



كلية العلوم الطبية التطبيقية

قسم علوم صحة المجتمع

Measuring the Prevalence of Smoking among Male High School Students in Riyadh (KSA)

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ABSTRACT

Background: In Saudi Arabia, tobacco use by adolescents has become a growing health concern as it is the single most important cause of chronic morbidity affecting an active age group. A high prevalence of smoking is reported in Saudi Arabia, which can be understood by reviewing the literature.

Objective: This study was conducted to examine smoking prevalence among male high school students in Riyadh (KSA).

Methods: A cross-sectional study was conducted in Riyadh, randomly selected five school public high schools for males. Data were obtained from a questionnaire online.

A questionnaire containing questions on personal background, smoking behavior, knowledge, and behavior and attitudes towards smoking. A total of 393 students responded to the questionnaires.

Results: Of the studied group, 24 currently smoked, the prevalence of high school students smoking ranges was ascertained. The beliefs supporting smoking behaviors like effect friends correlated with changes in students' tobacco behavior.

Conclusion: Results of the research indicate that the rate of smoking is weak, schools need to increase educational campaigns for schools to raise awareness about the harms and the correct ways to quit smoking.

Keywords:- *Smoking, Prevalence, Male students, high schools, Saudi Arabia.*

CHAPTER 1

INTRODUCTION

Smoking is one major challenge to public health kills about six million people every year around the world, smoking is harmful because it causes many diseases (lung disease - heart disease), increasing smoker in the world affects public health, and most beginning smoking school -age (15-18) years, Knowing the prevalence of smoking to clarify the reasons and developing preventive planning to help reduce smoker.

The reports from WHO statistical trends have shown that among Saudi adolescents, their smoking rate has increased gradually. In 2000, it was 12.45%, in 2010 it reached 15.1%, and projections are that in 2025, the number of male smokers aged between 15 and 24 will reach 38% while that of the females will be 2% (WHO, 2015). The current smoking rate in Saudi Arabia for both sexes is 17.1% and that of females 15 years or older is 3.0% (WHO, 2015). The start of smoking behavior is generally at the adolescent stage, and these individuals are not likely to quit this act. The estimations are that approximately 90% of the new smokers are individuals in high school. It is pertinent for Saudi Arabia and other countries to look into commencing efforts that control or prevent smoking amongst the adolescent population.

CHAPTER 2

LITERATURE REVIEW

A. *Patterns of Smoking*

Adolescents between ages 10 and 15 are a collaborative group that first trying using cigarettes (Talip et al., 2016). These individuals take up regular smoking, and this behavior continues to their early 20s. In Saudi Arabia, the regions with the highest smoking prevalence are the Northern borders, Aljwaf, Eastern regions, and Riyadh. The areas with the fewest smokers are Albaha and Aseer Jizan (Algabbani et al., 2018). Furthermore, males are the highest smokers at 27.9%, followed by females 2.9%. Tracking and monitoring such prevalence require updated data, especially for secondary school students. The number of secondary school students smoking cigarettes is also increasing as new forms and technologies emerge, which are more appealing and sophisticated. Therefore, more and more secondary school students are being lured by their friends to join the smoking bandwagon. In children, tobacco smoking is increasing considerably among 16-18-year-olds (Ansari et al., 2020).

B. *Risk Factors for Commencement of Smoking among Teenagers*

Family history, personal character, companionship, and psychological problems are the most common risk factors associated with adolescents' commencement of smoking behaviors. Studies have shown that youths from lowincome families have poor relationships with their parents and other family members, which has driven them to smoke (Qattan et al., 2021). In Saudi Arabia, it is also noted that smoking family or friends were the risk factors for high school students to start smoking. Furthermore, the outings high school students go for with their friends, boredom, the company they keep, and the spare time are all risk factors associated with their commencement of waterpipe smoking behavior.

