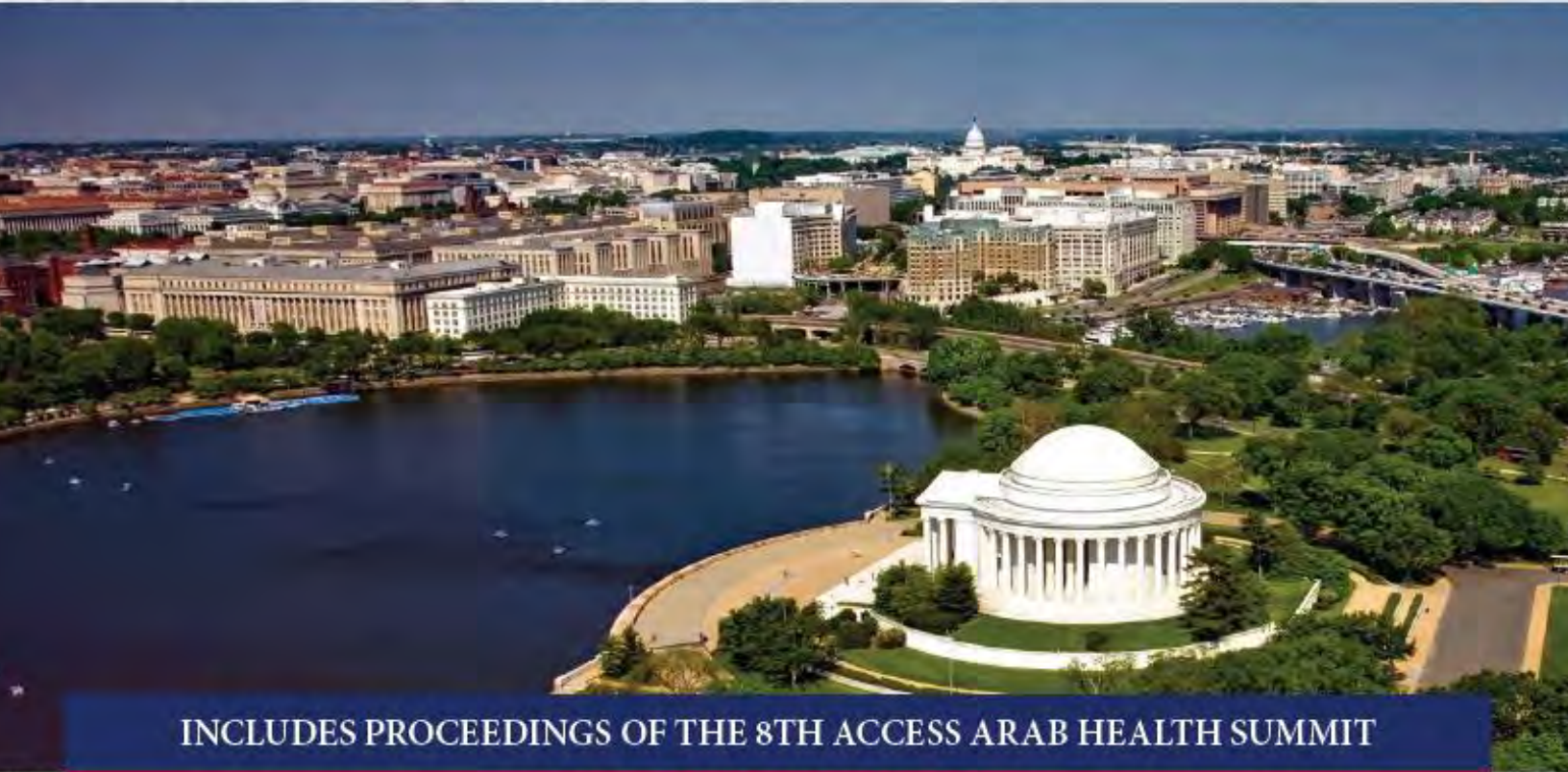




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Assessing Prevalence, Knowledge, Attitude, Beliefs and Behavior of Hookah Use among Members of Arab and Chaldean Americans in Metro Detroit Area, Michigan, 2017

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Abstract

Background: Previous studies have shown a high prevalence of cigarette smoking and hookah use among Arab Americans in the Metro Detroit area in Michigan. This study has used a larger sample size to be more representative for Arab and Chaldean Americans in Michigan.

