karakas et al., 2024; Kilinc et al., 2016; Oncel et al., 2011; Zaheri et al. (2022). However, it is concerning that this rate is very high among individuals who are educated in the health field (Celikel et al., 2009; Ennett et al., 2006; Karadogan et al., 2018; Kilinc et al., 2016; Oncel et al., 2011). This suggests that smoking is a significant concern in the context of tobacco use among university students.

The findings of this study indicated that students' attitudes regarding cigarette smoking addiction and their subscales are moderate. The attitudes of university students regarding cigarette smoking addiction are generally characterized as moderately positive, reflecting a nuanced understanding of the implications of smoking. Research indicates that many students hold beliefs that downplay the addictive nature of cigarettes, which can significantly influence their smoking behaviors and perceptions of addiction (Al-Haqwi et al., 2010; Jradi & Alshehri, 2014). Such attitudes may contribute to a normalization of smoking behaviors among peers, as students may underestimate the risks associated with tobacco use.

Nicotine dependence among university students also emerges as a critical factor influencing smoking behaviors. This recent study indicates that the FTND mean score of the students was 3.41 ± 2.68 (min: 0 max: 10). Smoking behavior among adolescents can start as a light and temporary habit and can lead to a real addiction (Celikel et al., 2009). The level of nicotine dependence is rapidly increasing among young people and may pose serious risks to their future health (Karakas et al., 2024; Oncel et al., 2011). This variability underscores the need for targeted interventions that address the levels of dependence within this demographic.

The implementation of smoke-free airspace policies in healthcare settings, particularly in universities, has garnered significant attention due to its implications for public health and the attitudes of healthcare students. Understanding these attitudes is crucial for the successful adoption of such policies, as they can influence compliance and the overall effectiveness of smoke-free initiatives. In this study, attitudes of students toward smoke-free airspace implementation were 36.46 ± 9.38 (min: 12 max: 56). Research indicates that healthcare students generally support smoke-free policies, recognizing the health benefits associated with reducing exposure to secondhand smoke. For instance, a study conducted among nursing students revealed that a substantial majority favored smoke-free environments, especially in outdoor areas of university campuses (Fu Balboa et al., 2023). This support is often rooted in their future roles as healthcare providers, where they are expected to advocate for public health and patient well-being (Bommelé et al., 2020). The positive attitudes toward smoke-free policies among healthcare students can be attributed to their education and awareness of the adverse health effects of smoking and secondhand smoke.

This study examined factors associated with attitudes toward cigarette smoking addiction among vocational school healthcare students and identified age, sex, and attitudes regarding smoke-free airspace implementation as significant independent predictors. The findings highlight the multifaceted nature of smoking-related attitudes and underscore the importance of both individual characteristics and environmental perceptions in shaping students' views on smoking addiction. The findings indicate that an age-related pattern in attitudes regarding smoking addiction, whereby increasing age was associated with a meaningful change in the odds of holding negative attitudes regarding smoking addiction (OR = .53, 95% CI = .31–.90). In this context, younger students demonstrated more negative attitudes regarding smoking addiction, a finding that aligns with previous research suggesting that younger individuals, particularly adolescents, are more receptive to anti-smoking messages. Research demonstrates that adolescents with negative attitudes toward smoking are significantly less likely to engage in smoking behaviors compared to their peers with positive attitudes. This correlation suggests that negative attitudes serve as a protective factor against smoking (Suwanwong et al., 2021). This finding may reflect greater exposure of younger cohorts to contemporary tobacco control policies, public health campaigns, and anti-smoking messages, which increasingly emphasize the health risks of smoking and nicotine dependence. As age increased, the likelihood of holding negative attitudes toward smoking addiction decreased, suggesting that sustained and age-appropriate educational efforts are needed throughout the academic period to reinforce awareness of smoking-related harms.

Female students were more likely to hold negative attitudes regarding smoking addiction compared with male students, as indicated by the lower odds observed among males (OR = .30, 95% CI = .10–.90). Research consistently indicates that sex plays a significant role in shaping attitudes toward smoking, often resulting in distinct patterns between male and female students. For instance, Mohmad et al. found a significant interaction between smoking attitudes and sex, revealing that women are generally more likely to hold negative attitudes toward smoking compared to their male counterparts (Mohmad et al., 2022). Furthermore, Khatatbeh et al. emphasize that socio-cultural factors may contribute to these sex differences, with women often facing more societal disapproval regarding smoking, which can shape their attitudes and behaviors (Khatatbeh et al., 2019). These insights are crucial for developing targeted smoking cessation interventions that consider sex-specific attitudes and behaviors.

