



CODEN [USA]: IAJPBB

ISSN : 2349-7750

## INDO AMERICAN JOURNAL OF PHARMACEUTICAL SCIENCES

SJIF Impact Factor: 7.187

<https://doi.org/10.5281/zenodo.5703159>
Available online at: <http://www.iajps.com>

Research Article

### PREVALENCE, KNOWLEDGE, AND ATTITUDE TOWARD SUBSTANCE ABUSE AND SMOKING AMONG MALE HIGH SCHOOL STUDENTS IN RIYADH, SAUDI ARABIA 2021

<sup>1</sup>Dr. Ibrahim Enad Alanazi, <sup>2</sup>Dr. Abdulkareem Alanazi, <sup>3</sup>Mohammed Nayel Alabdali,  
<sup>4</sup>Abdulaziz Abdullah Alanazi, <sup>5</sup>Salam Mohammed Alanazi

Department of Family and Community Medicine, Prince Mohammed Bin Abdulaziz Hospital,  
Riyadh, Saudi Arabia

<sup>1</sup>Family Medicine Resident, Department of Family and Community Medicine, Prince Mohammad Bin Abdulaziz Hospital, Riyadh , Saudi Arabia, E-mail: [eb353@hotmail.com](mailto:eb353@hotmail.com)

<sup>2</sup>Consultant Family Medicine, Department of Family and Community Medicine, Prince Mohammad Bin Abdulaziz Hospital, Riyadh , Saudi Arabia, E-mail: [dr.abdulkarem@hotmail.com](mailto:dr.abdulkarem@hotmail.com)

<sup>3</sup>6th year medical student, King Saud bin Abdulaziz University for Health Sciences, Riyadh, Saudi Arabia, E-mail: [Alabdalmn@gmail.com](mailto:Alabdalmn@gmail.com)

<sup>4</sup>6<sup>th</sup> year Medical student, King Saud bin Abdulaziz university for health sciences, Riyadh , Saudi Arabia, E-mail address: [AzeezAAlanazi@gmail.com](mailto:AzeezAAlanazi@gmail.com)

<sup>5</sup>5<sup>th</sup> year Medical student, King Saud bin Abdulaziz university for health sciences, Riyadh , Saudi Arabia, E-mail address: [salam.alanaz@hotmail.com](mailto:salam.alanaz@hotmail.com)

**Article Received:** October 2021**Accepted:** October 2021**Published:** November 2021**Abstract**

*Background and Aim: The prevalence of smoking, alcohol intake, and drug use among young people is increasing. Thus, we aimed to determine the prevalence, knowledge, and attitudes of male high school students toward substance abuse, alcohol intake, and smoking.*

*Methods: A survey was conducted on March, April and May 2021 using a self-administered questionnaire issued to male high school students in grades 10 to 12, randomly selected 8 public and 3 private schools in Riyadh, Saudi Arabia.*

*Results: A total of 400 male high school students participated in this study. The mean age of participants was 17.5 ± 1.3 years (range: 15 to 21 years old). A total of 281 students (70.2%) attended a public/government school and 119 (29.8%) attended a private or international school. Most students (>70%) had knowledge of the harmful effects of smoking, alcohol, and drugs. Nonetheless, the prevalence of smoking, alcohol intake, and drug abuse was 27.8%, 11.5%, and 9.5%, respectively. Students began smoking before age 15, drinking alcohol before age 20, and using drugs as early as age 14. Most smokers and students that drank alcohol could procure these substances by themselves. A larger percentage of students that took illegal drugs obtained these substances from friends. These vices markedly affected the performance of users at school.*

*Conclusion: Among our studied male high school population, the prevalence of smoking, alcohol intake, and drug use was quite high. Students began smoking, drinking alcohol, and using abused drugs at an early age, which may be influenced by friends and peers or their siblings. Some students purchase these substances by themselves while some receive help from friends, particularly for alcohol. These practices affect their performance at school. Although many students were aware of the harmful effects of smoking, alcohol intake, and substance abuse, some students had an opposing perspective. Therefore, health authorities need to educate these students and institute structural and emotional support for students who are in these vices to mitigate misuse, long-term use, and addiction.*

*Keywords: smoking, alcohol, drug abuse, young students, prevalence*

**Corresponding author:****Dr. Ibrahim Enad Alanazi,***Family Medicine Resident, Department of Family and Community Medicine**Prince Mohammad Bin Abdulaziz Hospital, Riyadh, Saudi Arabia**E-mail: [eb353@hotmail.com](mailto:eb353@hotmail.com)*

QR code



Please cite this article in press Ibrahim Enad Alanazi et al, *Prevalence, Knowledge, And Attitude Toward Substance Abuse And Smoking Among Male High School Students In Riyadh, Saudi Arabia 2021*, *Indo Am. J. P. Sci*, 2021; 08(11).

**INTRODUCTION:**

Substance abuse (including alcohol and other illicit drugs) and tobacco smoking (including vaping, hookah, and e-cigarettes) usually commence during teenage years. In recent years, substance abuse and tobacco smoking have become more prevalent among youths; however, this practice is unsafe, particularly for individuals of this age (1).

