

## RESEARCH ARTICLE

# Prevalence of Cigarette Smoking Usage among Adolescent Students in Northern Saudi Arabia

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### Abstract

**Background:** Cigarette smoking is a major public health issue in the Kingdom of Saudi Arabia (KSA) in recent years, particularly among adolescents. Therefore, the aim of this study was to determine the prevalence of cigarette smoking usage among adolescent students in the north of the country. **Materials and Methods:** This was a cross-sectional study investigated 305 adolescent students from the Northern KSA population, their ages ranging from 11 to 19 years old. **Results:** Of the 287 respondents, 56/287 (19.5%) were found to be current smokers. Of the 56 current smokers, 14/52 (27%), 29/52 (55.8%), and 9/52 (17.2%) smoked 1-3, 4-10 and 11+ cigarettes/day, respectively. For duration most had smoked for 26-36 months. **Conclusions:** The findings of the present study indicate that cigarette smoking use is still an important risk behavior among adolescent students. The findings of this study found a significant association of cigarette smoking usage and adolescents various beliefs and attitude for initiation of smoking and perception toward knowledge of other factors that contribute to the burden of tobacco use.

**Keywords:** Cigarette smoking - saudi arabia - adolescent

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### Introduction

Tobacco use is the most important preventable cause of deaths worldwide; the state is serious, particularly in the developing countries (Tiwari et al., 2014). Tobacco smoking is global public health anxiety leading to pulmonary disease, various cancers including those of the respiratory, digestive, and genitourinary systems, and definite types of leukemia and premature death (Office of the Surgeon General, 2004). In the developed world, a significant reverse association between socioeconomic status and smoking happens such that the poorest and minimum educated peoples are more expected to smoke (Laaksonen et al., 2005; Wipfli and Samet, 2009). Whereas there are limited studies characterizing tobacco use in the developing world, they mainly support the findings witnessed in the developed world. Furthermore, it has been suggested that tobacco use has grown into generally prevalent in developing countries and the public health importance of smoking related morbidity and mortality will continue to raise (Wipfli and Samet, 2009).

Youth around the world use tobacco products at high amounts. Young people may not grip the long-term consequences of tobacco use, even though tobacco usage and exposure has been revealed to have significant

negative health effects. Youth use a range of tobacco products that are smoked, chewed, or sniffed. Prevention efforts have concentrated on answering those aspects that are believed to contribute to smoking acceptance, such as tobacco industry advertising and promotion, and access to tobacco. Given the severity of the tobacco epidemic worldwide and the upsetting health effects on an individual and population basis, there are presently numerous efforts to restrict the tobacco problem, including the World Health Organization (WHO) sponsored Framework Convention on Tobacco Control (Tanski et al., 2004). Scientific evidence on all aspects of smoking amongst youth is very vital for planning suitable interventions to shrink smoking among this susceptible population (Minh, et al., 2016).

Smoking initiation is well thought-out the fundamental behavior that governs the future health burden of tobacco smoking in a society (Kaleta et al., 2015). Understanding the role of the family in determining adolescent health risk behaviors has recently been given better consideration (Zaborskis and Sirvyte, 2105). Several countries around the world are experiencing an increase in the prevalence of current smoking among youth and young adults and are now having to deal with the preventing tobacco use (National Center for Chronic Disease, 2012).

An average of 600 million SR (approximately US\$

150 millions) are expended each year on tobacco use in Saudi Arabia (CDC, 2005). KSA is ranked 8th in the world in relations to tobacco usage and use to import 20,000 million cigarettes per year, which cost approximately 351.8 million US dollars (WHO, 1998). In 2002, the two holy cities of Mecca and Medina in Saudi Arabia were declared tobacco free by the Custodian of the Two Holy Mosques. Since then, great efforts are being employed by the Tobacco Control Program, Ministry of Health and the Anti-Smoking Committee (nongovernmental organization) towards sustaining and ensuring the continuity of this initiative (WHO, 2006). However, the few studies have been conducted to find out the prevalence of smoking among adolescent KSA have showed alarming figures (Al Nohair, 2011). The prevalence of smoking is huge and should be considered as a warning for a coming epidemic health education provision should have a greater role in schools governmental commitment and social support are important if health education and awareness programs are implemented and sustained among adolescents. Therefore, the aim of the present study was to determine the prevalence of cigarette smoking usage among Adolescent Students in Northern Saudi Arabia.

