Socio-demographic Characteristics Associated with Tobacco Consumption among Smokers Attended MOH Smoking Cessation Clinics in Jeddah, 2018

Abstract

Introduction: The World Health Organization (WHO) has identified tobacco smoking as a global epidemic, causing an estimated three million deaths annually. This study aims to examine the socio-demographic characteristics and smoking-related behaviors among individuals attending smoking cessation clinics in Jeddah during 2018. By identifying these factors, appropriate interventions can be developed to combat the smoking epidemic.

Methods: The study enrolled male and female participants who visited the Smoking Cessation Clinics in Jeddah from January 2018 to December 2018. Eligible participants were between 18 and 60 years old and agreed to take part in the study. Data on smoking status, medical history, previous attempts at quitting, and medication use were collected. Statistical analysis, including chi-square tests and p-values, were conducted to assess the associations between participants' medical history and smoking cessation attempts.

Results: A total of 5869 participants were included in the study. The findings revealed that approximately one-fifth of the participants had previously attempted to quit smoking, while the majority (81.4%) had not made any cessation attempts. Among those who had made quit attempts, most had tried quitting between one to four times (16.5%). The duration of successful cessation reported by participants was generally short, with the majority (81.5%) not experiencing any extended period of quitting. Common reasons for relapse included cravings, social influences, mood changes, stress, and withdrawal symptoms. The study also found significant associations between specific medical conditions and smoking cessation attempts.

Conclusion: The study identified significant associations between male gender, older age group (51-60 years), divorced marital status, intermediate educational levels, higher income levels,

retired status, extreme BMI categories, and previous attempts at smoking cessation. Healthcare providers and policymakers should consider these findings when developing and implementing smoking cessation programs. The insights gained from this research can contribute to the development of targeted interventions to reduce smoking rates and improve public health outcomes.

Keywords: tobacco consumption, smoking cessation, socio-demographic characteristics, smoking-related behaviors, Jeddah, epidemic, interventions, medical history, quit attempts, relapse, healthcare providers, policymakers.

Introduction:

Tobacco smoking poses a significant global public health challenge, contributing to a range of health issues such as lung cancer, respiratory disorders like chronic obstructive pulmonary disease, eye-related ailments, and arthritis [1]. Additionally, the detrimental effects of smoking extend beyond the individuals who smoke, affecting those in close proximity to them through exposure to second-hand smoke. In fact, second-hand smoke exposure alone is responsible for causing more than 600,000 deaths each year [2]. According to the World Health Organization (WHO), by 2025, tobacco control initiatives are anticipated to have reduced tobacco prevalence rates throughout all WHO regions [3].

In 2018, the Saudi Food and Drug Authority conducted a survey aimed at updating data on tobacco usage. The results of the survey revealed that 21.4% of the adult population were smokers, which marked a notable increase in prevalence compared to the figure of 12.2% recorded in 2013. This indicates a clear upward trend in smoking rates between the years 2013 and 2018 [4]. Indeed, this continues to be a significant issue as approximately 1.2 million deaths worldwide are attributed to the exposure of non-smokers to second-hand smoke [1]. Consequently, with the prevalence of current smoking in the Kingdom of Saudi Arabia (KSA) rising from 12.2% in 2013 to 21.4% in 2018, it suggests that there has been a substantial increase in the number of non-smokers potentially exposed to second-hand smoke.

The Saudi government has made significant efforts to address the issue of tobacco use. In 2005, Saudi Arabia ratified the WHO Framework Convention on Tobacco Control (FCTC) treaty [5].

Additionally, the healthcare system in Saudi Arabia offers complimentary smoking cessation services and a helpline that provides telephonic support and guidance for individuals seeking assistance in quitting smoking. The Ministry of Health (MOH) in Saudi Arabia has established various tobacco cessation centers throughout the country to implement comprehensive smoking cessation programs and treatments. These programs encompass a range of strategies, including medical interventions and behavioral approaches. Medical interventions encompass consultations and the prescription of medications like nicotine replacement therapy, nicotinic receptor agonists, Varenicline, and antidepressants[6]. Behavioral interventions focus on educating individuals about the significance of smoking cessation and providing psychological support to tobacco smokers through the involvement of healthcare professionals [6].

