Association between tobacco smoking and different demographic factors among the general population at Al-Baha, Saudi Arabia

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ABSTRACT

INTRODUCTION Tobacco smoking is a major global health problem. This study aimed to assess the association of different demographic variables and tobacco smoking among the general population at Al-Baha province, Saudi Arabia.

METHODS This cross-sectional study was carried out among residents of Al-Baha city, Saudi Arabia using a Google Form questionnaire. This cross-sectional study conducted using information about smokers' socioeconomic status, family, and friends. The study was conducted from January to February 2024, the sample size was calculated using the Raosoft sample size calculator, including a convenience sample of 384 participants from the general population of Al-Baha province, Saudi Arabia.

RESULTS Most of participants were males (92.6%), compared to only 7.4% females (p<0.001), and 39.4% of participants were aged 25–34 years, with only 2.9% aged <18 years (p<0.001). The majority of participants were married (62.6%), while only 2.5% were divorced (p<0.001), and the majority were full-time workers (56.7%), compared to 6.4% unemployed (p<0.001). Most participants started smoking >10 years ago (47.8%), compared to 10.8% that started <1 year ago (p<0.001). About a third of the participants had income <5000 SAR (33.9%). The most common reason for starting smoking was to relieve stress from work (23.6%). Additionally, 71.4% of participants had a family member who smokes and 78.8% had more than four smoking friends.

CONCLUSIONS The demographic profile provides important information about the study participants, revealing gender differences, age distribution, marital and employment status, income distribution, and geographical variations. These complexities highlight the multifaceted nature of smoking habits in the population, providing critical information for clinicians and public health professionals to develop targeted interventions that address various medical and social aspects of smoking behaviors.

INTRODUCTION

The epidemic of tobacco smoking is one of the major public health challenges in the world. According to the WHO, tobacco smoking causes >7 million deaths yearly, and >6 million deaths result from direct tobacco use, and about 890000 deaths in non-smokers exposed to secondhand smoke[1]. The Saudi Ministry of Health established several measures to control tobacco use, including anti-smoking awareness campaigns and anti-smoking clinics in different regions of the country. However, recent statistics showed that the total number of smokers in Saudi Arabia reached 5.5 million (23% of the population), with a distinct gender disparity showing higher rates among men compared to women (21.5% vs 1.1%). The average age of smoking onset was 19.1 ± 6.5 years, and, notably, 8.9% of individuals with a history of smoking initiated this habit before the age

of 15 years. In addition, 17.2% of Saudis are exposed to secondhand smoke at home and 14.8% at work[1,2].

Cigarette smoking is still the most common form of tobacco consumption worldwide. Waterpipe tobacco, cigars, cigarillos, heated tobacco, roll-your-own tobacco, pipe tobacco, bidis, kreteks, and smokeless tobacco variants are examples of other tobacco products[3]. Smoking is known as an important risk factor for many conditions such ulcerative colitis, coronary heart disease, chronic obstructive pulmonary diseases, ischemic cerebrovascular stroke, and lung, laryngeal, oropharyngeal, esophageal, colorectal, pancreatic and urinary bladder cancers[4-11].

Additionally, according to the findings of a previous study, people with higher socioeconomic status are more likely to smoke at the national level[12]. Another study showed that the most common reason given for starting smoking was influence by friends who smoke, followed by family members who smoke[13].

Besides, another investigation revealed that gender is a statistically significant predictor of current daily tobacco smoking among Saudi college students. Statistically, male college students are more involved in tobacco smoking than female college students[14]. Moreover, a prior study showed that cigarette smoking was more prevalent in the general population than among school and university students[15]. In addition, individuals with a higher level of education were less likely to become involved in smoking behaviors[16].

The current study aimed to evaluate the association between different demographic variables, including age, gender, income, marital status, and tobacco smoking among the general population at Al-Baha province, Saudi Arabia.

METHODS

Study design and setting

This study used a descriptive cross-sectional design in Al Baha, Saudi Arabia, and collected data from January to February 2024. The surveys, which used an anonymous self-administered questionnaire, distributed via online platforms and various smoking awareness campaigns in Al-Baha, strategically targeted the general population of Al-Baha province. To ensure content validity, the questionnaire was reviewed and refined using the input of two subject matter experts and senior researchers.

Ethical approval

The Research Ethics Committee of the Faculty of Medicine, Al-Baha University, Saudi Arabia approved the study proposal (approval number: REC/PHA/BU-FM/2024/6). The online questionnaire contained a consent form detailing the rights of the participants, including voluntary participation, anonymity, confidentiality, and a right to withdraw without justification.

