MEDICAL SCIENCE

A cross-sectional study of community knowledge of the effects of active cigarette smoking on respiratory disease and its risk factors in Hail, KSA

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ABSTRACT

Background: Smoking is a recognized risk factor for respiratory disease. *Objective:* The study objective is to evaluate their familiarity with the consequences of smoking on the respiratory system and the risk of respiratory disease. *Methodology:* A self-administered cross-sectional online survey was conducted in 2023 to determine the prevalence and risk factors of smoking-related disease in the Hail region. The data were entered and processed using version 23 of the statistical package for social sciences (SPSS). *Results:* In the present study, 503 individuals from both sexes (females: 60%; males: 40%) participated. When the effects of smoking and the possibility of developing respiratory disease were analyzed, it became clear that non-smokers (both sexes, male 83.2%, and female 88.4%) are more aware of the harmful effects of smoking than cigarettes smokers (male 73.2%, and female 50%). Also, these findings revealed that smokers who do not want to quit smoking have an adverse mindset towards quitting (16%), compared to smokers who do want to quit (84%), and the same group got the fewest programs about the dangers of smoking (25%), compared to smokers who do want to quit (81%). *Conclusion:* The present study revealed that understanding of the negative effects of smoking is lower in smokers than in non-smokers of both sexes.

Keywords: Smoking knowledge, risk factors, Awareness, smoking cessation, Hail, KSA

DISCOVERY
SCIENTIFIC SOCIETY

1. INTRODUCTION

A significant public health problem is tobacco use. It is one of the highly regarded causes of morbidity and mortality (West, 2017). Additionally,

tobacco smoke poses a significant danger for the emergence of chronic conditions such lung cancer, heart disease, and pulmonary illness (National Center for Chronic Disease Prevention and Health Promotion, 2014). The World Health Organization recognizes it as the second-largest global risk factor for death (World Health Organization, 2009). Over 1.3 billion people use tobacco globally (Centers for Disease Control and Prevention, 2015), despite the health concerns it poses.

According to the most recent nationally representative study, 12.2% of Saudi Arabian adults smoked in 2013. Male smoker prevalence was 27.9% and female smoker prevalence was 2.9% (Moradi et al., 2015). In Saudi Arabia, smoking cigarettes was the most popular form of tobacco consumption (Ministry of Health, 2013). There is an increasing demand for up-to-date data to monitor and track the prevalence of cigarette smoking in the Saudi population. The purpose of this paper is to ascertain the prevalence of smoking in Saudi Arabia and the contributing causes.

Smoking has long been recognized as a leading cause of many diseases and deaths globally, making it one of the biggest health epidemics of the twentieth century. Smokers are vulnerable to a wide range of adverse effects, as evidenced by their propensity for acute and chronic harmful diseases like respiratory illnesses, cancer, coronary heart disease, and worsening self-reported health, which can lead to absenteeism from school or the workplace and mortality (Onor et al., 2017). These difficulties are exacerbated by the population's attitudes and levels of knowledge regarding smoking and exposure to SHS, and a number of local studies point to a lack of content in medical education curricula on topics related to tobacco use, especially in undergraduate years (Al-Jdani et al., 2018).

Conversely, there was a range of 13% to 28.9% of local medical students who smoked (Wali, 2011), and there is proof that peers at Saudi schools can predict future active smoking (Almutairi, 2016). Globally, tobacco use is the leading preventable cause of mortality. People who are exposed to it get acute lung injury, pulmonary infection, and chronic lung disease. Interstitial lung disorders, sarcoidosis, asthma, pneumoconiosis, chronic obstructive pulmonary disease, and other chronic respiratory ailments are among the illnesses that impair human health. Smoking, environmental pollution, occupational variables, and other risk factors have all been shown to raise the incidence and mortality risks of chronic respiratory disorders. Smoking has negative health consequences on the respiratory system that begin in utero and have an impact on children's and adults' immune systems.