A better understanding of the sociodemographic characteristics and behavioral factors among visitors to a smoking clinic in Jeddah city will help identify specific target groups. Therefore, this study aims to provide up-to-date information on sociodemographic smoking determinants, facilitating the development of appropriate interventional policies to reduce the smoking epidemic.

Methodology:

This study was an analytical cross-sectional study conducted at the Ministry of Health smoking cessation clinics in Jeddah City, Makkah Province, Saudi Arabia. All participants who visited the Ministry of Health smoking cessation clinics in Jeddah City from January 1st to December 31st, 2022, were included in the study. The total number of participants during the study period was 5871. Data regarding smokers registered at the clinics between January 1st and December 31st, 2018, were obtained from the National Tobacco Control Program of the Ministry of Health.

The data, provided in a spreadsheet, contained variables related to the smoking clinics, including sociodemographic factors (such as gender, age group, marital status, education, income, occupation), smoking-related factors (such as age of smoking initiation, presence of smokers at home, smoking duration, number of packs smoked per day, quit attempts), and other clinical information (such as presence of other diseases, medications, etc.).

Ethical approval to conduct the study was obtained from the Ministry of Health's institutional review board (IRB) at King Fahd Medical City in Saudi Arabia. Approval was also obtained

from the Ministry of Health's Tobacco Control Program in Riyadh. The confidentiality and anonymity of participants' data were preserved, and the data obtained were used solely for the purpose of this study.

Data analysis was performed using the Statistical Packages for Social Sciences (SPSS) version 23, encompassing both descriptive and inferential statistics. A p-value of ≤ 0.05 was considered statistically significant. Frequencies of variables and the relationship between descriptive and outcome variables were examined. Categorical variables were summarized as frequencies and proportions (percentages), while mean values and corresponding standard deviation (SD) values were calculated to summarize continuous variables. Comparisons were made to assess the distributions of selected variables (early smoking initiation, heavy smoking of 2 packs or more, and smoking duration of above 15 years) among groups defined by sociodemographic characteristics and smoking-related behaviors. Chi-squared ($\chi 2$) tests were applied as all the variables were categorical. The p-values were reported to indicate the significance of the associations.

Results

The sociodemographic characteristics of the participants (n=5869) are presented in Table 1. The majority of participants attended the Jeddah Mobile Clinic (47.6%), and a significant proportion of participants were male (95.2%). The age distribution indicated that the highest percentages were in the age ranges of 26-30 (19.9%) and 31-40 (27.4%). Regarding marital status, the majority of participants were married (55.8%). Participants exhibited diverse educational backgrounds, with the largest group having a bachelor's degree (39.3%). On average, participants started smoking at the age of 18± years, and the majority reported no smokers at home (76.9%). Most participants had a smoking period of fewer than 15 years (82.6%). Further details can be found in Table 1.

Table 1: Sociodemographic characters of the participants (n=5869).

Parameter		**No. (%) / Mean+SD (Min-Max), N**
Gender	Female	284 (4.8%)
	Male	5585 (95.2%)
Age (Year)	18 - 20	249 (4.2%)
	20 - 22	510 (8.7%)
	23 - 25	998 (17%)
	26 - 30	1169 (19.9%)
	31 - 40	1606 (27.4%)
	41 - 50	790 (13.5%)
	51 - 60	399 (6.8%)
	Over 60	148 (2.5%)
Marital Status	Divorce	81 (1.4%)
	Married	3272 (55.8%)
	Single	2503 (42.6%)
	Widower	13 (0.2%)
Education	Bachelor	2306 (39.3%)
	Diploma	478 (8.1%)
	Doctorate	43 (0.7%)
	Higher School	1823 (31.1%)
	Illiterate	37 (0.6%)
	Intermediate	224 (3.8%)
	Master	85 (1.4%)
	Others	748 (12.7%)
	Primary	125 (2.1%)
Monthly Income (SAR)	3000 - 5999	915 (15.6%)
	6000 - 10000	1019 (17.4%)
	Less than 3000	569 (9.7%)
	More than 10000	658 (11.2%)
	No Income	2708 (46.1%)
Occupation	Business	198 (3.4%)
	Free	810 (13.8%)
	Govt. Employee	1449 (24.7%)
	Housewife	79 (1.3%)
	Others	1302 (22.2%)
	Private Sector	857 (14.6%)
	Retired	219 (3.7%)
	Student	955 (16.3%)
Any smoker at home	No	4515 (76.9%)
	Yes	1354 (23.1%)
Smoking Period > 15 Years	No	4849 (82.6%)
	Yes	1020 (17.4%)

