# Prevalence and Determine Knowledge and Attitude of Tobacco Smoking Among Secondary School Students in Sulaimani City

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#### Abstract

**Objective:** This study aimed to determine the prevalence rate and assess knowledge and attitudes among secondary students in Sulaimani city.

**Methods:** A cross-sectional study was conducted among school students, from eight randomly selected secondary schools in Sulaimani city, Iraq. 1200 students participated in this study during six months from October 2022 to April 2023. The respondents were explained about each section of the questionnaire form. It describes behaviors, knowledge, beliefs, opinions, and other variables related to tobacco use.

**Results:** The prevalence rate of current tobacco use (all types) is 21.8%, from this rate; 13.2% were cigarette smoking, 11.9% waterpipe, 24.7% used electronic smoke such as vape and pods and 50.2% of students used all types of tobacco product. The prevalence rates of tobacco use in males (31.3%) and females (12.1%). The rates were higher among students whose mother and father, schoolmates, relatives, and friends were smokers than those whose parents, schoolmates, relatives, and friends were non-smokers. A higher rate of smokers have not thought about the harmful of other people's cigarettes on them, 16.7%, 25%, 9.9%, and 4.8% of smokers have not thought definitely, probably not, probably yes, and definitely yes. Regarding the attitude of the smokers, it showed statistically that there were significant associations for example only 6.6% of smokers were with the banning of smoking in public places while 21.7% of them were with not banning smoking in public places.

**Conclusions:** Despite the prevalence rate of smoking in Sulaimani City being relatively lower than in other cities in Iraq the rate is still high. The rate was higher in males than females. In addition, there were factors connected with smoking initiation which are parents, schoolmates, relatives, and friends smoking. A higher rate of smokers did not think about the harmful of other people's cigarettes to them and a lower rate of smokers were with the banning smoking in public places.

Keywords: Tobacco smoking, students, Sulaimani

# Introduction

Tobacco smoking is considered as one of the main public health problems, being responsible for eight million deaths in a year worldwide due to direct use of tobacco and nearly one million deaths due to passive smoking.<sup>1</sup> It is estimated that globally, the prevalence rate of tobacco use was 20.2%.<sup>2</sup> The use of tobacco mostly starts in childhood and adolescence. According to a study done by US Department of Health and Human Services in America, 88% of current adult smokers first started smoking before 18 years old.<sup>3</sup> There are three main types of tobacco smoking firstly: conventional tobacco products such as cigarettes, smokeless tobacco, and waterpipe tobacco, secondly: electronic cigarettes including electronic nicotine delivery systems and electronic non-nicotine delivery systems and lastly: heated tobacco products.<sup>4</sup> In Iraq the prevalence rate of tobacco use among adolescent is 21.8 % (male 27.1% and female 12.7%), which is the highest rate in the Middle East.<sup>5</sup> In Kurdistan region of Iraq, in Erbil city the rate of cigarettes smoke and waterpipe were 27.6% and 23.6% respectively,<sup>6</sup> and among youth of Duhok city the prevalence of current tobacco smoker was 20.3%.7 Tobacco smoke contains at least 70 toxic compounds known to cause cancer in human. The most known alkaloid's component of tobacco is nicotine which can affect the nervous system and is one of the highly addictive substances.8 One of the main action plans of WHO to prevent and control non-communicable diseases is to decrease the prevalence rate of tobacco use by 30% in the year 2025 compared to 2010.9 Tobacco control requires a multi-sector response working together; government and the

community. In Europe, the overall rate of smoking has been decreasing; this is due to the restrictive national policy and increases tax. However, the prevalence rate still high among adolescence which are principally vulnerable to addiction by nicotine.<sup>10</sup> The best places where youth tobacco use can be targeted are the secondary schools. Schools represent an important situation where prevention and control plans can be applied.<sup>11</sup> In Iraq specifically in the Kurdistan region, there is very little work on the prevalence rate of tobacco use among adolescents, particularly in secondary schools therefore the current study aims to find out the prevalence rate and associated risk factors of tobacco use among secondary schools students in Sulaimani city.

# **Material and Methods**

#### **Study Location**

This study was conducted on Kurdish students at secondary schools in Sulaimani City center, Kurdistan region of Iraq. Kurdistan Region consists of three major cities; Erbil, Duhok, and Sulaimani. The populations were estimated at nearly 6.2 million individuals. Sulaimani is the largest governorate hosting nearly 2.27 million, followed by Erbil 2.25 million, and Duhok 1.65 million populations.