In comparison to "healthy" smokers, smokers with respiratory disorders have higher levels of nicotine dependence and withdrawal, higher levels of carbon monoxide exhaled, lower motivation and self-efficacy, a greater concern for weight gain, and a higher prevalence of anxiety and depression. These differences can make it difficult for smokers with respiratory disorders to quit. Research is still limited, despite the fact that smoking is still widely prevalent in Saudi Arabia.

Chronic respiratory illnesses, such as interstitial lung diseases (ILD), sarcoidosis, asthma, chronic obstructive pulmonary disease (COPD), and pneumoconiosis (Hasan et al., 2019). The incidence and mortality risks of chronic respiratory disorders have been demonstrated to be increased by tobacco use, environmental pollution, occupational factors, and other risk factors (Ministry of Health, 2016). Most smokers are aware of the harm they cause and don't enjoy it, but they nonetheless smoke (Al-Turki et al., 2010).

2. MATERIALS AND METHODS

This is a cross-sectional survey that included data from 503 Saudis and Non-Saudis obtained from the general population of the Hail region, KSA. During the period of December 2022 to February 2023. It included individuals who were at least 10 years of age or more. A pretested questionnaire was used to obtain the data. The questionnaire was modified from the previous studies and revised by research experts and validated by the deanship of the Hail College of medicine. The Arabic translation of the English form was also supplied. It included two components; the first portion collected demographic information (e.g., Age, Gender, Nationality, Marital status, and Type of community).

The second part addressed knowledge of the impact of smoking on respiratory disease and its risk factors. The answers to the second part of the questionnaire reflected the knowledge of participants, with "Yes", "No", and "I do not know" as possible answers. The statistical package for social sciences (SPSS), version 23, was used for data entry and statistical analysis. Categorical variables were described utilizing frequency and percentage. Test for the association between the level of knowledge and its associated factors was done using the Chi-square test and statistical significance was determined at $p < 0.05$.

Sampling and sample size
Surveys used a quota sampling technique to achieve equal distribution of participants. Two age groups based on the Saudi Arabia median age were used. Based on the gender, age, and region.

Participants and recruitment methods

The study targeted the local community of Hail region aged 18 years or older. The surveys were conducted mainly via web-based computer-assisted phone interviews. A government database and the Sharik database, a Saudi national research database of people interested in participating in health research, were used to compile a list of random phone numbers. Up to three phone calls were made to participants before they were removed from the list.

Participants were recruited through face-to-face interviews in public spaces, such as shopping malls, community events, and parks, where phone calls did not fill quotas (due to distance community, cultural considerations, etc.). About 30% of the overall sample was drawn via in-person interviews, which make up a component of the sample size.

Questionnaire design

Participants were questioned about their socio-demographic details, including age, gender, area, education, marital status, employment status, and income, after verbally consenting to the study. Additionally, information on the prevalence of chronic diseases such diabetes, asthma, high cholesterol, and hypertension was gathered. The individuals' cigarette smoking status was evaluated by asking, "Do you now smoke cigarettes?" Please do not put cigars or hookah in your list of tobacco products.

Three groups of respondents were created: Daily smokers, occasional smokers, and nonsmokers. Respondents were asked to rank their general current health status as outstanding, very good, good, fair, or poor in order to gauge the participants' health level.

3. RESULTS

To investigate the knowledge of the Hail community about the impact of active cigarette smoking on respiratory disease.

Demographic Characteristics

About 503 were included in the current study and we investigated their demographic variables as follows: Age, the sample of individuals under study was varied, with the youngest age group starting at 10 years old and the oldest age group being defined as being older than 60 years (Figure 1). Gender, the female percentage (60%) of respondents to this survey was higher than the male percentage (40%). Nationality, Saudi participants (88%) gave more than Non-Saudi participants (12%). In the tested marital status, the single participant's group was a higher percentage (81%) as shown the (Table 1) ($p<0.05$).