Inclusion and exclusion criteria

The study enrolled participants who were active smokers, aged 18–60 years, living at Al-Baha province. Non-smokers, individuals aged <18 years or >60 years, and Al-Baha non-residents were excluded. The sample size was calculated using the Raosoft sample size calculator[17], with a 5% margin of error, 95% confidence level, from a population size of

Table 1. Demographic factors associated with tobacco smoking among participants from the general population of Al-Baha province, January to February 2024, Saudi Arabia (N=384)

Characteristics	n	%	p
Gender			
Male	188	92.61	0.001
Female	15	7.39	
Age (years)			
<18	6	2.96	0.001
18–24	36	17.73	
25–34	80	39.41	
35–44	33	16.26	
45–55	37	18.23	
>55	11	5.42	
Marital status			
Married	127	62.56	0.921
Single	71	34.98	
Divorced	5	2.46	
Employment			
Full-time	115	56.65	0.016
Student	34	16.75	
Part-time	22	10.84	
Retired	19	9.36	
Unemployed	13	6.4	
Monthly income (SAR)			
<5000	69	33.99	0.001
5000–10000	62	30.54	
10000–15000	44	21.67	
>15000	28	13.79	
Residence			
Albaha	52	25.62	0.001
Baljurashi	49	24.14	
Alaqiq	29	14.29	
Almandaq	28	13.79	
Almakhwah	24	11.82	
Other	21	10.34	

Fisher's exact and Pearson chi-squared tests used for statistical analyses. The level for statistical significance is p<0.05. SAR: 1000 Saudi Riyals about US$270.

Table 2. Tobacco smoking behaviors among participants from the general population of Al-Baha province, January to February 2024, Saudi Arabia (N=384)

Smoking behavior	Categories	n	%	p
When did you start smoking? (years)	<1	22	10.84	0.001
	1–5	37	18.23	
	5–10	47	23.15	
	>10	97	47.78	
Why did you start smoking?	Curiosity	50	24.63	0.001
	Stress relief	48	23.65	
	Socialization	23	11.33	
	Job stress	52	25.62	
	Other	30	14.78	
Cigarettes/day	1–5	26	12.81	0.001
	6–10	46	22.66	
	11–20	62	30.54	
	>20	69	33.99	
Did you make any attempts to quit smoking?	No	26	12.81	0.001
	Yes	177	87.19	

Fisher's exact and Pearson chi-squared tests used for statistical analyses. The level for statistical significance is p<0.05.

339174 and 50% response distribution, a final sample size of 384 was considered a convenience sample.

Variables

The questionnaire covered the participant demographics, including age, gender, education level, monthly income, marital status, and insurance status. Smoking practices, including the age of smoking initiation, and the effect of the number of family members or friends who smoke were also covered.

Statistical analysis

The data were subjected to descriptive and inferential statistical analyses. The participants' sociodemographic characteristics were examined, including smoking habits, socioeconomic status, and other categorical variables. Sample frequencies, percentages, and p-values in relation to smokers for these variables were calculated and tabulated using SPSS version 29.0.0. Fisher's exact and Pearson chi-squared tests assessed the association between different sociodemographic characteristics and smoking. A significance level of p<0.05 was taken as the threshold for statistical significance.

RESULTS

The study investigated smokers from various socioeconomic and age groups, including 384 participants and excluding non-smokers. Table 1 shows that most participants were males (92.6%), and 7.4% were females, with only 2.9% of participants aged <18 years and 39.4% aged 25–34 years. The majority of participants were married (62.6%), while only 2.5% were divorced. Additionally, the majority of participants work full-time (56.7%), with only 6.4% unemployed. About one third (34%) of the participants had a monthly income <5000 SAR, while 13.7% had an income >15000 SAR. The main city, Al-Baha, had the highest percentage of participants (25.6%), followed by Baljurashi (24.1%).

Table 2 shows the smoking behavior of the participants. The majority started smoking >10 years ago (47.8%), while only 10.8% started < 1 year ago. The majority started smoking due to job stress (25.6%), and 34% smoke >20 cigarettes/day. In addition, the vast majority (87.2%) had previously attempted to quit smoking.

Table 3 shows the financial factors for the participants; most spend >300 SAR monthly on cigarettes (54.2%), and 74.4% of the participants agree that smoking has an effect on their financial situation. In addition, Table 3 shows the family factors influencing the smokers; the majority of the participants had a family member who was a smoker (71.4%), while 38% of the participants were allowed to smoke inside the house, and 89% agreed that it had an

Table 3. Financial, family, and social factors affecting tobacco smoking participants from the general population of Al-Baha province, January to February 2024, Saudi Arabia (N=384)

Factors	Categories	n	%	p
Financial				
How much do you spend on cigarettes per month? (SAR)	50–100	26	12.81	0.001
	100–200	39	19.21	
	200–300	28	13.79	
	>300	110	54.19	
Does smoking affect your finances?	Agree	151	74.38	0.001
	Disagree	12	5.91	
	Slightly agree	30	14.78	
	Slightly disagree	10	4.93	

Continued

Table 3. Continued

Factors	Categories	n	%	p
Family				
Does anyone in your household currently smoke or use tobacco products?	No	58	28.57	0.001
	Yes	145	71.43	
Do you live in a household where smoking is allowed indoors?	No	124	61.08	
	Yes	79	38.92	0.001
If yes, has smoking indoors affected non-smoking household members' health?	Agree	71	89.87	0.001
	Disagree	2	2.53	
	Slightly agree	4	5.06	
	Slightly disagree	2	2.53	
Social				
How many friends do you have who smoke cigarettes or use tobacco products?	1	7	3.45	0.001
	2	18	8.87	
	3	18	8.87	
	≥4	160	78.82	
Do you often spend time with friends who smoke?	No	49	24.14	0.001
	Yes	154	75.86	
Have you talked to your friends about the health risks associated with smoking?	No	48	23.65	0.001
	yes	155	76.35	

Fisher's exact and Pearson chi-squared tests used for statistical analyses. The level for statistical significance is $p<0.05$. SAR: 1000 Saudi Riyals about US$270.

effect on the house members. Table 3 also shows the friends' factors for the participants. It shows that the majority of participants (78.8%) have more than four smoking friends. Besides, 75.9% of the participants spend time with smoker friends, and the majority of them talk about the risks of smoking (76.4%).