#### Study Design

A cross-sectional study was conducted among school students, from eight randomly selected secondary schools in Sulaimani city center, Iraq. The official educational cycle in Iraq extends to 12 years, including 6 years of mandatory primary education, which starts from the age of six years, followed by 3 years of intermediate school, then 3 years of secondary education grades 10, 11, and 12. The secondary school students in Sulaimani comprise 126 schools, of which 107 are public schools under the Government sector, and 19 private schools. A validated, pretested, self-administered questionnaire in Kurdish language was used for data collection. The respondents were explained about each section of the questionnaire before the participant filled up the questionnaire. After the participants completed the questionnaire, the researcher checked the questionnaire for any missing parts. The tobacco consumption section is used according to the Global Youth Tobacco Survey -2007, this section describes behaviors, knowledge, beliefs, opinions, and other variables related to tobacco use among students of secondary schools aged 15-18 years. Face and Content validity of the questionnaire was done by experts. A pilot run was conducted before finalizing the questionnaire. A detailed description of the study was given to the participants. Students who were present at the time of administration of the questionnaire and willing to participate in the study were included.

#### Study Population and Sample Size

The study populations were public secondary school students and the sampling frame consisted of the list of all 107 public secondary schools in Sulaimani city Centre Kurdistan Region, Iraq. The sampling unit comprised Students in levels 10, 11, and 12 between the age groups 15 to 18 years, belonging to both genders were approached to participate in the study from randomly four boys and four girls selected schools. 1200 students were participated in this study during six months from October, 2022 to April, 2023.

## Data Analysis

The probability proportional to size sampling technique was used for the selection of schools. This is a combination of sample random, cluster, stratified, and systematic sampling. Collected data was fed into the Statistical Package for Social Sciences (SPSS 24) for data organizing and analysis. Students who were currently using any type of tobacco were included in the estimation of the prevalence of tobacco users. The type of tobacco use was compared with gender. In addition, the chisquare test was used to detect significant levels of tobacco use with correlated factors. Tests were considered significant when the two-sided p-value was less than 0.05.

## **Ethical Consideration**

Ethics approval was obtained from the Ethics Committee for Research involving Human Subjects of the Sulaimani Polytechnic University. Permission to conduct the study was also obtained from the Ministry of Higher Education and Scientific Research, Kurdistan Region Government, State Education Departments, and Principles of the participating schools. Informed consent was obtained from the parents and respondents before data collection.

# Results

Out of the 1200 selected students from eight secondary schools, 1045 students were participated with a response rate of 87%.

The students who did not respond were either those who were absent from school on the day of data collection or those who did not agree to complete the questionnaire form. The results of the current study found that the prevalence rate of current tobacco use (all types) is 21.8%, from this rate; 13.2% were cigarette smoking, 11.9% waterpipe, 24.7% used electronic smoke such as vape and pod and 50.2% of student were used all types of tobacco product. In addition, according to the results there was a significant difference between the prevalence rates of tobacco use in male (31.3%) compared to female (12.1%) as shown in Table 1.

Moreover, the results of Table 2 showed that statistically there were significant relationships between the rate of cigarette smoking and other types of tobacco use. Only 3.5% of smoker were did not use other form of tobacco product and 27.9% of smoker were used other form of tobacco products while 96.5% non-smoker were did not use other form of tobacco products and 72.1% were used other form of tobacco products.

Regarding the association between the prevalence rate of tobacco use with their parents, friends and relatives' smokers, the results indicated that statistically there were significant relations. The rates were higher among students who their mother and father, schoolmates, relatives and friends were smoker than those whose parents, schoolmates, relatives and friends were non-smokers, for example 93.4% of non-smokers were neither father nor mother were smoke, 98.1% of non-smoker were their schoolmate not smoke as revealed in Table 3.

On the other hand, the current study tested the knowledge assessment of tobacco use effects on health. It designated that there were significant association between smoker and knowledge assessment. Higher rate of smoker were have not think about the harmful of other people's cigarette to them, 16.7%, 25%, 9.9% and 4.8% of smokers were have not think definitely, probably not, probably yes and definitely yes respectively as shown in Table 4.

In addition, the results explained the attitude of students (smoker and non-smoker) concerning banning smoking in public places and think it is safe to smoke for 1–2 years and then stop smoking. It showed statistically that there were significant associations for example only 6.6% of smoker were with the banning smoking in public places while 21.7% of them were with do not banning smoking in public places and 12.5% of smoker believe that it is safe to smoke for 1–2 years and then stop smoking while only 2.9% of smoker think it is not safe. The results were shown in Table 5.

