



# Evaluation of Knowledge, Attitudes and Behaviors of Physicians Working in a University Hospital About Smoking Cessation Treatment

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## Abstract

**Aim:** Tobacco use is a preventable cause of morbidity and mortality and a global public health problem. It is clear that physicians need to increase their awareness, increase their level of knowledge, and change their negative attitudes and behaviours about smoking, which is a risk factor for many preventable diseases in the world. This study was planned to evaluate the knowledge, attitudes and behaviours of physicians working in a university hospital regarding smoking cessation treatments.

**Material and Method:** This study was a descriptive and cross-sectional study. The study included 203 physicians. A printed questionnaire form was used to collect data. Nicotine dependence of the participants who smoked cigarettes was evaluated by Fagerström nicotine dependence test (FNBT). Data were analyzed using SPSS 23.0 statistical package form. A value of  $p < 0.05$  was accepted for statistical significance.

**Results:** The mean number of correct answers given by the participants to a total of 20 questions measuring the level of knowledge about smoking cessation counselling was  $13.41 \pm 3.80$ . Among the physicians, 14.3% ( $n=29$ ) had received smoking cessation counselling training and 85.7% ( $n=174$ ) had not received any training. When the knowledge scores of the participants were analyzed according to the status of receiving smoking cessation counselling training, it was seen that the mean correct answers given to the knowledge questions by the participants who received training were significantly higher ( $p=0.023$ ).

**Conclusion:** In addition to receiving smoking cessation counselling training, participants' having more time spent in medical education, such as being a specialist and lecturer, was found to be associated with higher awareness of smoking and more positive attitudes and behaviours regarding smoking cessation treatments. Increasing the number and quality of trainings related to smoking and smoking cessation counselling will make significant contributions to the awareness, knowledge, attitudes and behaviours of physicians on this issue.

**Keywords:** Smoking, smoking cessation, physicians

## INTRODUCTION

Tobacco usage stands as a pivotal risk element for chronic non-communicable ailments and is a preventable contributor to morbidity and mortality (1). Its pervasive influence is felt globally, with smoking and addiction having claimed the lives of approximately 100 million individuals in the 20th century, and a projected toll of 1 billion in the 21st century. Smoking significantly escalates the risk for various ailments like cardiovascular diseases, cancer, chronic respiratory conditions, and diabetes, which collectively stand as leading causes of global mortality (2).

According to the World Health Organization (WHO), over 1.1 billion people were tobacco users in 2015, accounting

for 15% of the world's populace. Annually, nearly 7 million individuals succumb to smoking or tobacco-related usage, including passive exposure. This figure is anticipated to rise to 8.5 million by 2030 (1). Notably, China, Indonesia, and India rank highest in tobacco prevalence globally, with Türkiye featuring as the tenth country with approximately 18 million tobacco users. The combined consumption within these top 10 nations, including Türkiye, constitutes two-thirds of global tobacco usage (3).

In Türkiye, 19.2 million individuals (31.6%) smoke cigarettes or other tobacco products, with a smoking rate of 44.1% among men and 19.2% among women. On average, smokers consume 18 cigarettes daily, with approximately 15% initiating smoking before the age of 15. Among those

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who began smoking before 18, the average initiation age stands at 17 (4).

Physicians and healthcare professionals bear significant duties in disease prevention and health enhancement. A simple yet effective approach within tobacco control entails inquiring about smoking status and advising cessation to patients. Studies indicate that physicians can achieve 5-10% smoking cessation rates through such interventions alone (5,6).

Beyond serving as role models for a smoke-free lifestyle, physicians play a crucial role in combating smoking by questioning patients about their smoking habits, advising cessation, and providing information and guidance on appropriate cessation methods. Research underscores the need to elevate physicians' awareness and knowledge regarding smoking, particularly among primary care providers who cater to diverse health needs within society. It is imperative for physicians to enhance their awareness, knowledge, and attitudes towards smoking, a modifiable risk factor for numerous preventable diseases worldwide. Especially in primary care medicine, there is a need for a community-oriented but also patient-centred and long-term medical approach that focuses on addiction and supports a healthy lifestyle at a time of serious health problems. This study was planned to evaluate the knowledge, attitudes and behaviors of physicians working in a university hospital regarding smoking cessation treatments.