Additionally, high school students in Saudi Arabia have also seen their teachers smoke, and this is a risk factor associated with their commencement of smoking behavior. Students from high-income families are also given allowances daily, which have prompted them to engage in smoking. As a result, they end up skipping their classes, studying less, spending most of their time away from home, and are not affiliating with any religion (Alasqah et al., 2019). Also, mass media is a factor that has contributed to teenagers engaging in smoking while in high school. The reason is that tobacco products in mass media have been displayed as an everyday activity, making young people curious and trying the product. Peer pressure is the other contributing social and physical environment that leads many young people to use tobacco. For high school athletes, smokeless tobacco is common and those not using the product and on the team are easily lured because of the aftermath of smoking. As such, using tobacco helps some of them avoid unpleasant emotions like stress or look mature or calm (Abdel-Salam et al., 2021).

C. *Knowledge and Attitudes among Smoking Teenagers*

In Arab culture, the most popular method of smoking tobacco is *shisha*, also called argilla in other places (Aldoss et al., 2020). Shisha is a sweetened tobacco fermented and has additions of glycerin, molasses, and fruit essences, producing a pliable and moist mixture (Othman et al., 2019). Shisha became popular among young people due to communication, such as the internet and satellite television that promoted and advertised the product. In family gatherings, shisha was accepted socially as a traditional and cultural behavior, and through this, its acceptance was encouraged among adolescents and young people (Aldoss et al., 2020). Furthermore, shisha has a sharing practice, which makes it more affordable, and smoking is intermittent.

Many held that smoking shisha was not as hazardous and harmful as cigarettes (Aldoss et al., 2020). However, some studies have reported that smoking shisha has adverse health effects associated with oesophageal cancer, lung cancer, oral cancer, and gastric carcinoma (Khani et al., 2018). Also, shisha is orally shared, which increases the risk of individuals contracting various infectious diseases, such as tuberculosis. Othman et al. (2019) reported that one puff of shisha contains nicotine that is 1.7 times more than cigarettes and has carbon monoxide that is 8.4 times, while the tar is 36.0 times. Shisha also marks a decline in pulmonary function values, raising an individual's risk of suffering from COPD later in life.

Consequently, the determinant factors of young people commencing the use of cigarettes are categorized into two groups. Sociodemographic factors include gender, daily allowance, age, family structure, academic performance, and type of school. In the second group, we have exposure to second-hand smoke, friends using tobacco, parental smoking restrictions, selling to minors' shisha, and teachers using tobacco (Othman et al., 2019).

D. Health Impact of Smoking

Adolescents engaging in cigarette smoking cause themselves significant health problems, increasing their chances of getting severe respiratory illnesses.

Furthermore, their physical fitness decreases, and it has the potential of lowering the growth and functioning of one's lungs. Adolescents also get addicted to smoking, which can last into and even sometimes through their adulthood. According to the American Lung Association (2020), nearly 2500 children below 18 years try smoking their first cigarette every day. From this, more than 400 of them will be new, regular, and daily smokers. Also, half of them can die from this habit. Smoking at an early age translates to severe nicotine addiction, and it becomes difficult for them to quit. The persistence of current trends results in the estimation of 5.6 million adolescents dying prematurely from smoking-related diseases. Additionally, asthmatic adolescents are said to be more apt to smoking than their non-asthmatic counterparts. Furthermore, a study reveals that their asthmatic condition while young in male adolescents reduces their smoking initiation (Jones et al., 2016).

Users of waterpipe tobacco have similar health issues as cigarette tobacco users, but the health risks of this product are not known or understood by many users. Smokeless tobacco is highly addictive and damages one's health as it contains many cancer-causing toxins. Therefore, using it increases the chances of throat cancers, oral cavity, healthy oesophagus, and neck (WHO, 2021). It also includes cancer of the gums, mouth, lip, and tongue. It is very costly to use tobacco because of its high health care costs and also treating diseases brought about by using tobacco is expensive, and individuals often lose their human capital. Therefore, it is attributed to morbidity and mortality. Tobacco users live a life of poverty as their household spending is diverted to buying tobacco. As such, many young children are forced to work in tobacco farms to boost their family income. Some of these children start experimenting with these products at a tender age, affecting their health and wellbeing. The farmers are also exposed to health risks like "green tobacco sickness" (WHO, 2021).