Objective: To determine current cigarette and hookah use prevalence, knowledge, beliefs and behavior among Arab and Chaldean Americans. Also, will compare the results with a previous similar study of 2009.

Methods: This is a cross sectional study designed to provide a large sample size of Arab and Chaldean American adults among Metro-Detroit residents. Questions about behavior and beliefs related to hookah were asked. The survey was administered throughout ten cities which are highly populated with this community. A total of 2056 adult, 18 years and older, were surveyed between August 2016 and August 2017.

Results: The study revealed that current cigarette smoking rate is 18.4% while the hookah use rate is 34.1% with heavier use among males than females. Dual use rate of cigarette and hookah is 26.3%. Regarding the age groups, the data indicate that hookah use is higher among the lower age group and use decreases as age increases after 34 years of age. By educational level, hookah use starts low with lower education and use increases as educational level increases.

Conclusion: Arab and Chaldean Americans smoke cigarettes at a lower level compared to the 2009 study but use hookah more. This study found that there is a positive change in believe and knowledge about the harm of hookah compared to the 2009 study.

Keywords: Arab-Americans; Health beliefs; Smoking, Hookah

Introduction

Tobacco use is the single most preventable cause of disease, disability, and death in the U.S. Nearly one-half million Americans still die prematurely from tobacco use each year ⁽¹⁾. And a growing body of evidence suggests that hookah use may expose the user to substantial amounts of smoke volume, carbon monoxide, nicotine, carcinogens, and tar ^(2,3,4,5).

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It was estimated that 3.7 million Arab Americans were living in the United States in 2010. Arab Americans grew by more than 72% between 2000 and 2010. Arab Americans are found in every state, but more than two thirds of them live in just ten states: Michigan is second after California; Metropolitan Los Angeles, Detroit, and New York are home to one-third of the population ⁽⁶⁾.

Arab and Chaldean Americans constitute the third largest minority group in Michigan after African Americans and Latinos. Chaldean Americans originated in northern Iraq, are Christian, and speak (in addition to Arabic) a modern version of Aramaic as their common language ⁽⁷⁾.

The Michigan Department of Health and Human Services, Tobacco Control Program (MDHHS, TCP) worked collaboratively with 2 Arab American Organizations; ACCESS (Arab Community Center for Economic and Social Services) and the ACC (Arab-American and Chaldean Council) to conduct a study in 2016 as a community health survey design. The survey was conducted in the Metro Detroit Area in Michigan.

Studies on smoking and hookah use in the Arab and Chaldean American community found higher smoking rates and lower quitting rates when compared with National and Michigan data for other population groups ^(8,9).

Objectives

The purposes of this study are to:

1. Determine the current cigarette smoking and hookah use rates, knowledge, attitudes and behavior among Arab and Chaldean Americans in the Metro Detroit area in Michigan.
2. Study some demographic factors among Arab Americans in Metro Detroit area related to tobacco use.
3. Compare the 2017 results with those of the 2009 study.

Methods

A 22-question survey was distributed to Arab and Chaldean Americans in the Metro Detroit Area in Michigan during 2016 and 2017 in both English and Arabic. About 20 staff from both organizations (ACCESS and ACC) were trained by MDHHS to conduct the survey among eligible adults 18 years and above who belong to the Arab and Chaldean Americans community. The training included sampling methodology, random selection, eligibility criteria, recruitment plans in the community, doorstep approach and safety guidance.

According to the Census, the people of Arab ancestry in Metro Detroit are residing in 10 main cities in the Metro Detroit Area. The total number of the participants who completed the survey was 2,056 participants from different areas, this number is considered a high number when compared to other studies that have been done in this community. Surveys were collected and entered into an Excel file and then data analyzed using IBM SPSS-25.