The 2011 to 2014 data from the CDC and the National Food and Drug Administration of the United States indicated that an estimated 4.6 million middle and high school students use a tobacco-based product, of which 2.2 million of these students use more than two tobacco products at one time (2). In another report published in 2016, the estimated number of tobacco users in US high school students increased to 4.7 million (3). A survey conducted among high school students in the US in 2016 revealed that 47.2% of middle school students and 42.4% use more than two tobacco products (4).

A high prevalence of cigarette smoking and shisha use among students aged 13-15 years has been reported in GCC member states (5). A high susceptibility of never smokers to initiate smoking was reported to be troubling, with boys more likely to smoke than girls (5). A study conducted in 2006 among Saudi medical students revealed a prevalence of 13% active smokers, with sheesha being the most commonly smoked product (44.1%), followed by cigarettes (32.2%). Another study conducted among Saudi adolescents in 2010 revealed a tobacco smoking prevalence of 9.72% (12.43% among boys and 6.65% among girls) (6). In contrast, the reported prevalence of substance abuse among male secondary school students in Saudi Arabia was 8.8%, whereas that of male secondary students that drank alcohol was 9.3% (7). The most common illicit drug used by students was cannabis (51.4%), followed by glue/solvents (48.6%) and amphetamine (45.7%) (7).

Students from higher income families that have larger daily allowances, spend less time studying, skip

classes more frequently, are less religious, spend more time at home, and drink more soft drinks were found to be more likely to smoke and use illicit substances (6). Another significant predictor of smoking and substance abuse among youths is having friends that smoke (8). A study revealed that 82.4% of students are sufficiently aware of smoking and substance abuse, and this is significantly correlated with having educated parents, family income, and parents that live together (9).

Some studies conducted among Saudi high school students revealed that drug abuse and smoking are highly prevalent, and estimates of existing knowledge and awareness vary. However, reports on substance abuse and tobacco use among adolescents in Saudi Arabia have reported mixed results depending on the geographical location. With the reported high frequencies of smoking and use of illicit substances among high school students and adolescents, it is imperative to assess their knowledge, attitudes, and practices regarding substance abuse and tobacco smoking to understand the reasons for the high prevalence of such practice. Therefore, this study was carried out to determine the prevalence of substance abuse and smoking among high school students, and their knowledge and attitude toward substance abuse and smoking to address this issue.

**METHODS:**

We conducted a cross-sectional survey on March, April and May 2021 using a self-administered questionnaire issued to male high school students in grades 10 to 12 at 8 public and 3 private schools in Riyadh, Saudi Arabia. School selection was performed using a random sampling technique. A random drawing of lots from a list of all male schools in Riyadh, Saudi Arabia, was performed via random selection of 11 high schools in Riyadh, Saudi Arabia. The necessary permits were secured from each selected school.

The sample size was calculated using the formula:  $n = Z^2 p (1 - p) / d^2$ , where n is the sample size, z is the

level of confidence (95% or 1.96),  $p$  is the expected proportion in the population (60%), and  $d$  is the absolute error or precision (5%) (10). Assuming that the prevalence of smoking and substance abuse was approximately 15%, the calculated required sample size was 369 students. We collected data from up to 400 male students to account for nonparticipation and low or incomplete responses.

The self-administered questionnaire was developed using constructs from previous related literatures (5-9) in the English language that were translated to Arabic. The questionnaire included the demographic characteristics of the students, social influences, attitudes, and knowledge. A pilot study was conducted among 20 students to verify the validity of the questionnaire. This pilot study included one male class from public high schools in Riyadh that was not part of the study sample. The questionnaire was modified following a thorough review of the results of the pilot study. Cronbach's alpha for the pilot study was 0.86.

Data were analyzed using the Statistical Package for Social Sciences (SPSS) version 23.0 (SPSS Inc., IBM, Armonk, New York, USA). Descriptive statistics of the survey variables were computed as means and frequencies. Chi-square and t-tests were performed to

determine the significant differences between categorical variables. A Pearson correlation test was performed to determine the bivariate relationship between the two variables. Statistical significance was set at  $p < 0.05$ .

To ensure the confidentiality and anonymity of our participants, the data collection tool did not include the participants' identifiers (name and address) or telephone numbers. Participation was voluntary, and there were no remuneration or payments for participation in the survey. Students were informed of the study objectives, and their participation was voluntary. Ethical approval to conduct the study was obtained from the Institutional Review Board of the Ministry of Health (Cluster 2), Riyadh, Saudi Arabia (IRB00018774), and the Ministry of Education, Saudi Arabia (transaction number 22421).

### RESULTS:

A total of 400 male high school students participated in this study. The mean age was  $17.5 \pm 1.3$  years (range: 15 to 21 years old). A total of 281 students (70.2%) attended a public/government school and 119 (29.8%) attended a private or international school. Table 1 shows the demographic profiles of the participants.