CHAPTER 3

METHODOLOGY

This research dealt with a presentation of the procedures taken by the researcher to achieve the objectives of the study, which began with a description of the research method used, the study population and its sample, the method of selecting the sample and also describing the study tool and how to develop it, verifying the validity and reliability of the used tool, and how to apply it to the sample members, describing the method of data collection, and indicating To the study procedures that were followed and the statistical methods that were used to treat them, as follows:

A. Design

A descriptive, cross-sectional study and was done in October 2021.

B. Settings

Male high school students in Riyadh (Saudi Arabia) were eligible for this study.

C. Sample

Random sampling was employed to calculate the sample for this study five high schools for boys (North, East, Central, West and South) Riyadh. The design used for the study online questionnaire a sample of students between 16 and 18 years attending either public school in Riyadh (Saudi Arabia). Random selection was also done for the specific classes to participate in from each school. As such, all students selected from the categories were eligible to participate in this study.

D. Tool

A questionnaire was used, and the questions were close-ended with multiple choices in several questions. In the questionnaire, demographic data included were age, the academic performance of parents, and year of study. It also had information like tobacco smoking patterns of tobacco. The definition of a smoker was a student who consumed one tobacco product.

E. Contents

Analysis of data involved the use of descriptive and inferential statistics. Descriptive analysis used gender, academic performance, and year of study. A unified method of collecting data was ensure by providing education to the team, which translates to encouraging students to participate in the survey by answering all questions without encountering any form of stress. Responding to the questions went smoothly as the teacher was not present. Confidentially, informed each participant of their information, and at any time, they were free to withdraw from participating in the study.

F. Date collection

For the present study, data were collected on the date the research contacted the Ministry of Education and took the approval to conduct the research. The schools were randomly selected, then the schools were visited, and give school questionnaire was the study.

G. Ethical

Approval was obtained from the Ministry of Education in the Kingdom of Saudi Arabia, data privacy and confidentiality were maintained, moreover, informed consent was a prerequisite to completing the online questionnaire.

H. Analysis

Since the main indicator in this study is prevalence, the variance was calculated through the binomial distribution with a confidence level of 95%, a program was used.

CHAPTER 4

RESULTS

The study sample consists of high school students in Riyadh, and the method of calculating the selection as the community method of calculating the sample size by applying the Richard Geiger equation, through the use of the purposive stratified sample and the distribution of the electronic questionnaire form for it, agreeing to answer the questionnaire (51) individuals (13%) of the total questionnaires. The researchers obtained the number of the final sample (342) questionnaires valid for statistical analysis at a rate of (87%) of the total questionnaire.

study community	Questionnaires spreader		Other questionnaires interrogated		Questionnaires suitable for analysis	
No.	No.	%	No.	%	No.	%
393	393	% 100	51	% 13	342	% 87

Table (1) Numbers and Percentages of Distributed, Retrieved and Valid for Analysis Questionnaires from the Study Sample

Source: Created by researcher

A. DESCRIPTION OF THE CHARACTERISTICS OF THE STUDY SAMPLE

The study tool, in its first part, dealt with the demographic characteristics of the study sample, represented by the stage of study, the location of the school, and the following table shows the frequency of participation, and the percentages of the study sample, which are as follows:

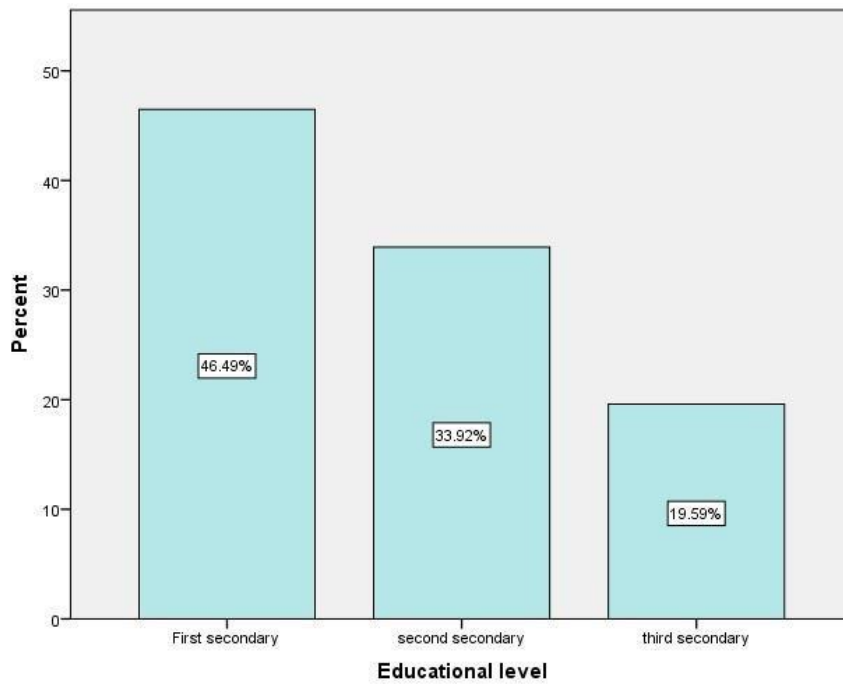
➤ Description of the study sample according to the study stage variable:

Variables	Frequency	Percent
Educational level:		
First secondary	159	% 46.5
second secondary	116	% 33.9
third secondary	67	%19.6
Total	342	% 100.0

Table No. 1: Shows the frequencies and percentages of the educational stage variable

Source: Prepared by researcher based on outputs (spss)

It is noted from the data in the above table that the percentage of the first secondary stage came in the first rank, reaching (46.5%) of the total sample members of the study. In contrast, the percentage of the sample members who are in the second secondary stage came in the second rank, reaching (33.9%), and in the same At the time, we note that the percentage of the sample who are in the third secondary stage came in the third and last rank, reaching (19.6%). More precisely, the following figure is seen: Figure No. (1) shows the secondary stage variable for the sample members



B. Description of the study sample according to the school location variable:

<i>Variables</i>	<i>Frequency</i>	<i>Percent</i>
school website		
North of Riyadh	63	% 18.4
East of Riyadh	25	% 7.3
downtown Riyadh	61	%17.8
west of Riyadh	125	%36.5
south of Riyadh	68	%19.9
Total	342	% 100.0

Table No. 2: Shows the frequencies and percentages of the school's location variable

Source: Prepared by researcher based on outputs (spss)

We note from the table that the highest percentage of the sample respondents was from those who were in schools in western Riyadh, which amounted to (36.5%) of the total sample items, and the second place was for those who were in schools south of Riyadh with a percentage of (19.9%), while the percentage of those in the schools came in the second place. North Riyadh schools ranked third with a rate of (18.4%).

In contrast, the percentage of respondents who are in the center of Riyadh came in the fourth place, reaching (17.8%), and the lowest percentage of those in eastern Riyadh came in the fifth and last rank with (7.3%). More precisely, see the following figure:

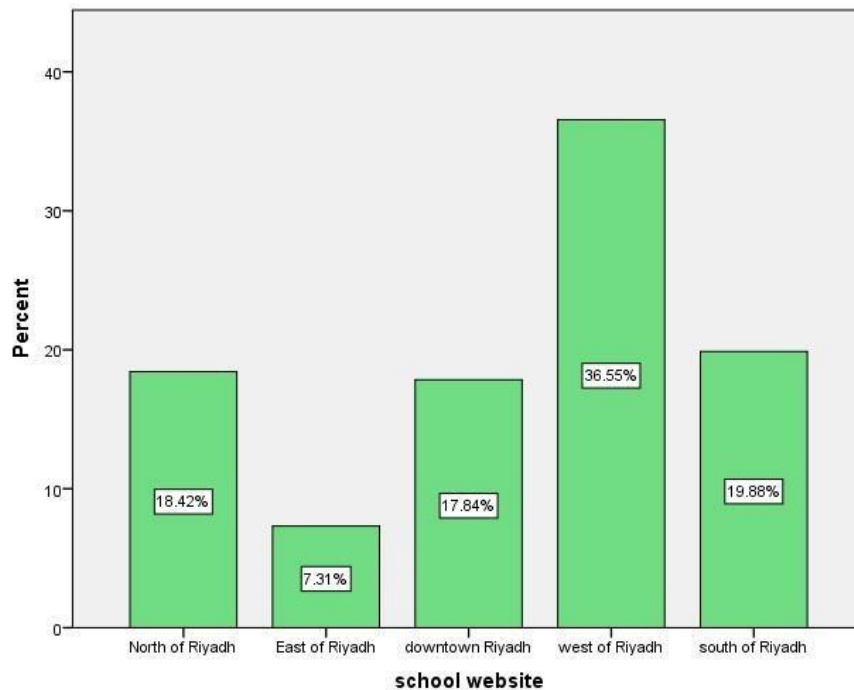


Fig. No. 2: Shows the school location variable for the sample members

C. THE VALIDITY OF THE RESOLUTION:

The honesty of the questionnaire means that the questionnaire questions measure what they were designed to measure. Therefore, the researcher verified the validity of the questionnaire through the following:

➤ *The veracity of the arbitrators: "apparent honesty"*

The veracity of the arbitrators: "apparent honesty"

After completing the preparation of the questionnaire in its initial form, it was necessary to verify its logical validity, that is: its ability to measure the variables that it was designed to measure, so the researcher Quote some paragraphs from the World Health Organization (WHO) and the Center for Control from Diseases and Prevention(CDC) America and presented it to a number of professors with academic specialization for the purpose of arbitration, to ensure the validity of the content, and also to ensure the validity of the content. The paragraphs of the questionnaire measure the variables that were designed to measure them, and the extent of their clarity and accuracy of their formulation and coverage of all aspects required to complete the study.

➤ *The validity of the scale:*

The validity of the scale was confirmed by the following:

- **Internal Consistency:**

Internal consistency honestly means: the consistency of all the paragraphs of the questionnaire with the sub-dimension to which this paragraph belongs.

The researchers calculated the internal consistency of the questionnaire based on the total sample size of (393) individuals, by calculating the correlation coefficients between each paragraph of the questionnaire By reading the results of the validity test (Pearson correlation coefficient) and the probabilistic value of this test for the paragraphs of the questionnaire distributed to the sample members, and the researchers found that it is a statistical function at a significant level of 1% for all questionnaire

items through the Correlations test to find out the correlation, and the following table shows the correlation coefficients, between the paragraphs of the questionnaire.

No.	Labs Pearson	Sig.	No.	Labs Pearson	Sig.	No.	Labs Pearson	Sig.
1	.217**	.000	2	.333**	.000	3	.436**	.000
4	.283**	.000	5	.224**	.000	6	.325**	.000
7	.167**	.001	8	.447**	.000	9	.502**	.000
10	.378**	.000	11	.398**	.000	12	.265**	.000
13	.373**	.000	14	.603**	.000	15	.559**	.005
16	.586**	.003	17	.767**	.000	18	.524**	.009

Table No. 3: Correlation coefficient for the prevalence of smoking

Source: Prepared by researcher based on outputs (spss)

Table No. (3) shows that all the values of the correlation coefficients in all items of the questionnaire are statistically significant at a significant level $\alpha \leq 0.01$ between the degree of all items according to the test set for that where the p value of each dimension is less than 1%. Thus, all the paragraphs of the questionnaire are true to what they were designed to measure.

• Resolution stability:

To measure the stability of the resolution, that is: the extent to which the same results are obtained even if the study is repeated in similar conditions and using the same resolution, the researcher used Chronbach's Alpha coefficient to determine the degree of stability of the tool.

The purpose of these results obtained by the statistical package (SPSS) is the Cronbach's alpha coefficient values to ensure the stability of the used scales.

Cronbach's Alpha	N. of Items
.751	18

Table No. 4: Shows Cronbach's alpha coefficient for the paragraphs of the resolution

Source: Prepared by researcher based on outputs (spss)

It is clear from Table No. (4) that all values of Cronbach's alpha stability coefficient for all paragraphs are average at a rate of (75%), and this means that the scale used for the tool of this study has a medium degree of stability.