DISCUSSION

The current study shows that a significant gender disparity exists, with the majority of participants being males. The age distribution shows that individuals aged 25–34 years make up 39.4% of the study population, while those aged <18 years were only 3%. A previous study conducted at Saudi Arabia showed nearly similar results, in which the overall prevalence of tobacco smoking was 23%, and men were more likely to smoke than women (21.5% vs 1.1%). The mean age of starting smoking was 19.1 years[2]. The current study also revealed that marital status defines the participants' social context, with the majority (62.6%) married and a smaller fraction (2.5%) divorced. Employment status underscores occupational engagement, with 56.6% of participants working full-time and 6.4% unemployed. The income distribution significantly skewed, with 33.99% of participants reporting incomes <5000 SAR, and only 13.8% falling in the category of incomes exceeding 15000 SR. Similar results obtained from a prior study, in which the prevalence of tobacco smoking was highest among individuals with primary education (40.9%), manual work (46.4%), and lowest income (38.1%)[18]. The geographical distribution highlights the importance of regional variation, with the majority of participants coming from the main city, Al-Baha (25.6%), followed by Baljurashi (24.1%). These demographic distinctions provide a contextual framework for comprehending the multifaceted factors influencing smoking behavior in this cohort. Such insights are critical for clinicians and public health professionals when designing interventions to address the various medical and social aspects of these individuals' smoking habits.

Additionally, the present study reveals insight into key aspects of the participants' smoking behavior, including initiation, motivating factors, daily consumption, and previous cessation attempts. Notably, 47.8% of participants began smoking more than a decade ago, with 10.84% starting within the last year. Job-related stress was identified as a motivator, affecting 25.6% of participants. While 34% reported smoking >20 cigarettes/day, indicating significant tobacco dependence. Importantly, a large proportion (87.2%) of participants attempted smoking cessation in the past, emphasizing both health risks and the difficulties in achieving successful quit attempts. Previous studies demonstrated nearly similar results, in which work-related stress was significantly associated with tobacco smoking, and the majority of smokers had previous quit attempts[19,20]. These findings highlight the complexities of smoking behavior, emphasizing the need for targeted interventions that address initiation factors, consumption patterns, and cessation challenges within this medical context. These insights are crucial for healthcare professionals.

Moreover, the current study shows significant financial aspects among participants, with 54.2% spending >300 SR per month on cigarettes. Notably, 74.4% recognize the negative financial consequences of smoking. This emphasizes the cohort's significant economic commitment to tobacco consumption and the need for comprehensive interventions. A prior study showed that tobacco smoking represented a huge health and economic burden, and suggested increasing tobacco taxes could significantly decrease these burdens[21]. When developing effective smoking cessation strategies for this population, healthcare professionals should take into account both health and economic factors.

Besides, the results of the present study highlight key familial and social influences on participants' smoking habits. The majority of respondents (71.4%) have a smoker in their family, and 38% smoke inside their homes, with 89% acknowledging the impact on household members. In addition, 78.8% of participants have more than four smoker friends, 75.86% spend time with them, and 76.4% talk about smoking risks. Similar results were obtained from previous studies, which showed that initiation of tobacco smoking is significantly influenced by close friends and family members, particularly in young male adults[22,23]. These findings highlight the important role of family and social circles in smoking habits, emphasizing the need for tailored interventions to address these dynamics in smoking cessation programs.

Limitations

The limitations of the present study include the cross-sectional design, which does not allow for the attribution of causality; the convenience sampling, which limits the generalizability to the general population of smokers in Saudi Arabia; and the possibility of reporting bias, which cannot be excluded. In addition, there is the possibility of sampling bias, as specific subgroups of the population would be more likely to respond to an internet-based questionnaire shared via social media.

CONCLUSIONS

The results of the present study provide a useful contextual information about the study participants, offering insight on diverse characteristics of Al-Baha region. Smoking behavior is more common in males, people aged 25–34 years, married, full-time workers, with monthly income <5000 SR. In addition, most smokers have a house member or friend who smokes. These findings highlight the complexities of the factors that influence smoking behavior in this population. These demographic distinctions provide a basis for understanding the multifaceted nature of smoking habits among the general population of Al-Baha province.

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CONFLICTS OF INTEREST
The authors have completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest and none was reported.

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DATA AVAILABILITY
The data supporting this research are available from the authors on reasonable request.

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