Students' attitudes regarding smoking addiction were significantly associated with attitudes toward smoke-free airspace implementation, with more positive perceptions of smoke-free airspace implementation corresponding to a meaningful change in the odds of holding negative attitudes regarding smoking addiction (OR = 1.13, 95% CI = 1.06–1.22). The relationship between students' attitudes toward smoking dependence and their perceptions of smoke-free airspace implementation is a critical area of research, particularly in the context of public health initiatives aimed at reducing tobacco use among young adults. Evidence suggests that students generally exhibit positive attitudes toward smoke-free policies, which can significantly influence their smoking behaviors and dependence. Research conducted by Khan et al. (2016) highlights that students at a South African university demonstrated a high level of awareness regarding the harms of smoking and expressed strong support for smoking regulations, advocating for total restrictions in indoor public spaces

(Khan et al., 2016). This indicates that positive attitudes toward smoke-free environments can serve as a protective factor against smoking dependence.

In contrast, parents' smoking status and nicotine dependence were not significantly associated with attitudes toward smoking addiction in the multivariable model. This may suggest that, among healthcare students, formal education and institutional policies exert a stronger influence on smoking-related attitudes than familial smoking behaviors or individual levels of nicotine dependence. As future healthcare professionals, these students may be particularly responsive to public health messaging and smoke-free regulations. Overall, the findings emphasize the importance of integrating comprehensive smoke-free policies with targeted educational interventions in university settings. Programs that are tailored to age and sex differences and that actively promote smoke-free environments may be especially effective in fostering negative attitudes toward smoking addiction and supporting tobacco control efforts among young adults.

Strengths and limitations

The strength of this study lies in its examination of the vocational healthcare students' attitudes regarding smoking addiction in Turkiye and its potential to guide instructional strategies for curriculum enhancement. Nonetheless, this study has certain limitations. The investigation was conducted at a single center, hence restricting the generalizability of the findings. Its findings might not be directly applicable to other student populations or different age groups. Second, the study employed a cross-sectional design, where the anteriority of risk factors (e.g., cigarette smoking use) could not be definitively established. A cross-sectional design only assesses the current state, and therefore, causal relationships cannot be conclusively determined. In light of this limitation, future research should utilize cohort designs to examine the longitudinal effects of cigarette smoking use on risk factors over time. Thirdly, as the findings are based on students' self-reports, there might be issues related to social desirability bias or inaccurate recollection. Lastly, this study did not examine psychological factors such as anxiety, depression and stress that could affect students' attitudes regarding smoking addiction.

Conclusions

In conclusion, students' attitudes regarding smoking addiction were significantly associated with age, sex and their perceptions of smoke-free airspace implementation. These findings highlight that supportive attitude toward smoke-free policies, combined with effective educational interventions, can significantly reduce smoking prevalence and dependence among students. This underscores the importance of continued advocacy for smoke-free environments and comprehensive educational programs in universities to combat smoking among young adults. These insights are crucial for developing targeted smoking cessation interventions that consider age- and sex-specific attitudes and behaviors. Such tailored interventions may enhance the effectiveness of public health efforts to curb smoking and support healthier lifestyle choices among university students.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Author contributions

CRediT: **Günay Kirkim**: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing; **Esin Ergönül**: Data curation, Formal analysis, Validation, Writing – original draft, Writing – review & editing; **Gülser Kilinç**: Conceptualization, Data curation, Investigation, Writing – original draft, Writing – review & editing; **Ayşe Pınar Erçetin**: Conceptualization, Data curation, Formal analysis, Investigation, Visualization, Writing – review & editing; **Merve Aliye Akyol**: Conceptualization, Formal analysis, Methodology, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing.

Data availability statement

Data and supplementary material related to this article can be obtained from the corresponding author upon request.

Ethical considerations

Approval from one vocational school where this research was conducted, and the university's ethics committee (number: 2023/14–24, date: May 3 2023) was received. The students approved an informed consent form for their participation in this study.

Informed consent

Informed consent was obtained from all students included in this study.

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