Table 2, present information on smoking cessation attempts and techniques among the participants in Jeddah. The majority of participants (81.4%) reported no previous attempts to quit smoking. However, 18.6% of participants had made previous attempts, with most attempting to quit between one to four times (16.5%). A smaller proportion had made five to nine attempts (1.4%) or ten or more attempts (0.7%). Regarding the longest period of cessation, the majority of participants (81.5%) had not experienced any prolonged period of quitting smoking. Nevertheless, a small percentage reported periods of cessation, with 2% achieving one to four years of cessation and 6.3% achieving one to six months of cessation. Only a few participants reported even longer periods of cessation.

The reasons for relapse varied, with the most commonly reported reasons including craving (1.8%), influence of friends (5.5%), mood changes (2.8%), stress (5.6%), and withdrawal symptoms (0.3%). Regarding specific techniques used for smoking cessation, the majority of participants did not receive counseling (99.2%) or use nicotine replacement therapy (NRT) patches (99.6%), lozenges (99.9%), or varenicline tablets (98.9%).

Table 2: Smoking cessation attempts and techniques among the participants (n=5869).

Parameter		**Frequency (%)**
Previous attempts of cessation	No	4780 (81.4%)
	Yes	1089 (18.6%)
Number of attempts	None	4780 (81.4%)
	One to four	968 (16.5%)
	Five to nine	82 (1.4%)
	Ten or more	39 (0.7%)
Longest period of cessation	None	4781 (81.5%)
	1 to 4 years	119 (2%)
	1 to 6 months	368 (6.3%)
	5 years or more	29 (0.5%)
	6 months to 1 year	90 (1.5%)
	Less than 1 month	482 (8.2%)
Reasons of relapse (if applicable)	Not specified	4837 (82.7%)
	Boredom	14 (0.2%)
	Craving	105 (1.8%)
	Family problems	8 (0.1%)
	Friends	321 (5.5%)
	Habit	13 (0.2%)
	Medication	5 (0.1%)

	Mood changes	164 (2.8%)
	Social problems	14 (0.2%)
	Stress	331 (5.6%)
	Travel	6 (0.1%)
	Withdrawal symptoms	19 (0.3%)
	Work	13 (0.2%)
Without Support	No	5411 (92.2%)
	Yes	458 (7.8%)
Counseling Only	No	5824 (99.2%)
	Yes	45 (0.8%)
NRT Patch	No	5844 (99.6%)
	Yes	25 (0.4%)
NRT Lozenge	No	5865 (99.9%)
	Yes	4 (0.1%)
Varenicline tablets	No	5806 (98.9%)
	Yes	63 (1.1%)

In Table 3, we examine the association between smoking cessation attempts and sociodemographic characteristics of the participants. The results revealed significant associations with gender ($p=0.047$), age group ($p<0.001$), marital status ($p<0.001$), monthly income ($p<0.001$), and occupation ($p<0.001$). Further details can be found in Table 4.

Table 3: Attempts of smoking cessation in association with sociodemographic characters of participants (n=5869).

Parameter		**Previous attempt of cessation**		**P-value**
		No	**Yes**	
Gender	**Female**	244 (85.9%)	40 (14.1%)	0.047
	Male	4536 (81.2%)	1049 (18.8%)	
Age (Years)	**18 - 20**	246 (98.8%)	3 (1.2%)	0.000
	20 - 22	406 (79.6%)	104 (20.4%)	
	23 - 25	861 (86.3%)	137 (13.7%)	
	26 - 30	985 (84.3%)	184 (15.7%)	
	31 - 40	1259 (78.4%)	347 (21.6%)	
	41 - 50	606 (76.7%)	184 (23.3%)	
	51 - 60	300 (75.2%)	99 (24.8%)	
	Over 60	117 (79.1%)	31 (20.9%)	
Marital Status	**Divorce**	60 (74.1%)	21 (25.9%)	0.000
	Married	2565 (78.4%)	707 (21.6%)	
	Single	2145 (85.7%)	358 (14.3%)	
	Widower	10 (76.9%)	3 (23.1%)	