Table 1 Demographic characteristics of the participants (n=503)

Variables	Percentage (%)	p-value
Gender		
Male	40	0.001
Female	60	
Nationality		
Saudi	88	0.000
Non-Saudi	12	
Marital status		
Divorced	3.0	
Married	14.1	0.001
Single	81.0	
Widow	2.0	
Type of community		
City or Urban community	81.7	
Rural community	11.1	
Suburban community	7.7	
Occupational status		
Works	26.6	0.000
Does not work	73.4	
Educational level		
Primary school	6.6	

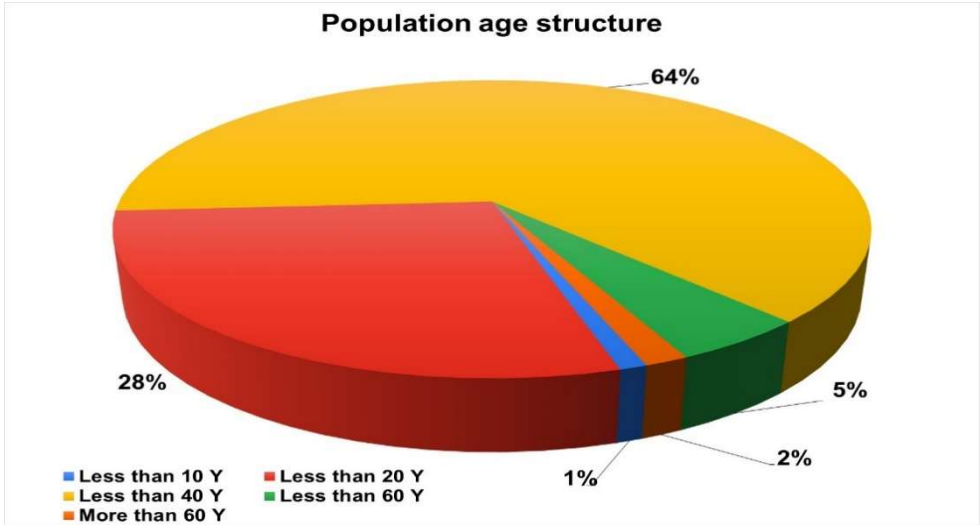|		
Intermediate school	6.6	
High school	21.9	
University	64.9	

Figure 1 Pie chart of population age structure (age in years)

Knowledge of the Negative Effects of Smoking

Table 2 shows that most of the non-smoker participants agree that smoking can damage respiratory health (varying from a high of 88.4% in females to a low of 83.2% in males) and oppositely in the smoker participants' agreement percentage was higher in the males 73.2% than females 50%. About half of the non-smoker participants knew that smoking increases the risk of respiratory diseases (varying from a high of 49.7% in females to a low of 40.1% in males) and oppositely in the smoker participants knowledge percentage was higher the males 46.5% than females 25%. On the other hand, smokers were more aware of the negative effects of smoking (males 77.5% and females 75%) than non-smokers (53% for males and 51.3% for females), according to statistics (Table 2).

Table 2 Weighted percentage of knowledge variables about smoking and its risks among male and female respondents (n=503)

	Male (n=6603)		Female (n=6603)	
	Non-smoker	Smoker	Non-smoker	Smoker
Variable	%	%	%	%
Knowledge about smoking				
Smoking increases the risk of respiratory disease	83.2	73.2	88.4	50
Smoking increases the risk of respiratory disease	40.1	46.5	49.7	25
Awareness of the harms of smoking	53	77.5	51.3	75