This indicates the objectivity of the statements and their ability to clearly express the variables that measure them. In addition, the questionnaire can be used with confidence, and then the same results will be reached if the study is re-applied to the same sample Presenting and analyzing the answers of the sample members to the paragraphs of the questionnaire:

Variables	Frequency	Percent	Mean	Std. Deviation	degree of approval
Father's educational level:					
secondary or lower	174	%50.9	1.49	.500	High
university	168	%49.1			
Mother's educational level:					
secondary or lower	216	%63.2	1.37	.483	High
university	126	%36.8			
Father's job:					
employee	212	%62.0	1.61	.840	medium
free busineses	50	%14.6			
retired	80	%23.4			
mother's work:					
housewife	275	%80.4	1.20	.398	High
employee	67	%19.6			
Family monthly income:					
More than 10 thousand	174	%50.9	1.49	.500	High
Less than 10 thousand	168	%49.1			
population:					
Property	191	%55.8	1.44	.497	High
tenant	151	%44.2			
Do you have a separate room:					
No	161	%47.1	1.53	.500	High

Yes	181	%52.9			
Do your friend's smoke:					
No	241	%70.5	1.30	.457	High
Yes	101	%29.5			
Is anyone in your family a smoker:					
No	217	%63.5	1.37	.482	High
Yes	125	%36.5			
Do you smoke:					
No	318	%93.0	1.07	256	weak
Yes	24	%7.0			
general arithmetic mean			1.3863	.16484	

Table No. 5: shows the results of the arithmetic averages, standard deviations, and the degree of approval of the phenomenon of smoking prevalence

Source: Prepared by researcher based on outputs (spss)

It is noted from Table (5) that the level of prevalence of smoking among students in secondary schools from the students’ point of view was average, and the paragraphs came at the high and medium levels, as the arithmetic averages ranged between (1.61- 1.07), and paragraph (3) came in the first place which states “the father’s work”, with an arithmetic mean (1.61) and standard deviation (.840) and at a high level, and in the second place came paragraph (7) which states “Do you have a separate room” with an arithmetic mean (1.53) and a standard deviation (.500) At a high level, and came in the penultimate rank, paragraph (4), which states "the mother's work" with an arithmetic mean (1.20) and a standard deviation (.398), and at an average level, and came in the last rank paragraph (10) which states "Are you a smoker?" With an arithmetic mean (1.07), a standard deviation (.256). The general arithmetic mean (1.3863) and standard deviation (.16484).

Variables	Frequency	Percent	Mean	Std. Deviation	degree of approval
smoking type:					
Traditional cigarette	15	%4.4	1.50	.722	weak
Electronic cigarette	6	%1.8			
Hookah	3	%.9			
Do you smoke daily:					
No	5	%1.5	1.79	.415	High
Yes	19	%5.6			

Why do you smoke:					
Because my family is a smoker	1	%3	1.96	.204	High
personal choice	23	%6.7			
Do you feel uncomfortable in non-smoking areas:					
No	12	%3.5	1.50	.511	High
Yes	12	%3.5			
Do you intend to quit smoking:					
No	12	%3.5	1.50	.511	High
Yes	12	%3.5			
Have you ever tried to quit smoking:					
No	14	%4.1	1.42	.504	High
Yes	10	%2.9			
Would you stop smoking if I helped you properly:					
No	13	%3.8	1.46	.509	High
Yes	11	%3.2			
Have you searched for information about the dangers of smoking:					
No	11	%3.2	1.54	.509	High
Yes	13	%3.8			
general arithmetic mean			1.5833	.19035	

Table No. 6: shows the results of the arithmetic averages, standard deviations, and the degree of approval for people who actually smoke

Source: Prepared by researcher based on outputs (spss)

It is noticed from Table (6) that the actual level of smoking among students in secondary schools in Riyadh by (7%) of the sample members, and the paragraphs came at the high and medium levels, as the arithmetic averages ranged between (1.61 - 1.07), and the first paragraph came in the first place (13) which states “Why do you smoke”, with an arithmetic mean (1.96) and a standard deviation (.204) and at a high level, and in the second place came paragraph (12) which states “the type of smoking” with an arithmetic mean (1.79) and a standard deviation (.415) and at a high level, and came in the penultimate rank, paragraph (18), which states, “Have you searched for information about the dangers of smoking” with a mean (1.46) and standard deviation (.509), and at an average level, and came in the last place paragraph (17) that It states "Would you stop smoking if I helped you properly" with a mean (1.42), a standard deviation (.504).