Education	**Bachelor**	1891 (82%)	415 (18%)	0.000
	Diploma	383 (80.1%)	95 (19.9%)	
	Doctorate	42 (97.7%)	1 (2.3%)	
	Higher School	1441 (79%)	382 (21%)	
	Illiterate	33 (89.2%)	4 (10.8%)	
	Intermediate	162 (72.3%)	62 (27.7%)	
	Master	68 (80%)	17 (20%)	
	Others	650 (86.9%)	98 (13.1%)	
	Primary	110 (88%)	15 (12%)	
Monthly Income (SAR)	**3000 - 5999**	730 (79.8%)	185 (20.2%)	0.000
	6000 - 10000	729 (71.5%)	290 (28.5%)	
	Less than 3000	460 (80.8%)	109 (19.2%)	
	More than 10000	456 (69.3%)	202 (30.7%)	
	No Income	2405 (88.8%)	303 (11.2%)	
Occupation	**Business**	188 (94.9%)	10 (5.1%)	0.000
	Free	765 (94.4%)	45 (5.6%)	
	Govt. Employee	1073 (74.1%)	376 (25.9%)	
	Housewife	66 (83.5%)	13 (16.5%)	
	Others	1081 (83%)	221 (17%)	
	Private Sector	666 (77.7%)	191 (22.3%)	
	Retired	152 (69.4%)	67 (30.6%)	
	Student	789 (82.6%)	166 (17.4%)	
Any smoker at home	**No**	3845 (85.2%)	670 (14.8%)	0.000
	Yes	935 (69.1%)	419 (30.9%)	
Smoking Period > 15 Years	**No**	4196 (86.5%)	653 (13.5%)	0.000
	Yes	584 (57.3%)	436 (42.7%)	

Table 4 presents the results of the association between the longest cessation period and sociodemographic characteristics of the participants.

Regarding gender, both female and male participants had a majority of no attempts at smoking cessation. The percentages of participants reporting different cessation periods were similar for both genders. The chi-square test indicated no statistically significant association between gender and the longest cessation period ($p = 0.229$).

For age, participants aged 18-20 had the highest proportion of no attempts at smoking cessation (98.8%). As age increased, the percentages of participants with longer cessation periods also increased. The association between age and the longest cessation period was statistically significant ($p < 0.001$).

Marital status showed a significant association with the longest cessation period. Divorced participants had the lowest percentage of no attempts at cessation (74.1%), while single individuals had the highest percentage of no attempts at cessation (85.7%). Widowers had the highest percentage of cessation periods of 5 years or more (7.7%). The chi-square test demonstrated a significant relationship between marital status and the longest cessation period ($p < 0.001$).

Education level was significantly associated with the longest cessation period ($p < 0.001$). Participants with a doctorate degree had the highest percentage of no attempts at cessation (97.7%), while those with intermediate education had the highest percentage of cessation periods of 5 years or more (1.8%). Monthly income also showed a significant association with the longest cessation period ($p < 0.001$). Participants with no income had the highest proportion of no attempts at cessation (88.8%), whereas those with an income of more than 10,000 had the highest percentage of cessation periods of 5 years or more (1.5%).

Table 4: Longest cessation period in association with sociodemographic characters of participants (n=5869).