## Materials and Methods

The study was a cross-sectional study investigated 305 adolescent students from the Northern Kingdom of Saudi Arabia (KSA) population. The study subjects were 14 to 19 years old adolescents studying in 5 intermediate schools in the city of Hail, Hail, Region, KSA.

All the intermediate schools in the city of Hail were included in the sampling frame. A cluster sampling design was adopted to achieve a representative sample, of students in classes 1–3 in intermediate schools. Out of 30 intermediate schools in Hail city, 5 schools were randomly selected from the list of schools. Each school consisted of 100 students. The classes with each school were randomly selected as they correspond to the desired age group of 11- to 19-year-old students. Of the 480 students fulfill the criteria for inclusion in the study, 305/480(63.5%) has responded. Since, tobacco use is considered as strongly social stigma, all participants were males.

### Inclusion and Exclusion criteria

All the students in the designated schools, existent on the day of the survey, were entitled to join the survey, agreeing for unidentified and voluntary involvement. Participants who had indicated their age to be either less than 11 years or more than 19 years were left out from the inclusion.

### Data Collection

Self-administered questionnaire was used in the study. The questionnaire was in Arabic language. The questionnaire included 17 Variables; Q1- Do you think cigarette smoking is harmful to your health?, Q2-Does the vacuum leads to smoking addiction, Q3-Adults' imitation leads to smoking, Q4- Family careless leads to smoking, Q5-does educational failure of adolescent leads to smoking, Q6-Do you accept smoker to be relative in law,

Q7-Do you believe that smoking can destroy community and deteriorate youth, Q8-Smoking reduces anger and helps people to forget their worries, Q9-Smoking is an easy way to escape from life's complexity, Q10-Is it easy to quit smoking, Q11-Are current Smoker if yes: Q12-Why do you smoke?, (a) Self-leisure, (b)To express manhood, (c) Imitation only, (d)Other, Q13-Do you feel with enjoyment that keeps you continuing smoking, Q14- Do you think in quitting smoking?, Q15-Frequency of Smoking cigarette per day, Q16-Does your family know your habit, Q17-How long do you smoke.

### Ethical Consent

A written consent from was obtained from education related leaders in Hail city prior to conducting the study in their school. A written consent was also obtained directly from the students and their relatives through school communication network.

### Statistical analysis

The collected data was transformed into a computer-based spreadsheet. Statistical Package for Social Sciences (SPSS version 16) was used. Statistical analysis included calculating of proportions of various variables and cross-tabulation with the chi-square test (Fisher's exact test being applied, wherever applicable). Chi-square test for statistical significant (P value  $P < 0.5$ ), and the 95% confidence level and confidence intervals were used.

## Results

Data in the present study analyzed for 305 respondents their ages ranged from 11 to 19 years with a mean age of 14 years. Of the 287 respondents, 56/287(19.5%) participants were found to be current smokers. Of the 56 current smokers, 14/52(27%), 29/52(55.8%), and 9/52(17.2%) were used to smoke 1-3 cigarette/day, 4-10 and 11+, respectively. For Duration most of the smokers used to smoke for 26-36 months. When asking them whether it is easy to quit smoking, 120/285(42%) said yeas. When asking them whether, you think to quit