## MATERIAL AND METHOD

This study is a descriptive and cross-sectional study. The study included 203 physicians who agreed to participate. A printed questionnaire form was used to collect data. This questionnaire was based on the literature. The questionnaire form was delivered to all participants by hand.

The questionnaire was determined by reviewing similar previous studies and finalized by pre-application in a small group of residents, specialists and faculty members before starting our study. In the questionnaire, questions were asked to measure the sociodemographic characteristics of the participants, smoking status, smoking cessation counseling training, awareness of the smoking cessation outpatient clinic in our hospital, attitudes of physicians towards patients in smoking cessation treatment, and behaviors related to smoking addiction and smoking cessation treatments. In addition, the Fagerström nicotine dependence test consisting of 6 questions was administered to measure the addiction level of physicians who smoked. The Turkish validity of the Fagerström nicotine dependence test was studied by Uysal et al. and found to be moderately reliable (7). The Fagerström nicotine dependence test (FNBT) consists of 6 questions and points are given according to the answers given to the questions. Maximum score is 10 and minimum score is 0. 0-2 points: Very little dependent; 3-4 points: Slightly dependent; 5 points: Moderately dependent; 6-7 points: Highly dependent; 8-10 points: Very highly dependent.

### Sample Size Analyses

When the studies were analysed, a power analysis was

performed by taking into account the knowledge of smoking cessation treatments, which is one of the main results of the study. In the sample calculation using Russ Lenth's Java applet (Piface), a similar study was taken into consideration and the sample size was calculated taking into account Type I error (0.05), targeted power (0.80) and it was concluded that there should be at least 196 people. However, 203 people were reached in total.

### Statistical Analysis

In the descriptive statistics of the study, numerical data were expressed as mean and standard deviation or median (minimum-maximum) according to normality. Categorical data were expressed as number and percentage. The distribution of numerical data was analyzed by Kolmogorov-Smirnov Z Test and histogram graphs. Numerical data in two groups were analyzed by Student's t test. Numerical data between more than two independent groups were analyzed by One Way Anova and Kruskal Wallis tests. Tamhane test was used for post hoc analysis. Chi-Square test was used to analyze categorical variables. P significance value was accepted as <0.05. SPSS 23.0 package program was used in the analyses.

### Ethical Aspects of the Research

The ethics committee approval of this study was obtained with the decision number 2022/209 dated 05.12.2022 and numbered 2022/209 of Düzce University Non-Interventional Health Research Ethics Committee.

## RESULTS

A total of 203 physicians took part in the study. Among them, 47.8% (n=97) were female, while 52.2% (n=106) were male. Regarding marital status, 49.8% (n=101) were married, and 50.2% (n=102) were single.

Analyzing the general branches of the participants, 4.9% (n=10) were in preclinical fields, 68.5% (n=139) were internal medicine specialists, and 26.6% (n=54) were surgical physicians.

In terms of professional roles, 80.8% (n=164) were research assistants, 2% (n=4) were specialists, and 17.2% (n=35) were faculty members (Table 1).

**Table 1. Sociodemographic data of the participants**

		n	%
Gender	Female	97	47.8
	Male	106	52.2
Marital status	Married	101	49.8
	Single	102	50.2
General branch	Preclinical medicine	10	4.9
	Internal medicine	139	68.5
	Surgical medicine	54	26.6
Title	Research assistant	164	80.8
	Specialist	4	2.0
	Academic staff	35	17.2

The mean age of the participants was 31.34±6.87 (minimum=24, maximum=61). There was a significant

difference between age and smoking status of physicians ( $p=0.002$ ). It was observed that those who had never smoked had a lower mean age. Post-hoc analysis showed no significant age difference between the groups ( $p>0.05$ ). The median duration of the participants' medical practice was 6.50 (minimum=0.5, maximum=37) years. A significant difference was observed between the duration of the participants' medical practice and their smoking

status ( $p=0.007$ ). Physicians who had never smoked were found to have a lower mean duration of practice. The mean number of correct answers given by the participants to a total of 20 questions measuring the level of knowledge about smoking cessation counseling was  $13.41\pm 3.80$  (minimum=1, maximum=20). There was no statistically significant difference between the knowledge scores of the participants and their smoking status ( $p>0.05$ ) (Table 2).