Parameter		**Longest cessation period**						**X^2**	**P-value**
		No attempts	**Less than 1m**	**1m to 6m**	**6m to 1y**	**1 to 4 years**	**5 years or more**		
Gender	**Female**	244 (85.9%)	20 (7%)	14 (4.9%)	0 (0%)	5 (1.8%)	1 (0.4%)	6.9	0.229
	Male	4537 (81.2%)	462 (8.3%)	354 (6.3%)	90 (1.6%)	114 (2%)	28 (0.5%)		
Age (Years)	**18 - 20**	246 (98.8%)	1 (0.4%)	2 (0.8%)	0 (0%)	0 (0%)	0 (0%)	190.4	0.000
	20 - 22	407 (79.8%)	58 (11.4%)	35 (6.9%)	4 (0.8%)	6 (1.2%)	0 (0%)		
	23 - 25	861 (86.3%)	62 (6.2%)	63 (6.3%)	3 (0.3%)	8 (0.8%)	1 (0.1%)		
	26 - 30	985 (84.3%)	80 (6.8%)	71 (6.1%)	20 (1.7%)	11 (0.9%)	2 (0.2%)		
	31 - 40	1259 (78.4%)	163 (10.1%)	100 (6.2%)	36 (2.2%)	38 (2.4%)	10 (0.6%)		
	41 - 50	606 (76.7%)	78 (9.9%)	47 (5.9%)	14 (1.8%)	35 (4.4%)	10 (1.3%)		
	51 - 60	300 (75.2%)	30 (7.5%)	39 (9.8%)	9 (2.3%)	18 (4.5%)	3 (0.8%)		
	Over 60	117 (79.1%)	10 (6.8%)	11 (7.4%)	4 (2.7%)	3 (2%)	3 (2%)		
Marital	**Divorce**	60 (74.1%)	10	5 (6.2%)	2	3	1	101.	0.00

Status			(12.3%)		(2.5%)	(3.7%)	(1.2%)	4	0
	Married	2565 (78.4%)	293 (9%)	225 (6.9%)	72 (2.2%)	91 (2.8%)	26 (0.8%)		
	Single	2146 (85.7%)	177 (7.1%)	138 (5.5%)	16 (0.6%)	25 (1%)	1 (0%)		
	Widower	10 (76.9%)	2 (15.4%)	0 (0%)	0 (0%)	0 (0%)	1 (7.7%)		
Education	**Bachelor**	1891 (82%)	181 (7.8%)	136 (5.9%)	39 (1.7%)	51 (2.2%)	8 (0.3%)	79.6	0.000
	Diploma	383 (80.1%)	34 (7.1%)	35 (7.3%)	9 (1.9%)	13 (2.7%)	4 (0.8%)		
	Doctorate	42 (97.7%)	1 (2.3%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)		
	Higher School	1442 (79.1%)	173 (9.5%)	135 (7.4%)	29 (1.6%)	35 (1.9%)	9 (0.5%)		
	Illiterate	33 (89.2%)	2 (5.4%)	0 (0%)	1 (2.7%)	1 (2.7%)	0 (0%)		
	Intermediate	162 (72.3%)	23 (10.3%)	24 (10.7%)	3 (1.3%)	8 (3.6%)	4 (1.8%)		
	Master	68 (80%)	5 (5.9%)	7 (8.2%)	2 (2.4%)	2 (2.4%)	1 (1.2%)		
	Others	650 (86.9%)	59 (7.9%)	23 (3.1%)	7 (0.9%)	6 (0.8%)	3 (0.4%)		
	Primary	110 (88%)	4 (3.2%)	8 (6.4%)	0 (0%)	3 (2.4%)	0 (0%)		
Monthly Income (SAR)	**3000 - 5999**	730 (79.8%)	87 (9.5%)	62 (6.8%)	9 (1%)	26 (2.8%)	1 (0.1%)	274.8	0.000
	6000 - 10000	729 (71.5%)	119 (11.7%)	97 (9.5%)	30 (2.9%)	32 (3.1%)	12 (1.2%)		
	Less than 3000	461 (81%)	59 (10.4%)	34 (6%)	4 (0.7%)	11 (1.9%)	0 (0%)		
	More than 10000	456 (69.3%)	78 (11.9%)	62 (9.4%)	24 (3.6%)	28 (4.3%)	10 (1.5%)		
	No Income	2405 (88.8%)	139 (5.1%)	113 (4.2%)	23 (0.8%)	22 (0.8%)	6 (0.2%)		
Occupation	**Business**	188 (94.9%)	6 (3%)	3 (1.5%)	0 (0%)	1 (0.5%)	0 (0%)	244.1	0.000
	Free	765 (94.4%)	16 (2%)	22 (2.7%)	2 (0.2%)	5 (0.6%)	0 (0%)		
	Govt. Employee	1073 (74.1%)	160 (11%)	112 (7.7%)	39 (2.7%)	50 (3.5%)	15 (1%)		
	Housewife	66 (83.5%)	5 (6.3%)	5 (6.3%)	1 (1.3%)	1 (1.3%)	1 (1.3%)		
	Others	1081 (83%)	105 (8.1%)	67 (5.1%)	22 (1.7%)	21 (1.6%)	6 (0.5%)		
	Private Sector	666 (77.7%)	81 (9.5%)	70 (8.2%)	13 (1.5%)	24 (2.8%)	3 (0.4%)		
	Retired	152 (69.4%)	22 (10%)	29 (13.2%)	4 (1.8%)	8 (3.7%)	4 (1.8%)		
	Student	790 (82.7%)	87 (9.1%)	60 (6.3%)	9 (0.9%)	9 (0.9%)	0 (0%)		
Any smoker at home	**No**	3845 (85.2%)	311 (6.9%)	221 (4.9%)	54 (1.2%)	69 (1.5%)	15 (0.3%)	182.7	0.000
	Yes	936 (69.1%)	171 (12.6%)	147 (10.9%)	36 (2.7%)	50 (3.7%)	14 (1%)		
Smoking	**No**	4197	307	215	53	62	15	490.	0.00