**Table 1. Demographic characteristics of the 400 male high school students who participated in the survey.**

Demographic variables	Mean $\pm$ SD (range)	n (%)
Age in years	17.5 $\pm$ 1.3 (15 – 21)	
Grades of the last year	2.7 $\pm$ 0.6 (1.0 – 3.0)	
<b>School</b>		
Public / Government		281 (70.2)
Private / International		119 (29.8)
<b>School level</b>		
First		35 (8.8)
Second		92 (23.0)
Third		273 (68.3)
<b>Grades of the last ear</b>		
Good		21 (5.3)
Very good		89 (22.3)
Excellent		290 (72.5)
<b>Father's educational level</b>		
Illiterate		17 (4.3)
Primary		23 (5.8)
Intermediate		28 (7.0)
Secondary		109 (27.3)
University		156 (39.0)
Postgraduate		67 (16.8)
<b>Mother's educational level</b>		
Illiterate		30 (7.5)
Primary		38 (9.5)
Intermediate		41 (10.3)
Secondary		83 (20.8)
University		180 (45.0)
Postgraduate		28 (7.0)
<b>Father's employment status</b>		
Unemployed / retired		155 (38.8)
Employed		245 (61.3)
<b>Mother's employment status</b>		
Unemployed / retired		254 (63.5)
Employed		145 (36.5)
<b>Family's monthly income, in SAR</b>		
<5,000		86 (21.5)
5,000-15,000		49 (12.3)
15,001-20,000		111 (27.8)
>20,000		72 (18.0)
Do not know		82 (20.5)
<b>Total number of brothers and sisters</b>	6.8 $\pm$ 2.3 (0 - 15)	
<b>Daily pocket money allowance to school, in SAR</b>		
<10		235 (58.8)
10 – 14		144 (36.0)
15 and more		21 (5.3)

**A. Smoking**

A total of 134 students (27.8%) were smokers. Of these students, 81 (20.3%) smoked cigarettes while 53 smoked a combination of cigarettes, electronic vapes, hookahs, pipes, cigars, and khat/kyat (13.3%).

Of the 134 students who smoked, 79 (58.9%) began smoking before age 15. One hundred and two students (76.1%) could buy the product smoked from nearby stores without assistance. One hundred and twenty of the 134 students (89.6%) claimed to smoke on a daily basis, while 55 students (41.0%) claimed to smoke at least half a pack of cigarettes per day.

There were no significant differences in the age between smokers and non-smokers (smokers:  $17.6 \pm 1.4$  years versus non-smokers  $17.4 \pm 1.3$  years,  $p=0.312$ ). Seventy-nine of the smokers (59.0%) had fathers with university/postgraduate degrees ( $p=0.004$ ), and 82 of the 134 smokers (61.2%) had fathers who were employed ( $p=0.001$ ). Most smokers belonged to a family whose monthly income was less than 15,000 SAR per month ( $p<0.001$ ). Smoking was more common among students who had more than five siblings than among those who had fewer than five siblings ( $n=115$ , 85.8% versus 19, 14.2%,  $p<0.001$ ). Smoking was significantly correlated with the number of siblings ( $r=0.228$ ,  $p<0.001$ ) but not school level ( $r=0.014$ ,  $p=0.777$ ), age ( $r=0.051$ ,  $p=0.312$ ), grades in the previous year ( $r=-0.057$ ,  $p=0.257$ ), father's educational level ( $r=-0.058$ ,  $p=0.246$ ), mother's educational level ( $r=-0.081$ ,  $p=0.1055$ ), father's employment ( $r=-0.001$ ,  $p=0.987$ ), mother's employment ( $r=-0.032$ ,  $p=0.532$ ), and family monthly income ( $r=0.022$ ,  $p=0.654$ ).

### B. Alcohol

A total of 46 students (11.5%) claimed they drank alcohol that were mainly locally made, such as Arak and others ( $n=29$  of 46, 63.0%). Thirty of the 46 students (65.2%) began drinking alcohol before age 20. Twenty-eight of the 46 students (60.9%) obtained these alcoholic drinks by themselves. Thirty-nine of the 46 students (84.8%) consumed 1-3 bottles per day.

There were no significant differences in the age between students that consume alcohol and those that do not consume alcohol ( $17.5 \pm 1.5$  years versus  $17.5 \pm 1.3$  years,  $p=0.701$ ). There were significantly more third-year students who drank alcohol than second- and first-year students (78.3%, 6.5%, and 15.2%, respectively) ( $p=0.009$ ). Twenty-four of the 46 students who drank alcohol had fathers with university and postgraduate levels of education ( $p=0.675$ ), whereas 21 of the 46 students who drank alcohol had mothers who were university and postgraduate level of education ( $p=0.407$ ). Thirty-three of the 46 students who drank alcohol had unemployed mothers ( $p<0.001$ ), and 26 (56.5%) of the students who drank alcohol had families whose monthly income was more than 15,000 SAR per month ( $p=0.211$ ). Students who drank alcohol had more than five siblings compared to those who did not drink alcohol ( $n=34$ , 73.9% versus  $n=12$ , 26.1%,  $p<0.001$ ).