**Table 1. Distribution of the Study Subjects by Cigarette Smoking Status**

Variable	Category	Response	Percentage
Current smoker		56	56/287(19.5%)
Frequency	1-3 cigarette/day	14	14/52(27%)
	4-Oct	29	29/52(55.8%)
	11+	9	9/52(17.2%)
	Total	52	52(100%)
Duration	<12 month	5	5/32(15.6%)
	13-24	5	5/32(15.6%)
	26-36	16	16/32(50%)
	37+	6	6/32(18.8%)
	Total	32	32(100%)
Quitting	Yes easy to quit	120	120/285(42%)
	Difficult to quit	165	165/285(58%)
	Total	285	285(100%)
Thinking to Quit	Yes will quit	43	43/55(78%)
	No	12	12/55(22%)
	Total	55	55(100%)

smoking 43/55(78%) answered yes, as indicated in Table 1, Figure 1.

Table 2, summarizes the distribution of the study subjects by attitude towards possible causes of smoking initiation. Of the 237 respondents, 237/299(79%) participants believe that adult imitation leads to smoking. About 235/297(79%), believe that family careless and lead to acquiring the habit. Education Failure believed to lead to smoking among 199/298(67%). Approximately 184/294(63%) confessed that Vacuum leads to smoking. About 53/289(18%), believe that smoking is the easy way to scape life complexity.

**Table 2. Distribution of the Study Subjects by Attitude Towards Possible Causes of Smoking Initiation**

Variable	Category	Response	Percentage
Imitation (adult imitation leads to smoking)	Yes	237	237/299(79%)
	No	62	62/99(21%)
	Total	299	299(100%)
Family careless	Yes	235	235/297(79%)
	No	62	62/297(21%)
	Total	297	297(100%)
Education Failure	Yes	199	199/298(67%)
	No	99	99/298(33%)
	Total	298	298(100%)
Vacuum leads to smoking	Yes	184	184/294(63%)
	No	110	110/294(37%)
Easy way to scape life complexity	Yes	53	53/289(18%)
	No	236	236/289(82%)
Reduces and anger and worries	Yes	149	149/288(52%)
	No	139	139/288(48%)
Feel with a joy keeping me smoking	Yes	36	36/53(68%)
	No	17	17/53(32%)
Other causes	Total	53	53(100%)
	Pleasure	28	28/52(54%)
	To be a man	6	6/52(11.4%)
	Friend	9	9/52(17.3%)
	Others	9	9/52(17.3%)
	Total	52	52(100%)

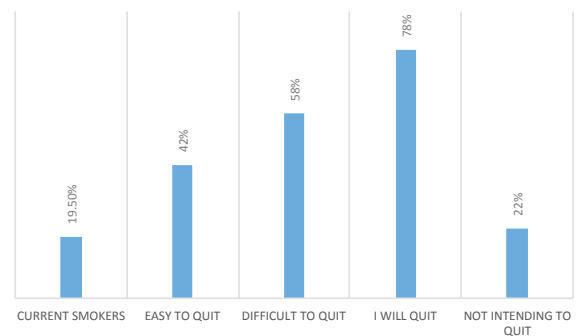
**Table 3. Distribution of the study subjects by attitude towards possible consequences of cigarette smoking**

Variable	Category	Response	Percentage
Destroy community	Yes	271	271/299(90%)
	No	28	28/299(10%)
	Total	299	299(100%)
Harmful to health	Yes	223	223/298(75%)
	No	75	75/298(25%)
	Total	298	198(100%)
Accept smoker for marriage	Yes	148	148/299(49.5%)
	No	151	151/299(50.5%)
	Total	299	299(100%)
Family know	Yes	14	14/52(27%)
	No	38	38/52(73%)
	Total	52	52(100%)