First-Time Smoke Cigarette in the Population Under Study

This study gives an idea of the number of participants who tried smoking for the first time; the majority of them state that they did so while they were younger than 20 years old (Figure 2).
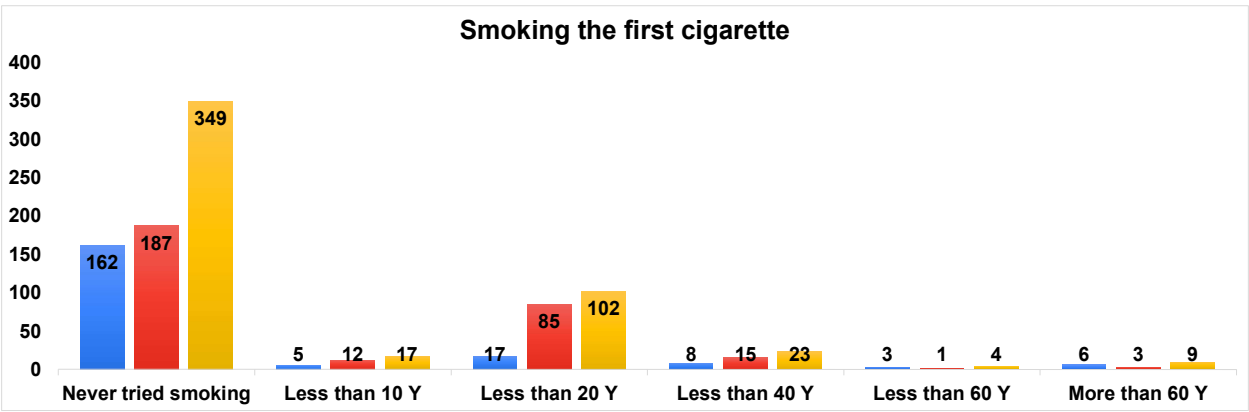
Smoking the first cigarette

Figure 2 displays the findings from the population's replies regarding their first attempt at smoking a cigarette

The Effect of Knowledge and Awareness About the Hazards of Smoking on the Attitude of Smoker Participants Toward Smoking Cessation

We found that, while most smokers (81%) believe that smoking can harm their respiratory systems, 84% of smoker participants indicated that they desire to stop smoking. Conversely, the findings showed that smokers who don't want to quit have a bad attitude, with 16% more than half of them (58%) believing that smoking won't harm their lungs (Table 3). Moreover, the same smoker participants shown in (Figure 3), the smokers who get advice about the hazards of smoking (81%) are more likely willing to quit smoking (84%), compared to those who don't want to quit smoking (16%) and are not get advice about the hazards of smoking (75%).

Table 3 Effect of knowledge and advice about the risks of smoking on the attitude of smoker participants toward smoking cessation

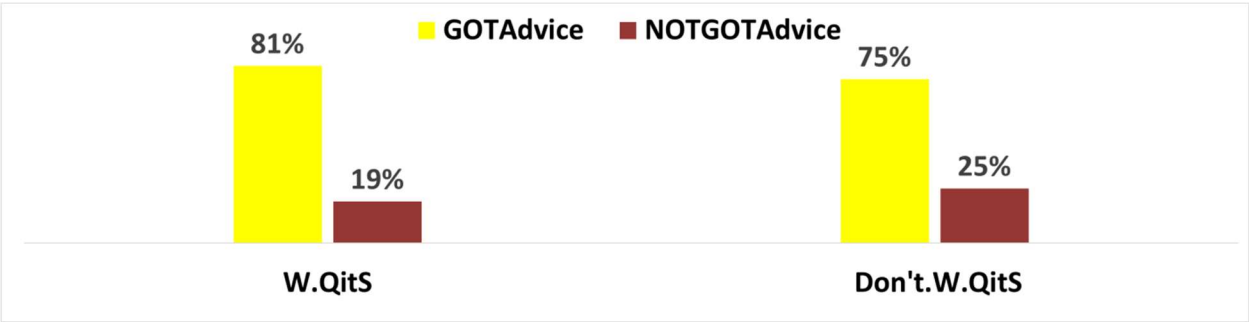|		Smoker participants	
Smoking cessation		Want to quit smoking (84%)	Don't want to quit smoking (16%)
Does smoking damage the respiratory system?	Yes	81	58
	No	19	42
Did you receive awareness of the hazards of smoking	Yes	81	25
	No	19	75

Figure 3 Effect of advice about the hazards of smoking on the attitude of smoker participants toward smoking cessation (*Where: GOTAdvice is the smoker participants who gets advice about the hazards of smoking; NOTGOT Advice is the smoker participants who do not get advice about the hazards of smoking; WQitS is the smoker participants who want to quit smoking; and Don't-WQitS is the smoker participants who don't want to quit smoking*).