Results

Demographic criteria:

Male participants are 1,149 (56%) while females are 901 (44%), age group distribution of the sample shows that 29.2% of the sample fell among the (18-24 year) age group, while in 2009 this group constituted 20.4%. There are 2 age groups, that each constitutes 25% of the sample, the

(25-34 year) and the (45 and above), the fewer group is from the age group of (35-44 year). Participants from Iraq are the leading group (n=704, 34.3%) followed by Lebanese (n= 600, 25.8%), and Yemeni (n=419, 20.4%), then Syrians and Jordanians. In 2009, Lebanese participants were the highest 37% vs 30% Iraqis. About 30.8% of the participants are born in the U.S while the remaining 69.1% are born outside the U.S., compared to 2009 those who were born in the U.S. represented 19.6%. Immigration status shows that 23.8% were refugees or asylees when they entered the U.S. While 42.9% of the sample are immigrants, we also noticed that missing or refused to answer this question are 33.2% of the participants as shown in Table-1.

Socioeconomic status

We calculated 2 elements of socioeconomic status: 1) educational level and 2) household income level. We found 15% of the participants (n=308) have low educational level (less than high school). The high school graduates are (n=721, 35%) while those with some college and above constitute 46.4% (n= 954) of the participants.

For household income level, lower than one third, 29% (n=591) of the participants have a low household income level of “less than \$20,000 per year” and 25% (n=507) have \$20,000-34,000 per year. Only 5.5% (n=114) of the Arab and Chaldean participants reported a higher income level of \$75,000 and above. In the 2009 survey, the low-income level participants were 20.4% and the higher income level were 7.1%. All results are shown in Table-2.

Cigarette Smoking and Hookah Use Status and Behavior

We assessed the current cigarette smoking rate among Arab and Chaldean Americans for this survey and found it to be 18.4% versus 32.4% in 2009. Former cigarette smoking rate is 15.7% versus 7.4% in 2009. For hookah use, the current use rate is 34.1% (n=683) versus 33.5% in 2009, while the former hookah user rate is 7.3% (n=147). We assessed the dual use of both hookah and cigarettes and it is 26.3% in 2017 versus 35% in 2009.

All results are shown in Table -3.

We studied the smoking behavior related to gender, age, country of origin, location of birth, and immigration status. We found the current cigarette smoking rate among males is 77.9% compared to 21.6% among females in the 2009 survey, the smoking rate among males was 72% versus 28% among females. For hookah use, in 2017 the rate among males is 59.6% versus 40.1% among females, whereas in 2009 the rate of using hookah was 64.6% among males compared to 35.4% among females. We found in 2017 that the current cigarette smoking rate is 18.9% among 18-24 year, 27.5% among 25-34 year, 27.2% among 35-44 year and 26.4% among 45 years and older groups. For hookah use we found the rate is 34.6% among young adults 18-24, 10.5% among 45 years and above. In 2009, hookah use was almost the same among all age groups with higher use among 45 years and above. By country of origin, the current cigarette smoking rate is 37.7% among participants originally from Iraq and second is 26.7% among participants originally from Lebanon, others are listed in Table 4. With hookah use we found that 34.4% among participants originally from Iraq and 30.1% among participants originally from Lebanon. We also assessed the smoking rate by location of birth whether inside the U.S. or outside the U.S., we found that the cigarette smoking rate is 21.3% among those who were born inside the U.S. versus 78.4% among those who born outside the U.S., and same results were found in the 2009 study.

While for hookah use we found that the rate is 47.4% for those who born inside the U.S. versus 27% among those who were born outside the U.S. All results are shown in Table-4.

Cigarette Smoking and Hookah Use by Educational level and Household Income levels

We assessed cigarette smoking and hookah use in each group of education and household income in 2017 and compared it with 2009 findings. We found that cigarette smoking is 18.2% and 23% among those with less than high school and high school graduate groups respectively, while those with college and above smoke at a rate of 14.7%, whereas the 2009 study found cigarette smoking was almost similar among all educational levels. By income level, we found that the cigarette smoking rate is 21.2% among the low-income level (below \$20K) and 15.8% among high income level (of \$75K and above). In the 2009 study, cigarette smoking was similar among all income groups. For hookah use we found the rate is 21.4% among low educational level versus 35.7% among higher education level. For the household income groups, the rate of hookah use is 29.8% among low income versus 42.1% among the highest income level. Similar findings emerged in the 2009 study among income groups but a little different among education groups. All the rates are shown in table 5.