Alcohol drinking was significantly negatively correlated with grades in the previous year ( $r=-0.109$ ,  $p=0.029$ ) but not significantly correlated with school level ( $r=0.020$ ,  $p=0.693$ ), age ( $r=0.019$ ,  $p=0.701$ ), father's educational level ( $r=-0.055$ ,  $p=0.273$ ), mother's educational level ( $r=-0.069$ ,  $p=0.166$ ), father's employment ( $r=-0.051$ ,  $p=0.308$ ), mother's employment ( $r=-0.062$ ,  $p=0.218$ ), monthly family income ( $r=0.096$ ,  $p=0.055$ ), and number of siblings ( $r=0.081$ ,  $p=0.106$ ).

### C. Substance abuse and illicit drugs

A total of 38 students (9.5%) claimed that they had attempted the use of drugs, such as cocaine, heroin, amphetamine, marijuana, and other illegal drugs. The most commonly abused substance was marijuana ( $n=16$ , 4.0%). Of the 38 students, 14 (36.8%) began using illegal substances at 14-16 years old, whereas 16 (33.3%) began using these substances after age 20. Eighteen of the 38 students (47.4%) could obtain illicit drugs from friends, 10 (26.3%) by themselves, and 10 (26.3%) either by themselves or through friends. Fourteen of the 38 students (36.8%) took these illicit drugs once per month, while 13 (34.2%) and 7 (18.4%) took these drugs on a weekly basis and daily basis, respectively.

There were significantly more third-year students who had attempted the use of drugs and illicit substances than students in lower grades ( $n=26$ , 68.4% versus  $n=12$ , 31.6%,  $p<0.001$ ). Thirty of the 38 students who tried illegal drugs and illicit substances were from public and government schools ( $p<0.001$ ). Twenty-six of the 38 students (68.4%) who tried illegal drugs and illicit substances were in their third year of high school ( $p<0.001$ ). There were no significant differences in the frequencies of students who took drugs and illicit substances with regard to father's educational level ( $p=0.645$ ), mother's educational level ( $p=0.168$ ), father's employment status ( $p=0.998$ ), mother's employment status ( $p=0.054$ ), family monthly income ( $p=0.645$ ), and number of siblings ( $p=0.168$ ).

The use of illegal drugs and illicit substances was significantly correlated with lower grades in the previous year ( $r=-0.109$ ,  $p=0.029$ ), but not with the type of school ( $r=-0.097$ ,  $p=0.051$ ), year level ( $r=0.020$ ,  $p=0.693$ ), age ( $r=0.019$ ,  $p=0.701$ ), father's educational level ( $r=-0.055$ ,  $p=0.273$ ), mother's educational level ( $r=-0.069$ ,  $p=0.166$ ), father's employment ( $r=-0.051$ ,  $p=0.308$ ), mother's employment ( $r=-0.062$ ,  $p=0.218$ ), family monthly income ( $r=0.096$ ,  $p=0.055$ ), and number of siblings ( $r=0.081$ ,  $p=0.106$ ).

#### **D. Reasons students began smoking, drinking, or taking illicit drugs and substances**

The most common reasons for smoking, drinking, or taking illicit drugs and substances were loneliness (n=39, 9.8%) and happiness (n=39, 9.8%). Other reasons included curiosity (n=38, 9.5%), influence of peers and friends (n=33, 8.3%), and to forget problems (n=17, 4.3%).

#### **E. Knowledge and opinions of smoking, drinking alcohol, and substance abuse**

Most students believed that a person who smoked, drank alcohol, and took drugs always had unsatisfactory health (73.8%), developed respiratory disease (64.3%), developed heart disease (65.0%), spent more money (75.0%), dropped out of school

Table 2. Knowledge and opinions of male high school students with regard to smoking, drinking alcohol, and substance abuse.

Questions	Strongly agree/agree	Neutral	Strongly disagree/disagree
Smoking, alcohol, and substance abuse are not dangerous to my health	76 (19.0%)	36 (9.0%)	288 (72.0%)
A person who smokes, drinks alcohol, and takes drugs always has unsatisfactory health	295 (73.8%)	48 (12.0%)	57 (14.2%)
A person who smokes, drinks alcohol, and takes drugs develops respiratory disease	257 (64.3%)	96 (24.0%)	47 (11.7%)
A person who smokes, drinks alcohol, and takes drugs develops heart disease	260 (65.0%)	89 (22.2%)	51 (12.8%)
A person who smokes, drinks alcohol, and takes drugs spends more money	300 (75.0%)	40 (10.0%)	60 (15.0%)
A person who smokes, drinks alcohol, and takes drugs drops out of school	243 (60.8%)	77 (19.2%)	80 (20.0%)
A person who smokes, drinks alcohol, and takes drugs always runs out of money	267 (66.7%)	70 (17.5%)	63 (15.8%)
The family of the person who smokes, drinks alcohol, and takes drugs always experiences poverty	131 (32.8%)	154 (38.5%)	115 (28.7%)
Smoking, alcohol, and drug abuse are against the norms of society	304 (76.0%)	40 (10.0%)	56 (14.0%)
The family of the person who smokes, drinks alcohol, and takes drugs is always denigrated by others	206 (51.5%)	129 (32.2%)	65 (16.3%)
People do not like the company of people who smoke, drink alcohol, and take drugs	276 (69.0%)	63 (15.8%)	61 (15.2%)
A person who smokes, drinks alcohol, and takes drugs is a burden to society	279 (69.8%)	54 (13.5%)	67 (16.7%)
People do not easily trust a person that smokes	151 (37.8%)	103 (27.7%)	146 (36.5%)
People do not easily trust a person that drinks alcohol	273 (68.3%)	72 (18.0%)	55 (13.7%)
People do not easily trust a person that takes illicit drugs	317 (79.3%)	41 (10.2%)	42 (10.5%)