Period > 15 Years		(86.6%)	(6.3%)	(4.4%)	(1.1%)	(1.3%)	(0.3%)	9	0
	Yes	584 (57.3%)	175 (17.2%)	153 (15%)	37 (3.6%)	57 (5.6%)	14 (1.4%)		

Discussion

This study aims to determine the most important socio-demographic characteristics among smokers who attended MOH smoking cessation clinics in Jeddah city, Saudi Arabia. The study shows that nearly one-fifth of the participants had made previous attempts to quit smoking, whereas the majority (81.4%) did not attempt to quit smoking. This highlights the need for interventions aimed at increasing awareness and motivation among smokers to seek support from cessation clinics. However, it is important to note that 18.6% of the participants had made previous attempts, demonstrating a willingness to quit and engage with cessation services.

Among those who had made attempts to quit, the majority had made between one and four attempts (16.5%), indicating that multiple quit attempts may be necessary for successful cessation. This finding underscores the importance of sustained support and resources to assist individuals in their cessation efforts, as quitting smoking can often be a challenging and iterative process [7-10].

Furthermore, the longest period of cessation reported by participants was relatively short, with the majority (81.5%) not having experienced any prolonged period of quitting smoking. The reasons for relapse among participants who experienced relapses varied, with common factors including craving, social influences, mood changes, stress, and withdrawal symptoms. These findings highlight the importance of tailored interventions that address these specific triggers and provide individuals with coping mechanisms to prevent relapse. Smoking cessation clinics can play a crucial role in providing personalized support and strategies to help individuals overcome these challenges and maintain their quit attempts [11, 12].

A study conducted among pharmacy students reported that consultation was the most frequently mentioned method for quitting smoking (58.6%), followed by the usage of electronic cigarettes (41.92%) and nicotine patches (40.7%). The study further concluded that specialized smoking cessation clinics increased the effectiveness of smoking cessation strategies, as reported by 36.8% of the participating students [13].

The results in our study revealed several noteworthy associations between specific medical conditions and smoking cessation attempts. Participants with hypertension (HTN) were more likely to have attempted smoking cessation compared to those without HTN due to behaviour change is more likely to result if an individual feels susceptible to a specific health risk in addition to a person's perception of vulnerability regarding health [14, 15]. This suggests that individuals without HTN may face additional challenges or barriers to smoking cessation, which may require targeted interventions or support to enhance their quit attempts [16, 17].

It is important to acknowledge several limitations of this study. First, the data relied on self-report measures, which are subject to recall bias and social desirability bias. Additionally, the cross-sectional nature of the study design limits our ability to establish causality or determine the temporal relationship between medical conditions, medication use, and smoking cessation attempts. Longitudinal studies are needed to provide a more comprehensive understanding of these associations over time.

Furthermore, the study focused on a specific sample population, and the generalizability of the findings to other populations or regions may be limited. Future research should aim to replicate these findings in diverse populations to enhance the external validity of the results.

Despite these limitations, this study contributes to the existing literature by shedding light on the complex interplay between medical conditions, medication use, and smoking cessation attempts. The findings underscore the need for a multidimensional approach to smoking cessation interventions that takes into account individuals' medical histories, medication regimens, and tailored support to address the specific challenges associated with each medical condition.