**Table 2. Smoking status of participants according to age, number of children, length of practice and knowledge scores**

	Total (n=203)	Smoking status			p
		Using (n=32)	Quit (n=17)	Never drank (n=154)	
		Mean±SD	Mean±SD	Mean±SD	
Age	31.34±6.87	32.53±6.74	34.06±8.30	30.79±6.68	<b>0.002</b>
Duration of residency	6.69±6.73	8.13±6.74	8.94±8.76	6.15±6.43	<b>0.007</b>
Number of correctly answered knowledge questions	13.41±3.80	13.44±3.22	15.24±3.27	13.20±3.93	0.095

In order to measure the awareness of the physicians who participated in our study about smoking cessation outpatient clinic, their knowledge about the existence of smoking cessation outpatient clinic and their patient referral status were questioned. 78.8% (n=160) of the participants answered the question "Is there a smoking cessation outpatient clinic in the institution where you work?", 0.5% (n=1) answered yes, 0.5% (n=1) answered no, and 20.7% (n=42) answered don't know. To the question "Have you ever referred a patient to a smoking cessation outpatient clinic?" 50.2% (n=102) of the physicians answered yes, 49.8% (n=101) answered no.

Participants were queried regarding their receipt of smoking cessation counseling training and the sources thereof. Results indicated that 14.3% (n=29) of physicians had undergone such training, while the majority, comprising 85.7% (n=174), had not.

Among the 29 physicians who had received training, the breakdown of training sources was as follows: 7 individuals reported exclusive training from the Ministry of Health, 12 from their respective universities, 1 solely from specialty training, 3 exclusively from attendance at

congresses, 1 from other institutions exclusively, 1 from both the Ministry of Health and congresses, 2 from both the Ministry of Health and their universities, 1 from both the Ministry of Health, their university, and congresses, and 1 from a combination of their university, specialty training, and congresses.

When the FNBT scores of the participants who smoked cigarettes were evaluated, it was determined that 41.9% (n=13) were very low, 25.8% (n=8) were low, 12.9% (n=4) were moderate, 12.9% (n=4) were high and 6.5% (n=2) were very high nicotine addicted.

When the smoking status of the participants was analyzed according to their gender, a significant difference was observed ( $p=0.004$ ). It was observed that the rate of smoking was lower in female physicians compared to male physicians. A significant difference was observed between the marital status of the participants and their smoking status ( $p=0.002$ ). It was observed that married participants had higher smoking rates than single participants. There was no significant difference between the presence of children, general branch and title of the participants and smoking status ( $p>0.05$ ) (Table 3).

**Table 3. Smoking status of participants according to gender, marital status, presence of children, general branch and title**

		Smoking status			p
		Using	Quit	Never drank	
		n (%)	n (%)	n (%)	
Gender	Female	7 (21.88)	7 (41.18)	83 (53.90)	<b>0.004</b>
	Male	25 (78.13)	10 (58.82)	71 (46.10)	
Marital status	Married	23 (71.88)	12 (70.59)	66 (42.86)	<b>0.002</b>
	Single	9 (28.13)	5 (29.41)	88 (57.14)	
Child presence	Yes	11 (34.38)	6 (35.29)	45 (29.22)	0.767
	No	21 (65.63)	11 (64.71)	109 (70.78)	
General branch	Preclinical medicine	1 (3.13)	0 (0.00)	9 (5.84)	0.791
	Internal medicine	23 (71.88)	13 (76.47)	103 (66.88)	
	Surgical medicine	8 (25.00)	4 (23.53)	42 (27.27)	
Title	Research assistant	26 (81.25)	14 (82.35)	124 (80.52)	0.961
	Specialist	1 (3.13)	0 (0.00)	3 (1.95)	
	Academic staff	5 (15.63)	3 (17.65)	27 (17.53)	

When the knowledge scores of the participants were examined according to their general branches, no significant statistical difference was observed between the variables ( $p=0.092$ ). When the knowledge scores of the participants were analyzed according to their titles, a statistically significant difference was found ( $p=0.028$ ). It was observed that the mean knowledge score of the participants who were research assistants was higher than the mean knowledge score of the participants who were specialists or faculty members (since the number

of specialist physicians was low, the numbers of faculty members and specialist physicians were combined). When the knowledge scores of the participants were examined according to their smoking cessation counseling training status, a statistically significant difference was observed ( $p=0.023$ ). It was determined that the mean knowledge scores of the participants who received smoking cessation counseling training were higher than those of the participants who did not receive training (Table 4).