Knowledge and Attitudes among Hookah users:

The salient reason reported for using hookah in the 2017 study is to socialize with others at 73.9%; a similar finding was also found in 2009 at 55%. The second reason given was the attractive taste of the flavored tobacco at 47.9% versus 18% in 2009, third was to relieve stress at 43.7% in 2017 versus 16% in 2009. When estimating their knowledge about the harmful effects of hookah on personal health, we found that their knowledge about the harmful effect in 2017 is 86.7% versus 78.5% in 2009 study. The findings are shown in Table-6.

Quitting Behavior:

We also assessed quitting attempts and whether individuals used quit methods during their quit attempts. We found that quitting attempts in 2017 were at 39.4% while it was 5.7% in 2009. We also found that most of those who tried to quit were able to quit on their own i.e. cold turkey (29.5%) in 2017. All the findings are in table 7.

Frequency, Location, Flavored, Herbal and using delivery services among Hookah users:

We assessed how frequent hookah users use hookah, and we found that the highest rate used hookah on a weekly basis (31.6%); 28.4% use hookah twice a week; 18.1% on a daily basis. The lowest frequency is using on a monthly basis (7.2%).

Then we assessed whether they use flavored or non-flavored shisha when using hookah and found that 91.2% use flavored shisha while only 3.4% use non-flavored. We also assessed whether they use herbal shisha or tobacco shisha and found that 93.8% use tobacco while 6.2% use herbal shisha.

We assessed whether hookah users request delivery services for their sessions or not, and we found that 31.9% use delivery services. For the location where they use hookah, we found 50.4% use them at home while 40.4% use at hookah lounge; other locations are at lower rates. All findings are shown in table 8.

Discussion

As mentioned before, the objective of this study is to assess and compare the personal cigarette smoking and hookah use behavior among a cross sectional sample of Arab and Chaldean Americans living in the Metro Detroit area in Michigan.

We found that the current cigarette smoking rate is 18.4% versus 32.4% in 2009. This difference is mostly because many of the Arab Americans switched to hookah use. Additionally, many of them quit and now are considered former smokers since the former cigarette smoker rate in the 2017 study is 15.7% versus 7.4% in 2009 and the quit attempt rates during the past 12 months for cigarette smokers is 39.4% in 2017 versus 5.7% in 2009. Another factor contributing to quit attempts is that the MDHHS TCP offered an Arabic speaking coach in the state quitline where smokers can call and talk in Arabic. The current smoking rate is lower than the average Michigan smoking rate of 20.4%, but it is higher than the national average of 17% in 2016⁽¹⁵⁾, and it is also lower than what was found in many studies among Arab Americans⁽¹⁶⁾, but like some other studies of being low⁽¹⁷⁾. Males smoke at 77.9% which is significantly higher than females at 21.6%, and this is like most of the studies among this community^(9,18).

Smoking by age groups is similar to the Michigan general population average, higher among middle age groups and lower among young adults of 18-24 years group.

By location of birth, we found that those who born outside the U.S. smoke cigarettes at a very high level (78.4%) compared with those born in the U.S. (21.3%), and this may reflect that those born in the U.S. are similar to the U. S. general population rates of smoking (20.4%).

By immigration status, we found that those with refugee status smoke cigarettes (28.8%) less than those with non-refugee immigrant status (47.5%). One of the reasons is that access and availability of cigarettes is less than the other group because of lack of fund. For the educational level, we found that the rate of cigarette smoking is less among low educational level (14.9%) and increase with level of education, this is opposite the trend among the general population, where the smoking rate is higher among low educational level and the rate decreases with higher educational level⁽¹⁵⁾.