# Discussion

The present study designated that the prevalence rate of tobacco use among secondary school students in Sulaimani city is relatively lower (21.8%) than a recent study done in other cities of Iraq for example a study in Baghdad city found that the prevalence of hookah smoking among high school students was 46.1%,<sup>12</sup> in Al-Hilla city was 32%<sup>13</sup> and 25.3% was in Kerbala.<sup>14</sup> However, the rate of tobacco use in the current study is higher than other countries of the region, for instance the prevalence rate were 7.1% and (10–21.7%) in Iran and Saudi Arabia respectively.<sup>15,16</sup> This increase in smoking rate among secondary school students in Iraq might be due to the weak application of a law in Iraq forbidding the sale of

Table 1. Prevalence rate and association of all types of tobacco use with gender (n = 1045)								
Toba	cco status	No. (%)		Types of tobacco use	No. (%)			
Smoker		227 (21.8)	1	Cigarette smoke	30 (13.2)			
			2	Water-pipe	27 (11.9)			
			3	vape and pod	56 (24.7)			
			4	Use all the above types	114 (50.2)			
Non	-smokers	818 (78.2)						
Total		1045						
Toba	cco use by gender	No. (%)		Types of tobacco use	No. (%)	<b>X</b> <sup>2</sup>	df	Р
1	Male smoker	164 (31.3)	1	Cigarette smoke	20 (12.2)	62.3	4	0.0001*
			2	Water-pipe	16 (9.7)			
			3	Vape and pod	37 (22.6)			
			4	Use all the above types	91 (55.5)			
	Male non-smoker	360 (68.7)						
	Total of male students	524 (100)						
2	Female smoker	63 (12.1)	1	Cigarette smoke	10 ( 15.9)			
			2	Water-pipe	11 (17.4)			
			3	Vape and pod	19 (30.1)			
			4	Use all the above types	23 (36.5)			
	Female non-smoker	458 (87.9)						
	The total of female students	521 (100)						
*	for the Discontinue of the Disco							

\*significant at  $P \leq 0.5$ .

Table 2. Correlate between cigarette Smoking with other than tobacco users (water pipe, vape, and pod) (n = 1045))								
Students were used any form of smoked tobacco products other than cigarettes (e.g. vape, cigarillos, little cigars, and pipe). (in past 30 days)	Non-smoker	Smoker						
	N (%)	N (%)	X2	df	Р			
	Non-smoker	Smoker						
No	818 (96.5)	30 (3.5)	127	1	0.001*			
Yes	142 (72.1)	55 (27.9)						
Types of tobacco product other than cigarette	Non-smoker	Smoker						
Never	818 (96.5)	30 (3.5)	179	3	0.001*			
Waterpipe	27 (55.1)	22 (44.9)						
Electronic cigarettes (vape, etc.)	56 (91.8)	5 (8.2)						
All above types	59 (67.8)	28 (32.2)						
Total	960	85						
*significant at $P \le 0.5$ .								

Table 3. Association between tobacco use with their parents, schoolmates, relatives and friends							
	N (%)	N (%)	<b>X</b> <sup>2</sup>	df	Р		
Parents smoking	Non-smoker	Smoker					
None	712 (93.4)	50 (6.6)	18.12	4	0.001*		
Both	7 (100)	0 (0.0)					
Father	236 (88.1)	32 (11.9)					
Mother	1 (50)	1 (50)					

(Continued)

Table 3. Association between tobacco use with their parents, schoolmates, relatives and friends—Continued							
	N (%)	N (%)	<b>X</b> <sup>2</sup>	df	Р		
Parents smoking	Non-smoker	Smoker					
l do not know	4 (66.7)	2 (33.3)					
Schoolmates smoking	Non-smoker	Smoker					
None of them	511 (98.1)	10 (1.9)	87	3	0.001*		
Some of them	351 (88.6)	45 (11.4)					
Most of them	78 (82.1)	17 (17.9)					
All of them	20 (60.6)	13 (39.4)					
Relatives smoking inside students home. (during last 7 days)	Non-smoker	Smoker					
0 days	593 (93.5)	41 (6.5)	13.7	4	0.008*		
1 to 2 days	165 (92.7)	13 (7.3)					
3 to 4 days	70 (86.4)	11 (13.6)					
5 to 6 days	31 (93.9)	2 (6.1)					
7 or more	101 (84.9)	18 (15.1)					
Friends smoking inside students place other than home. (during last 7 days)	Non-smoker	Smoker					
0 days	474 (96.5)	17 (3.5)	111	4	0.001*		
1 to 2 days	241 (94.9)	13 (5.1)					
3 to 4 days	119 (92.2)	10 (7.8)					
5 to 6 days	36 (90)	4 (10)					
7 or more	90 (68.7)	41 (31.3)					
Total	960	85					

\*significant at  $P \le 0.5$ .