4. DISCUSSION

The present study revealed that although the smoker group got a high number of awareness programs about the harmful effects of smoking, still their knowledge of the negative effects of smoking is lower than the non-smokers in both sexes. In addition, these findings could help us to explain why there is a highly significance level of smoking outbreaks in Hail City (Parsons et al., 2010). On

the other hand, with regard to the group of smokers, the group that received the least percentage of these awareness programs showed a bad attitude toward quitting smoking, which indicates the importance of these programs in the supporting positive attitude toward quitting smoking (Table 3) (Figure 3). All these results lead us to conclude that, although there are good efforts for smoking cessation and control, there are no specific evaluation tools to monitor and evaluate the effectiveness of these awareness programs (World Health Organization, 2005).

This study found that knowledge level significant differences among gender, age group. This study's results were consistent with other study result were found that age group and gender difference significantly (Yang et al., 2010). Other study found that young age group was significantly different with older age group. One similar study conducted in china where gender difference not significantly different due to similar habit behavior in both male and female gender (Sansone et al., 2012). Result regarding intention to quit; only few of the study participants were quit smoking in coming month. The result was concordant with other study where result found that 24% of smokers had intention to quit (Chan et al., 2007).

Other study found that 15% of the study participants were intention to quit (Abdullah et al., 2006). In USA and Canada, most of the smokers were intention to quit because of counseling to quit smoking (Hyland et al., 2006). The reason for this result for quit smoking because increased awareness level among community. Different studies found that dependent on nicotine predict quit smoking and intention to quit. Reason for this dependent due to physical dependence affect desire to cessation smoking and underscore the need to strategies on smoking quitting which is depend on the smoker's nicotine dependence level (Fagan et al., 2007).

Indoor smoking is one of the factors which barrier to quit smoking, study results found that it's a culture to smoke cigarette inside meeting room that lead to enchased smoking activity, this result were consistent with the other study results which found that indoor smoking are the barriers to quit smoking activity. It's essential to give health promotion for smoking cessation activities and give opportunity to participants to choose the best method to quit smoking. It also to create safe environment with the education campus to free form smoking which lead to students easy to quit smoking. Other option given to students were nicotine adjunctive that is good therapy for chain smoker (Berlin, 2009).

Limitations

This study was several limitations. First this is the cross-sectional study and cause and effect relationship not established. Second this had response bias due to self-reported diagnosis. Third sampling method is non random sampling which leads to biases in to the study.

5. CONCLUSIONS

Result of this study found that low level of awareness toward risk factors of smoking. There is no gender difference for quit smoking. However, increasing the awareness is associated significantly with quitting intentions and the number of cigarettes smoked per day. This study is very important to explain the factors which can predict intentions to quit. Finally, based on the findings and conclusions we recommend reconsidering the methods and tools for evaluating smoking awareness programs.

Author Contributions

Dr Syed Monowar Alam Shahid designed the main idea of the research, revised and proof edited the paper. Tarig Ginawi, Mubashir Zafar, Abdul Hafiz, Asif Malik, Mohammed Alramadan and Naif Alsokih contributed in proposal writing and ethical approval obtaining. Mohammed Alramadan and Naif Alsokih collected data of participants after explaining the idea of research to contributors. Tariq Ginawi, Mubashir Zafar helped in data analysis. All authors helped in manuscript writing and revision. All authors helped each other during conducting the research paper.

Ethical approval

The study was approved by the Medical Ethics Committee of University of Hail (Ethical approval code: HU-2022 1104-4-9788).

Informed consent

Not applicable.

Data and materials availability
All data sets collected during this study are available upon reasonable request from the corresponding author.

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