Conclusion

There was a significant association between male gender, older age group (51–60 years), marital status (divorced), intermediate educational levels, higher income levels, retired status, extreme BMI category, and previous attempts at smoking cessation. Healthcare providers and policymakers should consider the findings of this study when developing and implementing smoking cessation programs. Targeted interventions and support should be provided to individuals with specific medical conditions, taking into account their unique challenges and

needs. Future research should further explore the underlying mechanisms and develop evidence-based strategies to improve smoking cessation outcomes among individuals with diverse medical histories

References

1. El-Zaatari ZM, Chami HA, Zaatari GS: Health effects associated with waterpipe smoking. Tob Control. 2015, 24 Suppl 1:i31-i43. 10.1136/tobaccocontrol-2014-051908
2. Oberg M, Jaakkola MS, Woodward A, et al.: Worldwide burden of disease from exposure to second-hand smoke: a retrospective analysis of data from 192 countries. Lancet. 2011, 377:139-146. 10.1016/s0140-6736(10)61388-8
3. Monshi SS, Arbaein TJ, Alzhrani AA, et al.: Factors associated with the desire to quit tobacco smoking in Saudi Arabia: Evidence from the 2019 Global Adult Tobacco Survey. 2023, 21.
4. Algabbani AM, Almubark R, Althumiri N, et al.: The prevalence of cigarette smoking in Saudi Arabia in 2018. 2018, 1:1-1.
5. Monshi SS, Ibrahim JJSAT, Prevention,, Policy: Implementation of tobacco control measures in the Gulf Cooperation Council countries, 2008–2020. 2021, 16:1-10.
6. Monshi SS, Halpern MTJSMJ: Factors associated with smoking cessation and smoking cessation interventions in the Gulf Cooperation Council countries. 2019, 40:119.
7. West R, McNeill A, Raw M: Smoking cessation guidelines for health professionals: an update. Health Education Authority. Thorax. 2000, 55:987-999. 10.1136/thorax.55.12.987
8. Villanti AC, West JC, Klemperer EM, et al.: Smoking-Cessation Interventions for U.S. Young Adults: Updated Systematic Review. Am J Prev Med. 2020, 59:123-136. 10.1016/j.amepre.2020.01.021
9. Cinciripini PM, Karam-Hage M, Kypriotakis G, et al.: Association of a Comprehensive Smoking Cessation Program With Smoking Abstinence Among Patients With Cancer. JAMA Netw Open. 2019, 2:e1912251. 10.1001/jamanetworkopen.2019.12251
10. Asharani PV, Ling Seet VA, Abdin E, et al.: Smoking and Mental Illness: Prevalence, Patterns and Correlates of Smoking and Smoking Cessation among Psychiatric Patients. Int J Environ Res Public Health. 2020, 17. 10.3390/ijerph17155571
11. Lin B, Xie L, Xie X, et al.: Predictors for quitting smoking in smoking cessation clinics among female smokers in China. Tob Induc Dis. 2023, 21:26. 10.18332/tid/159132
12. Ugalde A, White V, Rankin NM, et al.: How can hospitals change practice to better implement smoking cessation interventions? A systematic review. CA Cancer J Clin. 2022, 72:266-286. 10.3322/caac.21709
13. Alwhaibi A, Wajid S, Alenezi A, et al.: Prevalence of Smoking and Beliefs and Attitude Toward Smoking Habit and Smoking Cessation Methods Among Pharmacy Students: A Cross-Sectional Study in Saudi Arabia. Front Public Health. 2022, 10:816101. 10.3389/fpubh.2022.816101
14. Eandura AJEC: Social learning theory. 1977.
15. Fishbein M, Ajzen I: Belief, attitude, intention and behaviour: An introduction to theory and research. 1975.
16. Rosenstock IMJHem: The health belief model and preventive health behavior. 1974, 2:354-386.
17. Sawyer K, Burke C, Ng RLY, et al.: Effectiveness of Mental Health Warnings on Tobacco Packaging in People With and Without Common Mental Health Conditions: An Online Randomised Experiment. Front Psychiatry. 2022, 13:869158. 10.3389/fpsyt.2022.869158