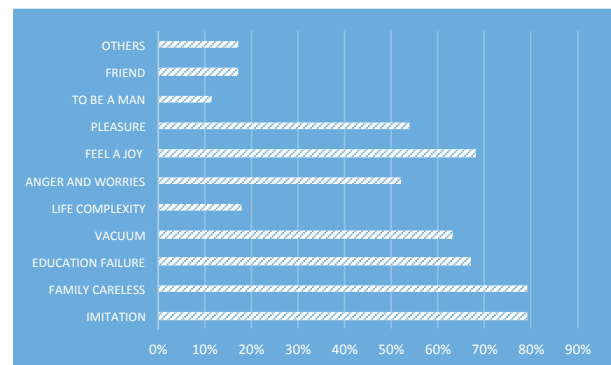
way to scape life complexity. The believe that smoking can reduces and anger and worries was found among 149/288(52%). A round 36/53(68%) participants indicated that “Feel a joy keeping me smoking”, as indicated in Figure 2.

Table 3, summarizes the distribution of the study subjects by attitude towards possible consequences of cigarette smoking. Of the 271 respondents to the question whether smoking a factor can destroy community, 271/299(90%) participants answered yes. About 223/298(75%) participants declare that smoking is harmful to health. Since smoking is considered as social stigma among the studied population, 75/298(25%) of the participants declare that they will not accept smoker to get marriage from their sisters. On asking them whether, their families know that they smoke, 14/52(27%) participants answered yes, as indicated in Figure 3.

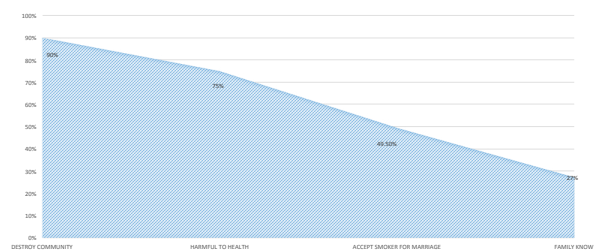
In regard to the association smoking habit and age and attitude, most of the smokers were at the age of 15 years old followed by 16+ and 14 constituting 22, 16 and



**Figure 1. Description of the Study Subjects by Cigarette Smoking Quit Status**



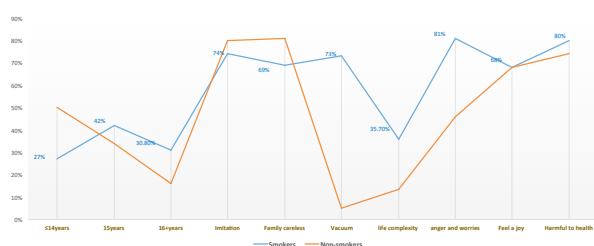
**Figure 2. Description of the Study Subjects by Attitude Towards Possible Causes of Smoking Initiation**



**Figure 3. Description of the Study Subjects by Attitude Towards Possible Consequences of Cigarette Smoking**

**Table 4. Distribution of the Study Subjects by Smoking Habit, Age and Attitude**

Variable	Category	Smokers	Non-smokers	P value
Age	≤14years	14	110	
	15	22	74	
	16+	16	34	
	Total	52	218	
Imitation (adult imitation leads to smoking)	Yes	40	184	
	No	14	44	
	Total	54	228	
Family careless	Yes	38	185	0.03
	No	17	42	
	Total	55	227	
Vacuum leads to smoking	Yes	38	13	0.05
	No	14	90	
	Total	52	277	
Easy way to scape life complexity	Yes	20	31	0.0001
	No	36	198	
	Total	56	229	
Reduces and anger and worries	Yes	43	102	0.0001
	No	10	118	
	Total	53	220	
Feel with a joy keeping me smoking	Yes	36	36	0.0001
	No	17	17	
	Total	53	53	
Harmful to health	Yes	44	166	0.0001
	No	11	59	
	Total	55	225	

**Figure 4. Description of the Study Subjects by Smoking, Age and Attitude**

14, respectively. About 40/54(%) of the smokers believe that “adult imitation leads to smoking”. When asking the smokers whether, Family careless, Vacuum, life complexity, smoking reduces and anger and worries, feel with a joy keeping me smoking and smoking is harmful to health, 38, 38, 20, 43, 36, and 44, respectively answered yes, as indicated Table 4 and Figure 4.