Table 4.     Knowledge assessment of tobacco use					
Questions	N (%)	N (%)	<b>X</b> <sup>2</sup>	df	Р
Do students think the smoke from other people's cigarettes is harmful to them?	Non-smoker	Smoker			
Definitely not	40 (83.3)	8 (16.7)	39	3	0.001*
Probably not	48 (75)	16 (25)			
Probably yes	283 (90.1)	31 (9.9)			
Definitely yes	589 (95.2)	30 (4.8)			
Does the student think cigarette smoking is harmful to their health?	Non-smoker	Smoker			
Definitely not	47 (83.9)	9 (16.1)	14.5	3	0.002*
Probably not	24 (82.8)	5 (17.2)			
Probably yes	155 (88.1)	21 (11.9)			
Definitely yes	734 (93.6)	50 (6.4)			
Do students think that smoking cigarettes makes them gain or lose weight?	Non-smoker	Smoker			
Gain weight	194 (97.5)	5 (2.5)	16.6	2	0.001*
Lose weight	327 (87.9)	45 (12.1)			
No difference	439 (92.6)	35 (7.4)			
Total	960	85			

\*significant at  $P \leq 0.5$ .

Table 5. Attitude assessment of tobacco uses								
Questions	N (%)	) N (%)		df	Р			
Are students in favor of banning smoking in public places	Non-smoker	Smoker						
Yes	877 (93.4)	62 (6.6)	29	1	0.001*			
No	83 (78.3)	23(21.7)						
Do students think it is safe to smoke for only 1–2 years and quit after that?	Non-smoker	Smoker						
Definitely not	330 (97.1)	10 (2.9)	21	3	0.001*			
Probably not	243 (91.7)	22 (8.3)						
Probably yes	247 (88.2)	33 (11.8)						
Definitely yes	140 (87.5)	20 (12.5)						
Total	960	85						

\*significant at  $P \le 0.5$ .

cigarettes to those under age 18 as found in other developed countries. Interestingly, a study in Nepal found the same prevalence rate as our study (21.8%) of current smoking among secondary school students.<sup>17</sup> This study also revealed that the rate of tobacco use was high among male students compared to female. This is in agreement with all of the studies done in Islamic countries for example one a study done in Saudi Arabia found that 40.8% of the male secondary school were current smoking<sup>18</sup> and only 8.9% of female students were current smoking.<sup>19</sup> Other study in Harare Zimbabwe found the significant differences between male (37.8%) and female (18.5%) students.<sup>20</sup> On the other hand, in Spain the prevalence of cigarette smoking was 11.8% (13.5% in females and 9.9% in males).<sup>21</sup> These differences may be due to the dissimilarities of social and environmental factors between Islamic and European countries. In addition, the results of the present study found the impact of parents, schoolmates, relatives and friends on the rate of tobacco use among students. The rate were higher among those students whose their parents, schoolmates, relatives and friends smoked compared to those whose their parents, schoolmate, relatives and friends never smoked. This is in consistent with the result of study done in Zakho city-Iraq. They showed that friends and parents have effects on the rate of smoking.<sup>22</sup> Regarding Knowledge assessment majority of non-smoker students believe that smoke from other people's cigarette, smoking have negative impact on health and smoking can make them loss or gain a weight. This is closely agrees with the finding of a study on electron cigarette (E-cigarette) in Baghdad city-Iraq. They explained that students have insufficient knowledge about the risk of E-cigarette on health.<sup>23</sup> Additionally, a study in Myanmar reveals that non-smoker students had better knowledge than smoker in term of diseases caused by smoking and smoke from other's cigarette is harmful.<sup>24</sup> About the attitude of students (smoker and non-smoker) concerns the banning smoking in public places and thinks it is safe to smoke for 1-2 years and then stop smoking (addictive). In the current study, there were significant associations between smoker and their attitudes for example only 6.6% of smoker were with the banning smoking in public places while 21.7% of them were with not banning smoking in public places and 12.5% of smoker believe that it is safe to smoke for 1–2 years and then stop smoking while only 2.9% of smoker think it is not safe. In disagreement with this result, a study in Nepal found that majority of students 85% of all students were with banning smoke in public places and more than 90% understood that it is an addictive behavior.<sup>25</sup>

#### Conclusion

This study concludes that despite the prevalence rate of smoking in Sulaimani city is relatively lower than other cities in Iraq but the rate still high. The prevalence rate was higher in male compared to female. Cigarette smokers were used other form of smoking more than non-cigarette smoker. In addition, there were factors connected with the smoking initiation which are parents, schoolmates, relatives and friends smoking. Regarding knowledge and attitude of smokers, higher rate of smoker were have not think about the harmful of other people's cigarette to them and lower rate of smokers were with the banning smoking in public places.

## **Conflict of Interest**

None.

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