(60.8%), and always ran out of money (66.7%). Furthermore, a large proportion of students believed that smoking, alcohol, and drug abuse were against the norms of society (76.0%). They also believed that people do not like the company of people who smoke, drink alcohol, use illicit substances (69.0%), and these people are a burden to society (69.8%). Seventy-two percent of the students believed that smoking, alcohol, and substance abuse are dangerous to their health. However, there were divided views on whether the family of a person who smoked, drank alcohol, and took drugs always experienced poverty, where 154 (38.5%) were undecided. Students do not easily trust a person that uses illicit drugs compared to people who drink alcohol and those who smoke (79.3% versus 68.3% versus 37.8%, respectively) (Table 2).

**F. Attitudes toward smoking, alcohol drinking, and use of drugs and illicit substances**

Most students (75.5%) would refuse an offer of cigarettes, alcohol, or drugs; however, 70 students (17.5%) would smoke, drink, or use drugs and illicit substances owing to curiosity. Many students (n=274, 68.5%) would resist invitations, 280 (70.0%) would avoid places that sell these items, and 227 (56.8%) engage in sports and other activities or are involved in social work (n=205, 51.2%) to avoid these vices.

Many students denigrated people who use illicit drugs more than those who drink alcohol and smoke (66.3% vs. 55.0% versus 35.8%, respectively). Seven of ten male students believed that occasional smoking, alcohol drinking, and illicit drug use are extremely harmful (70.8%) and can kill a person (75.8%). However, only 8 of the 10 students (81.0%) believed that smoking, alcohol drinking, and substance abuse are dangerous to their health (Table 3).

**Table 3. Attitudes of male high school students toward smoking, alcohol drinking, and the use of drugs and illicit substances**

Questions	Strongly agree/agree	Neutral	Strongly disagree/disagree
I will refuse an offer of cigarette, alcohol, or drugs	302 (75.5%)	40 (10.0%)	58 (14.5%)
I will try at least once to smoke, drink alcohol, or take drugs out of curiosity	70 (17.5%)	62 (15.5%)	268 (67.0%)
I can resist the invitation from my peers to try smoking, alcohol, and drug use	274 (68.5%)	55 (13.8%)	71 (17.7%)
I avoid places that sell illicit substances and smoke	280 (70.0%)	64 (16.0%)	56 (14.0%)
I practice sports and other activities to avoid these vices	227 (56.8%)	84 (21.0%)	89 (22.2%)
I participate in social work to help these people	205 (51.2%)	123 (30.8%)	72 (18.0%)
I denigrate people who smoke	143 (35.8%)	112 (28.0%)	145 (36.2%)
I denigrate people who drink alcohol	220 (55.0%)	101 (25.2%)	79 (19.8%)
I denigrate people who use illicit drugs	265 (66.3%)	55 (13.7%)	80 (20.0%)
I believe that occasional smoking, alcohol drinking, and illicit drug use are extremely harmful	283 (70.8%)	53 (13.2%)	64 (16.0%)
I believe that taking illicit drugs will kill a person	303 (75.8%)	55 (13.7%)	42 (10.5%)
Smoking, alcohol, and substance abuse are not dangerous to my health	76 (19.0%)	0	324 (81.0%)

**DISCUSSION:**

This study aimed to determine the prevalence rates of smoking, alcohol consumption, and use of drugs and illicit substances among high school students. Smoking, alcohol consumption, and use of drugs and illicit substances have long been reported; however, worldwide reports still show a high prevalence of such practices in more than 40% of high school students (2-5). Since its inclusion in the WHO Framework Convention on Tobacco Control in 2005, Saudi Arabia has legislated strict laws on the advertising, promotion, and sponsorship to restrict sales through the Royal Decree No. 56 or the so called "Anti-

Smoking Law (11)." Similarly, alcohol, illegal drugs, and the use of illicit substances remain a taboo.