## Discussion

Although several developing countries have implemented preventive drives to fight smoking with variable degrees of success, but smoking rates are still in elevation in many countries, particularly among adolescents. The present study focused on the burden of tobacco use (cigarette smoking only) and its associated cofactors and attitude.

Our findings revealed a prevalence of 19.5% of cigarette smoking among adolescent intermediate school students. It was previously reported that, the prevalence of current smoking in KSA ranges from 2.4-52.3% (median=17.5%). Among school students, the prevalence of current smoking ranges from 12-29.8% (median =

16.5%), among university students from 2.4-37% (median = 13.5%), and among adults from 11.6-52.3% (median = 22.6%) (Bassiony, 2009). Another study found that the prevalence of current smoking was 21.6% for cigarettes. Of current smokers, 41.4% were living in homes where others smoke and 17.0% initiated smoking under the age of 12 years. In logistic regression analysis of older age, living away from home, smoking by family and close friends and exposure to tobacco promotion were strong interpreters of smoking status (Al-Mohamed and Amin, 2010). These results are in agreement of our findings regarding the prevalence rates and other factors such as imitation and influence of a friend. A recent study from Hail in this context has showed that the prevalence of smoking and alcohol use is very low among medical students, which might be due to high female contribution besides social stigma. The prevalence of second-hand smoke (SHS) was found to be very high in Hail region (Alshammari, et al., 2015; Lam, et al., 2016). For better smoking decrease outcomes, it is recommend that tobacco interventions for adolescents should consider targeting more male students at older ages, create firmer adherence to school-based prohibiting of cigarette smoking, engage both smoking and nonsmoking adolescents and authorize adolescents to resist peer smoking inspiration as well as shifting their standards or beliefs towards smoking benefits (Huong et al., 2016).

Another factor among adolescent in KSA is the use of water pipe smoke. The prevalence of water pipe smokers was 30.3% among males in some parts of KSA (Amin, et al., 2010). Social acceptability, deprived awareness of water pipe’s health related hazards and certain socio demographic factors are favoring the growing use of water pipe among adolescents as an alternative for cigarette smoking.

However, different perceptions toward to tobacco used have been emphasized in the present study to find out the overall knowledge regarding causes of smoking initiation as well as, the possible attitude and believes that influence the behavior of adolescent toward smoking habits.

When asked why they initiate smoking, most participants in the present study confessed that they started smoking because of imitation, influence of friend, family careless but some stated they smoked as a personal choice and for happiness, escaping worries, and anger and life complexity. Studies have shown that smoking is a learnt behavior, often initiated during adolescence (Huong, et al., 2016). Smoking as entertainment was previously reported in some studies where adolescences shared smoking with other entertainment (Taliaferro et al., 2010). An essential opinion of interest regarding the personal choice to smoke is that reasonable number of students claim that their families know their habit and they respect that personal choice is made by their own families.

Furthermore, the great majority of the participants (smokers and non-smokers) have showed a high rates of awareness towards both positive and negative factors evaluated in the present study.

The strength of this study include the outcome that most participants intend to quit, particularly if appropriately supported, or had already tried to quit.



Another positive outcome is that most know information about smoking hazards. Even with relatively high awareness about smoking hazards, effective educational program is still extremely necessary to improve the level of broad knowledge and a suitable attitude regarding tobacco use.

The limitations of this study were the exclusion of female schools to overcome some administrative and social difficulties related to including female students in this study.

In conclusion: The findings of the present study propose that cigarette smoking use is still an important risk behavior among adolescent students. The findings of this study found a significant association of cigarette smoking usage and adolescents various believes and attitude for initiation of smoking and perception toward knowledge of other factors that contribute to the burden of tobacco use. Awareness as well as, smoking cessation programs directed the adolescents are urgently needed in this region.

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