**Table 4. Knowledge scores of participants according to their titles**

Title		Number of correctly answered knowledge questions			
		n	Mean	SD	p
Research assistant	Research assistant	164	13.70	3.37	<b>0.028</b>
	Specialist+academic staff*	39	12.21	5.11	
Smoking cessation counseling training	Yes	29	14.90	3.792	<b>0.023</b>
	No	174	13.16	3.760	

\*Statistical analysis was performed by combining the number of specialists and faculty members.

In terms of behavioral assessment, the majority of the participants answered "sometimes" for the statement "I ask all my patients who smoke whether they want to quit smoking". In addition, no significant correlation was found between the branches of physicians and their behaviors of questioning their patients whether they smoke or not and advising smoking patients to quit smoking ( $p>0.05$ ).

Propositions were presented to assess the knowledge level of the participants. Participants were asked to mark one of the options of true, false or no idea for each proposition. With 97.5% ( $n=173$ ) of the physicians answering correctly to the proposition "The combination of behavioral therapy methods and pharmacotherapy increases the success of

smoking cessation treatment", this was the proposition with the highest level of knowledge. The statement "For the statement "Smoking cessation treatment should be continued for at least one year", only 9.4% ( $n=19$ ) of the physicians chose the "incorrect" option and 59.6% ( $n=121$ ) chose the "correct" option. Thus, this statement was both the least correct and the most incorrect statement." For the statement "Nicotine replacement therapy (NRT) can be used for smoking cessation in pregnant and breastfeeding women", 49.3% ( $n=100$ ) of the participants responded that they had no idea. This statement was the statement about which the participants had the least opinion. The knowledge level assessment questions and the answers given by the participants are shown in Table 5.

**Table 5. Level of knowledge about smoking cessation treatment assessment questions and distribution of answers**

Knowledge level	Right n (%)	Wrong n (%)	No opinion n (%)
Motivational talks and cognitive behavioral therapy methods alone are not effective in smoking cessation	73 (36.0)	<b>118 (58.1)*</b>	12 (5.9)
NRT, Varenicline and Bupropion are the primary pharmacotherapies for smoking cessation	<b>173 (85.2)*</b>	9 (4.4)	21 (10.3)
Vaping is a type of treatment within NRT	25 (12.3)	<b>138 (68.0)*</b>	40 (19.7)
The combination of behavioral therapy methods and pharmacotherapy increases the success of smoking cessation treatment	<b>198 (97.5)*</b>	0 (0)	5 (2.5)
Smoking cessation treatment should be continued for at least one year	121 (59.6)	<b>19 (9.4)*</b>	63 (31.0)
NRT, is administered to patients with low nicotine dependence levels	56 (27.6)	<b>98 (48.3)*</b>	49 (24.1)
In order for a person to be considered to have quit smoking, he/she must not have smoked any cigarettes in the last 6 months	<b>114 (56.2)*</b>	26 (12.8)	63 (31.0)
NRT, is safer in terms of side effects than Bupropion and Varenicline	<b>102 (50.2)*</b>	23 (11.3)	78 (38.4)
Nicotine patch and gum are nicotine replacement therapy methods used in smoking cessation treatment	<b>185 (91.1)*</b>	1 (0.5)	17 (8.4)
Patients may continue to smoke during nicotine replacement therapy	23 (11.3)	<b>137 (67.5)*</b>	43 (21.2)
The most common side effects in people taking bupropion are headache, insomnia and dry mouth	<b>137 (67.5)*</b>	3 (1.5)	63 (31.0)
Varenicline; As a partial agonist, it stimulates alpha-4 beta-2 nicotinic receptors and reduces nicotine withdrawal symptoms	<b>111 (54.7)*</b>	4 (2.0)	88 (43.3)
NRT, can be used for smoking cessation in pregnant and breastfeeding women	25 (12.3)	<b>78 (38.4)*</b>	100 (49.3)

\*The answers that must be marked in order to be considered correctly answered are shown in bold font.



## DISCUSSION

In this study, conducted to assess the knowledge, attitudes, and practices of physicians regarding smoking cessation treatments within a university hospital setting, findings revealed a notably low prevalence of smoking among physicians, alongside a correspondingly low level of nicotine addiction among those who did smoke. Furthermore, a striking observation emerged: a minority of physicians reported having received formal training in smoking cessation counseling.