**A. Smoking**

The prevalence of smoking in this study was 27.8%. This prevalence is lower than the 37.1% found among male secondary students in Jeddah, as reported by Fida and Abdelmoneim in 2013 (12), and 40.8% reported by Albangy et al. in 2019 (13); however, it is higher than the 15.17% prevalence found among intermediate and secondary school students in Madina, Saudi Arabia in 2013 (14). Similar to previous studies, having friends and peers that smoke has a significant

influence on the smoking status of students. One of the highlights of this study is the ability of 76.1% of the students who smoke to purchase cigarettes from nearby stores. This occurrence is despite the strict implementation of cigarette sales among students in Saudi Arabia. The magnitude of smoking is reflected by the number of respondents that smoked daily (89.6%). Further, 58.9% of these students began smoking before age 15 years old. Such finding is alarming as smoking at an early age is correlated with lifelong smoking, which makes it more difficult for them to quit when they are older (15). Several other studies on smoking among students conducted in Saudi Arabia had comparable prevalence rates: AlHassa (28.1%) (16), and 28.6% from the National Guard study in 2009 (17).

This study revealed no significant correlation between smoking and grade level, age, grades, parents' educational level, employment, and income. The significant effects of the parents' level of education, parents' employment, and monthly family income were not found in this study as most parents were educated and had a high monthly income. Students who had better-educated parents and with good family income were better and more effective at school, as these factors markedly influenced student behavior (18, 19).

One significant factor that correlated with smoking was the number of siblings. The strong effect of friends who smoke, parents who smoke, and siblings who smoke was revealed in previous studies. Early smoking, particularly among teenagers and adolescents, was explained by the presence of siblings and peer smoking (20). A study showed that the prevalence of teenage and adolescent smoking increased from 18% (where no parent or sibling smoke) to 31% when at least one sibling smoke, and to as much as 41% when a parent and a sibling smoke (21).

#### *B. Drinking Alcohol*

The prevalence of alcohol consumption among the respondents was 11.5%. This prevalence is higher than that of previous studies where 9.3% of male secondary school students drank alcohol (7). In a study conducted in Jeddah in 2015, 2.6% of students drank alcohol (22). More than half of the 46 students who consumed alcohol began drinking before age 20. The age at onset of alcohol consumption was reported to have a significant negative correlation with the severity of alcoholism in adulthood, and postponing the use of alcohol until age 25 may be a good strategy to prevent severe alcoholism in adulthood (23).

Similar to smoking, an association was found between alcohol intake and number of siblings. Further, students who drank alcohol had a lower performance at school. Whether these students had siblings and parents who drank alcohol was not investigated. Studies have shown that alcohol intake among parents and siblings predisposes their son or younger brothers to alcoholism, besides the heightened genetic risk for the development of alcohol abuse (24).

#### *C. Use of drugs and illicit substances*

The prevalence of drug abuse and use of illicit substances in this study was 9.5%. This percentage is slightly higher than the 8.8% reported by Musa in 2016 (7). Although both studies revealed the use of cannabis (marijuana), this study revealed many other more dangerous substances, including cocaine and heroin. Accordingly, the prevalence of reported drug dependence is high and is directly proportional to the increased prevalence of psychotic symptoms associated with the use of these illicit substances (25). Our findings also confirm those of previous studies that young men abuse drugs and take illicit substances because of peer pressure (26), where 47.4% of our respondents could obtain these drugs and substances from friends, in contrast to smoke products and alcohol. Similar to other studies, 14 to 16 years were identified as the most volatile ages. A study on drug abuse and drug dependents admitted to a health institution in Riyadh showed an age range of 11-21 years old, with predominantly (53.3%) male high school graduates (25). Similar to findings regarding smoking and alcohol intake, the use of drugs and illicit substances was associated with poor school performance, but not with any other factors, including the number of siblings which was found for smoking and alcohol intake. Such finding might be due to the fact that drug users and substance abusers have a greater tendency to hide their vices from their parents and siblings, but usually carry out these vices with friends and peers.

#### *D. Reasons for smoking, alcohol intake, and drug abuse*

Loneliness and wanting to be happy were the two main reasons for smoking, drinking alcohol, and abusing drugs in this survey. Such finding is not surprising, as many reports have suggested that loneliness is particularly familiar among adolescents and young adults that turn to these vices (27, 28). Adolescents and young adults face peer pressure and experience a feeling of connectedness and social acceptance. Thus, during these years, they require social support as they are experiencing social changes and are coping with social stress, including romantic relationships and

relationships with family and friends (29). Very few adolescents can control their emotions to cope with stress, anxiety, and depression, which may lead to drug use that can be heightened by the influence of peers who are also drug users (30, 31).

#### G. Knowledge, opinions, and attitudes toward smoking, drinking alcohol, and substance abuse

Despite the high prevalence of smoking, alcohol, and drug use among our respondents, 7 of 10 believed that smoking, drinking alcohol, and drug abuse are not good for their health. Most students perceived that smoking, drinking alcohol, and drug abuse were a burden to society. These perception and knowledge echo those of previous studies where adolescents were knowledgeable about the aspects of smoking and alcoholism, but less knowledgeable about substance abuse (32, 33). Despite their high knowledge and negative perception of smoking, drinking alcohol, and drug abuse, there is still a high prevalence of smokers, alcohol drinkers, and drug users, similar to other reports (34). Further, despite their knowledge, healthy behaviors are not practiced and unhealthy vices are not curbed.