The general arithmetic mean (1.5833) and standard deviation (.19035).

CHAPTER 5

DISCUSSION

Among teenagers in high schools, the rising concern is their engagement in smoking. This study assessed the smoking prevalence of high school students, and these smokers' patterns were elaborated. There are several factors that contribute to the student's acceptance of smoking behavior, including the influence of peers and financial situation.

In most countries: the teenage population is 20% and having a health group translates to building their society's economic, social, and educational status (Agu et al., 2018). By nature, teenagers are explorers and this has resulted in them searching for self-identity in various possible environments and then expresses their autonomy through risk taking. Moreover, they engage in smoking as a way of increasing their self-esteem. The study shows that students receiving more pocket money from their parents stand a high chance of smoking, whereas those from low-income families are more than twice not likely to engage in smoking (Alzahrani, 2020). The author further states that adolescents that are not satisfied with their current status and have poor self-esteem were more likely to smoke tobacco. The other risk factor identified is having positive subjective health status. Other predictors mentioned include having a friend who smokes, being stressed and thin, a less hostile attitude to smoking, and perceptions that smoking boys look fantastic and are more attractive (Bobo et al., 2018). Accordingly, the behavior of smoking among teenagers is influenced by several factors, and government agencies need to develop laws that help mitigate the increasing trends of high school smokers.

The literature review: shows that the smoking prevalence among high school students in KSA and other countries is attributed to the fact that smoking has been radicalized. The new communication channels have enabled teenagers to try out new things like smoking shisha even though it has negative health impacts (Jiang et al., 2018). For Saudi Arabian students, their smoking behavior has not been understood when it is looked at from one's attachment to society via social connections, differential reinforcement promoted by surrounding people, associating with people who smoke and nonsmoking, imitating smokers, and the awareness of health risks. From this perspective, a social control theory can be applied in partial support of issues raised.

Islam is not agreeing with the arguments raised of smoking behaviors being related to health and financial reasons. Therefore, their consciousness wheels them towards their religious culture, which removes the chance of engaging in smoking behaviors with friends. In Saudi studies, religious conviction plays a critical role in enabling smokers to quit. The government should play an essential role in curbing, but Saudi Arabia has failed to take systematic punitive measures for those smoking. The sporadic policies formulated by the Saudi government, such as a ban on tobacco advertisements on the local media while in public, smoking only in designated areas, and banning the sponsorship of sport by tobacco companies, among others. Therefore, it is pertinent for Saudi Arabia to put more effort into developing antismoking policies, which reduces smoking prevalence among high school students. Furthermore, students can be encouraged to read the health warning information in cigarettes packets to try and restrict high school students' involvement in smoking cigarettes (Abdel-Salam et al., 2021).

According to Khani et al. (2018), tobacco smoking plays a protective role in developing thyroid cancer, and Kaposi sarcoma and skin issues. Furthermore, Ansari and Farooqi (2018) found that Saudi Arabia continues to witness an increase in smoking percentage in the country. It is attributed to teenagers wanting to relieve their stress, imitation, curiosity, anxiety, and the contact one has with smokers. Lastly, according to Algorinees et al. (2016), the prevalence of smoking among high school students in Saudi Arabia is on the rise and strategic measures need to be put in place by the government to curb teenagers over indulgence of the product as it affects their quality of life and well-being.

CHAPTER 6

CONCLUSION

I hope to conduct extensive research that includes all regions of the Kingdom of Saudi Arabia and increase educational campaigns for schools to raise awareness about the harms and the correct ways to quit smoking.

➤ RECOMMENDATIONS

- More research on smoking in schools
- Conducting awareness campaigns in schools about the harms of smoking and the correct quitting methods
- Be careful not to sell smoking products to anyone under 18 years old

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