Notably, male physicians and those of advanced age exhibited higher rates of smoking, indicating potential demographic associations with tobacco use among medical professionals. Moreover, a noteworthy disparity in knowledge levels surfaced between physicians who underwent formal smoking cessation counseling training and those who did not. Those who received such training demonstrated a superior grasp of pertinent concepts and practices associated with smoking cessation interventions.

When we look at other studies evaluating smoking rates among physicians, differences between countries are striking. In some studies conducted among physicians, smoking rates were 2.6% in the UK (8), 3% in the USA (9), 7.2% in Brazil (10), 9.6% in Germany (11), 2.9% in women and 12.5% in men in Japan (12), 15.2% in China (13), 18.9% in Portugal (14), 19.2% in Italy (15), 26% in France (16) and 29% in Pakistan (17). In Türkiye, the prevalence of smoking among physicians was found to be between 32.6-66.2% in 22 studies (18-21). The smoking rates of the physicians who participated in our study were found to be higher than the rates obtained in the UK, USA, Brazil, Germany, Japan and China, but lower than the smoking rates in studies conducted in Portugal, Italy, France, Pakistan and Türkiye. This may be explained by the gradual decrease in smoking in our country as well as in the world, especially among physicians.

In our investigation, the degree of nicotine addiction among cigarette-smoking participants was assessed using the FNBT, revealing predominantly low levels of addiction. Upon review of existing literature, it became apparent that physicians, as a cohort, typically exhibit low levels of nicotine dependence. This aligns with findings from our study, where addiction rates were comparable to or even lower than those reported in the literature (22-26).

The observed consistency or even diminution of addiction rates among physicians in our study compared to existing literature is an encouraging indication. It underscores the potential for successful smoking cessation interventions among medical practitioners, promising advancements in tobacco control efforts within this professional demographic.

In our study, it was observed that physicians did not give adequate appropriate answers to the questions questioning their smoking cessation advice to their smoking patients. In the literature, the rates of smoking cessation advice to smoking patients vary significantly (10,18,26,27). The reason for this variability may be that

the level of knowledge of physicians, especially about pharmacological treatments, increases according to their level of training in smoking cessation counseling, and this increased level of knowledge may be thought to trigger the behavior of advising and guiding smoking patients. It is clear that smoking cessation counseling trainings to be organized will positively affect this advice and referral behavior.

A significant difference was observed between the ages of the physicians participating in this study and their smoking status. While the mean age of physicians who never smoked was the lowest, the mean age of physicians who quit smoking was the highest. The mean age of the physicians who smoked was  $32.53 \pm 6.74$ . Similarly, although there are studies in the literature showing that smoking decreases as the average age decreases, there are also studies showing that there is no significant relationship between age and smoking status (26,28,29). The fact that awareness about the harms of smoking and personal health concerns increase with age may explain the emergence of smoking cessation behavior at older ages. At the same time, it may be thought that young physicians are more conscious about smoking and use cigarettes less frequently with the effect of successful tobacco policies in recent years.

In our study, a significant relationship was found between length of practice and smoking status. The duration of practice of the participants who never smoked was found to be significantly lower than the duration of practice of the participants who smoked and quit smoking. In Çerçi's study, similar to our results, the rate of smoking was found to be lower in participants with lower average years of practice (26).

In our study, no statistically significant relationship was found between the number of correctly answered information questions and smoking status. In this regard, our study yielded similar results with previous thesis studies. It is thought-provoking that although the knowledge levels of physicians who smoke about smoking and smoking cessation treatments were similar to those of non-smokers, they continued to smoke. However, the fact that the knowledge levels did not show a significant change may be interpreted as the fact that some of the physicians fulfill the requirements of their profession by not giving place to lack of knowledge on this subject despite smoking.

In our study, men had significantly higher smoking levels than women. According to the Global Adult Tobacco Survey (GATS) 2016 data, the smoking rate of men was 44.1%, while the smoking rate of women was 19.2% (30). The smoking levels of male and female physicians in our study were measured to be lower than the data from Türkiye. Similar to our study, many studies in the literature show that the smoking level of men is higher (12,18,22,23,31).