Approximately 20-25% of our respondents believed that these unhealthy vices are not harmful to their health. In fact, only 7 of 10 will resist taking or using these substances. A study revealed that knowledge of the hazards of smoking, and even alcohol and illicit substances, does not influence smoking and the use of illicit substance (35). Although some studies have implicated indicators for the use of these drugs, tobacco, and alcohol, which include family income, wealth, and parental education, these factors were not observed in this study (36).

#### H. Limitations of the study

The nature of the survey served as a limitation. The responses were self-reported by students; thus, the possibility of underreporting must be considered. We also failed to extract information on the family structure of smoking, alcoholism, and drug use by other family members to determine its association with the use of these substances by students. On the lighter side, we demonstrated the prevalence of smoking, alcohol intake, and substance abuse that can be employed as a basis by our group as well as other researchers for further studies on this subject matter.

#### CONCLUSION:

Among the male high school population evaluated herein, the prevalence of smoking was quite high (27.8%). Further, the prevalence of alcohol intake was 11.5%, while that of drug abuse or use of illicit

substances was 9.5%. Students began smoking, drinking alcohol, and abusing drugs at an early age, which may be influenced by friends and peers or siblings. These students procure these substances by themselves while some receive help from friends, particularly for alcohol. These practices affect the performance of students at school. Although many students know the harmful effects of smoking, alcohol intake, and substance abuse, some students had an opposing perspective. Health authorities need to educate these students and institute structural and emotional support for students who are in these vices to mitigate misuse, long-term use, and addiction.

#### REFERENCES:

1. US Department of Health and Human Services. The health consequences of smoking –50 years of progress. Atlanta, GA: US Department of Health and Human Services, CDC; 2014.
2. Arrazola RA, Singh T, Corey CG, Husten CG, Neff LJ, Apelberg BJ, Bunnell RE, Choiniere CJ, King BA, Cox S, McAfee T, Caraballo RS, Centers for Disease Control and Prevention (CDC). Tobacco use among middle and high school students - United States, 2011-2014. MMWR. Morbidity and mortality weekly report. 2015 Apr 17;64(14):381-5.
3. Singh T, Arrazola RA, Corey CG, Husten CG, Neff LJ, Homa DM, King BA. Tobacco use among middle and high school students - United States, 2011-2015. MMWR. Morbidity and mortality weekly report. 2016;65(14):361-7.
4. Jamal A, Gentzke A, Hu SS, Cullen KA, Apelberg BJ, Homa DM, King BA. Tobacco use among middle and high school students - United States, 2011-2016. MMWR. Morbidity and mortality weekly report. 2017 Jun 16;66(23):597-603.
5. Al-Mulla A, Abdou Helmy S, Al-Lawati J, Al Nasser S, Ali Abdel Rahman S, Almutawa A, Abi Saab B, Al-Bedah AM, Al-Rabeah AM, Ali Bahaj A, El-Awa F. Prevalence of Tobacco Use Among Students Aged 13-15 Years in Health Ministers' Council/Gulf Cooperation Council Member States. Moh'd. Journal of school health. 2008 Jun;78(6). 2001-2004:337-43.
6. Al Agili DE, Park HK. The prevalence and determinants of tobacco use among adolescents in Saudi Arabia. Journal of school health. 2012 Mar;82(3):131-8.
7. Al-Musa HM, Al-Montashri SD. Substance abuse among male secondary school students in Abha City, Saudi Arabia: Prevalence and associated factors. Biomedical research. 2016 Jan 1;27:1364-73.

8. Gaffar AM, Alsanosy RM, Mahfouz MS. Sociodemographic factors associated with tobacco smoking among intermediate and secondary school students in Jazan Region of Saudi Arabia. *Substance abuse*. 2013 Oct 1;34(4):381-8.
9. Siddiqui AF, Salim AM. Awareness of substance use and its associated factors in young Saudi students. *Journal of medical and allied sciences*. 2016;6(2):61.
10. Pourhoseingholi MA, Vahedi M, Rahimzadeh M. Sample size calculation in medical studies. *Gastroenterology and hepatology from bed to bench*. 2013;6(1):14-7.
11. Tobacco control laws: Saudi Arabia. Available at <https://www.tobaccocontrol.org/legislation/country/saudi-arabia/summary>.
12. Fida HR, Abdelmoneim I. Prevalence of smoking among secondary school male students in Jeddah, Saudi Arabia: A survey study. *BMC public health*. 2013 Dec;13(1):1010.
13. Albangy FH, Mohamed AE, Hammad SM. Prevalence of smoking among male secondary school students in Arar City, Saudi Arabia. *The pan African medical journal*. 2019;32:156.
14. Al-Zalabani A, Kasim K. Prevalence and predictors of adolescents' cigarette smoking in Madinah, Saudi Arabia: A school-based cross-sectional study. *BMC public health*. 2015 Dec;15(1):17.
15. Warren CW, Jones NR, Eriksen MP, Asma S. Pattern of global tobacco use in young people and implications for further chronic diseases burden in adults. *Lancet*. 2006;367(9512):749-53. [10.1016/S0140-6736\(06\)68192-0](https://doi.org/10.1016/S0140-6736(06)68192-0).
16. Al Mohamed HI, Amin TT. Pattern and prevalence of smoking among students at king Faisal university, Al Hassa, Saudi Arabia. *EMHJ-eastern Mediterranean Health. Journal*. 2010;16(1):56-64, 2010.
17. Al Nohair SF. Prevalence of smoking and its related behaviors and beliefs among secondary school students in Riyadh, Saudi Arabia. *International journal of health sciences*. 2011 Jan;5(1):51-7.
18. Zaloudíková I, Hrubá D, Samara I. Parental education and family status- association with children smoking. *Central European journal of public health*. 2012;20(1):38-44.
19. Suzuki J, Saruta K. The importance of socioeconomic and personal factors related with smoking among high school seniors in western Karasawa Prefecture, Japan. *Nihon koshu Eisii zasshi*. 2011;58(3):159-67.
20. Kelly AB, O'Flaherty MA, Connor JP, Homel R, Toumbourou JW, Patton GC, Williams J. The influence of parents, siblings and peers on pre- and early-teen smoking: A multilevel model. *Drug and alcohol review*. 2011 Jul;30(4):381-7.
21. Rajan KB, Leroux BG, Peterson Jr AV, Bricker JB, Andersen MR, Kealey KA, Sarason IG. Nine-year prospective association between older siblings' smoking and children's daily smoking. *Journal of adolescent health*. 2003 Jul 1;33(1):25-30.
22. Beaver KM, Al-Ghamdi MS, Kobeisy AN, Alqurashi FH, Schwartz JA, Connolly EJ, Gajos JM. The effects of low self-control and delinquent peers on alcohol, tobacco, and drug use in a sample of Saudi Arabian youth. *International journal of offender therapy and comparative criminology*. 2016 Oct;60(13):1569-87.
23. Johnson PR, Banu S, Ashok MV. Severity of alcoholism in Indian males: Correlation with age of onset and family history of alcoholism. *Indian journal of psychiatry*. 2010 Jul;52(3):243-9.
24. Njoroge BN. Influence of Parental Alcoholism on Academic Performance of Secondary School Students in Kandara Sub County, Muranga County-Kenya (Doctoral dissertation, Pan Africa Christian University).
25. Alibrahim O, Elawad N, Misau YA, Shaikh TM, Allam N. Drug dependence and psychotic symptoms: A retrospective study of adolescents who abuse drugs at Al Amal Hospital in Jeddah, Saudi Arabia. *Journal of public health in Africa*. 2012 Mar 7;3(1):e5.
26. Al-Jerani FM, Al-Basry EA, Aldawood H, Almudhry ZA, Alshammari NM, Busaleh H. Substance abuse among Saudi population. *International Journal of Medicine in Developing Countries*. 2017;12(4):204-9.
27. Lamis DA, Ballard ED, Patel AB. Loneliness and suicidal ideation in drug-using college students. *Suicide and life-threatening behavior*. 2014 Dec;44(6):629-40.
28. Horigian VE, Schmidt RD, Feaster DJ. Loneliness, mental health, and substance use among US young adults during COVID-19. *Journal of psychoactive drugs*. 2021;53(1):1-9.
29. Lee CY, Goldstein SE. Loneliness, stress, and social support in young adulthood: Does the source of support matter? *Journal of youth and adolescence*. 2016 Mar 1;45(3):568-80.
30. Segrin C, McNelis M, Pavlich CA. Indirect effects of loneliness on substance use through stress. *Health communication*. 2018 May 4;33(5):513-8.
31. Spooner C, Hetherington K. *Social determinants of drug use*. Sydney, Australia: National Drug and

- Alcohol Research Centre, University of New South Wales; 2005.
32. Haddad L, Shotar A, Umlauf M, Al-Zyoud S. Knowledge of substance abuse among high school students in Jordan. *Journal of transcultural nursing*. 2010 Apr;21(2):143-50.
  33. Martinotti G, Lupi M, Carlucci L, Cinosi E, Santacroce R, Acciavatti T, Chillemi E, Bonifaci L, Janiri L, Di Giannantonio M. Novel psychoactive substances: Use and knowledge among adolescents and young adults in urban and rural areas. *Human psychopharmacology: Clinical and experimental*. 2015 Jul;30(4):295-301.
  34. Malara B, Góra-Kupilas K, Joško J, Malara P. Evaluation of knowledge and health attitude towards cigarette smoking, alcohol and drugs use among students. *Przegląd lekarski*. 2005 Jan 1;62(10):1119-21.
  35. Ganley BJ, Rosario DI. The smoking attitudes, knowledge, intent, and behaviors of adolescents and young adults: Implications for nursing practice. *Journal of nursing education and practice*. 2013 Jan 1;3(1):40.
  36. Patrick ME, Wightman P, Schoeni RF, Schulenberg JE. Socioeconomic status and substance use among young adults: A comparison across constructs and drugs. *Journal of studies on alcohol and drugs*. 2012 Sep;73(5):772-82.