In our study, the smoking rates of married physicians were statistically significantly higher than the smoking rates of single physicians. In the majority of studies that investigated this relationship, no relationship was found

between marital status and smoking (26,28,29,31). Our study differs from most of the literature in this regard. In our study, the mean age of non-smokers was significantly lower. Considering that the mean age of single physicians may be lower than that of married physicians, the higher rate of smoking among married physicians is an understandable result.

In this study, no significant difference was observed between the smoking status of physicians and their branches. In previous studies, physicians working in surgical departments were found to smoke at a higher rate than those working in internal and basic medicine departments (25,31,32). Although there was no significant difference between department and smoking in our study, when other studies in the literature are considered, it can be said that the department in which physicians work is a factor affecting their smoking status. The fact that the majority of the physicians participating in our study (139/203) were internal medicine physicians may have caused this discrepancy.

In our study, no significant relationship was found between these variables when the smoking status of the participants was examined according to their smoking cessation counseling training status. In Çerçi's study, although the smoking rates of physicians who received smoking cessation counseling training were found to be lower than those of physicians who did not receive training, statistical significance was not found (26). The fact that physicians who do not smoke may have a higher interest in smoking cessation counseling training may explain the lower smoking rates of physicians who received training, although there was no statistical significance.

In our study, a significant difference was found between the titles of the participants and their level of knowledge about smoking cessation counseling. The average of the information questions answered correctly by resident physicians was found to be higher than that of specialists and lecturers. It can be said that the fact that the participation in our study was mostly made by resident physicians and that the majority of these residents were family medicine residents who were actively working in the smoking cessation outpatient clinic of our hospital led to this result.

In our study, it was determined that the mean knowledge scores of the participants who received smoking cessation counseling training were higher than the participants who did not receive training, as expected. In the study conducted by Keten et al. with family physicians in 2014, no significant difference was found in terms of knowledge level between physicians who received and did not receive training on smoking cessation treatments (27). In the thesis study conducted by Çerçi in 2017, the average of correct answers given by physicians who received tobacco addiction training to information questions about smoking cessation treatments was found to be significantly higher compared to physicians who did not receive training (26). When the studies in the literature on this subject are examined, it can be concluded that the contribution of

education to the level of knowledge has increased over the years. One of the factors affecting this result may be thought to be the increase in the quality and accessibility of smoking cessation counseling training.

In our study, a significant difference was found when the number of correct answers given by physicians to the knowledge level questions was compared with their attitudes and behaviors in questioning the smoking status of patients and advising them to quit smoking. This robust association strongly underscores the premise that the primary impediment to the adoption of attitudes and behaviors conducive to smoking cessation among physicians is a deficiency in knowledge. Consequently, the provision of smoking cessation counseling training to medical professionals is posited to exert a beneficial impact not only on knowledge acquisition but also on the cultivation of more favorable attitudes and behaviors toward smoking cessation interventions.

## CONCLUSION

The observable decline in smoking rates among young physicians is attributed, in significant part, to the recent implementation of tobacco control policies in our country. This trend is particularly noteworthy given the pivotal role that physicians play as societal role models. Moreover, factors such as receipt of smoking cessation counseling training and extended duration of medical education, including attainment of specialist and lecturer status, were identified as correlates of heightened awareness and more favorable attitudes and behaviors toward smoking cessation interventions.

Enhancing the quantity and quality of training initiatives focused on smoking and smoking cessation counseling, both within medical school curricula and throughout post-graduate education, holds considerable promise for bolstering physicians' awareness, knowledge, attitudes, and practices regarding this critical public health issue. Such endeavors are poised to yield substantial contributions toward the advancement of tobacco control efforts within the medical community.

All physicians, particularly family practitioners entrusted with the provision of preventive healthcare services to the entire community, must heighten their awareness and assume a more proactive stance regarding smoking and tobacco addiction. Given its status as one of the most significant public health challenges of our time, with potential health hazards mitigable through appropriate strategies, it is imperative to prioritize the development of requisite policies. Furthermore, due emphasis and weight must be accorded to smoking cessation initiatives, alongside concerted efforts to augment the quantity, quality, and accessibility of training programs. Additionally, there is a pressing need for the undertaking of more comprehensive scientific research endeavors aimed at elucidating this multifaceted issue. Such concerted actions are indispensable for the effective mitigation of the adverse impacts of smoking and tobacco addiction on public health.

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