Smoking rates by income level follow the general population trend, as they start higher among low income and decreases with higher income level. The quit method most preferred by Arab Americans smokers is cold turkey i.e. quitting on their own (29.5%).

For hookah use, the status is different; the rate in 2017 is 34.1%, a little higher than what we found in 2009 (33.5%) which can explain why the cigarette smoking rate is lower now. The former hookah user rate is 7.3% which is an indication-of a very low quit rate among hookah users. The quit attempt rates during the past 12 months for hookah users is 23.9%.

Those with dual use of hookah and cigarettes are 26.3% in the 2017 study compared to 35% in 2009. The reason could be the lower rate of cigarette smoking in 2017; this rate is the same rate that Asfar et al. found⁽⁸⁾. The gap between males and females who use hookah is narrower than the cigarette smoking (59.6% among males versus 40.1% among females for hookah use). By age groups, the hookah use rate decreased with older age. This can be explained by the fact that

hookah use has exploded rapidly into the youth culture, and impacts especially on or near college campuses and schools where they attract teens and young adults ^(19,20)

In a similar finding that we found with cigarette smoking, the hookah use rate is highest among Iraqi Americans than others. A different finding from cigarette smoking is with location of birth, as we found the opposite: a higher rate of using hookah was found among those who are born in the U.S. (47.4% versus outside U.S. 27%). This is because those who are born in the U.S. are of younger generations and hookah attracts young adults.

By educational level, hookah use is lower among low educational level (21.4%), while those with college degrees use hookah more (35.7%); this also can be explained by the spread of hookah among the younger generation near college campuses.

When we studied it with income level, we found that hookah use starts higher among low income and then decreases with higher income level, and this can be explained by those of higher income are mostly those of middle and older age groups who use hookah less than the young population.

Reasons for why they use hookah: the highest reason is to socialize with friends (73.9%), then the taste (47.9%), and relieve stress at 43.7%. Hookah users believe that hookah use is harmful to health (86.7%) and only 18% believe that it is safer than cigarettes while in Asfar et al. study they found that 46.4% believes that hookah is safer than cigarettes and this may be one of the results of the close collaboration between the MDHHS, TCP with the 2 Arab American Organizations; ACCESS and ACC which both serve the Arab and Chaldean community in the Metro Detroit area as all partners believe that lack of public knowledge about the potential health hazards of using hookah has led to this widespread misperception that hookah smoking is safe. Studies conducted in Egypt, Israel, and Syria have found that in general, people know little about its health effects and believe that it is less harmful than cigarette smoking ^(12,13,14).

Frequency of using hookah is weekly and twice a week (31.4% and 28.4%) respectively.

For the type of shisha they use in hookah sessions, we found that most of the hookah users use Tobacco versus Herbal (non-tobacco) 94% versus 6%.

Regarding the use of flavored shisha, we recognize that the introduction of flavored Tobacco in the early 1990s by Egyptian tobacco companies as they introduced “Maassel”, a specially prepared mixture containing sweetened fruit flavors and mild aromatic smoke was the major reason for the growing popularity of hookah use worldwide. Maassel, known as “shisha” in the U.S., consists of about 30% of crude cut tobacco fermented with about 70% honey, molasses, and the pulp of different fruits. It provides a pleasant aroma when heated slowly with burning charcoal and comes in a variety of flavors including apple, strawberry, rose, mango, cappuccino, banana, peach, lemon, orange, mint, licorice and many others. Currently, most hookah smokers around the world use Maassel (flavored) rather than the traditional tobacco mix because it is more flavorful and makes the process of waterpipe preparation simpler because users do not need to moisten, shape, and dry the tobacco before use, as with other kinds of tobacco ^(10,11). We found in our study that 96.6% of hookah users use flavored shisha. The preferred locations to use hookah we found at home (50.4%) and hookah lounge (40.4%)

Also, we inquired about a new trend which is using delivery services for shisha and hookah to homes and found that 32% of hookah users utilize this service.

Conclusion

Comparing these findings with a previous similar study in 2009 can be considered a good measure of the positive impact of the public education campaign that was conducted through the partnership between MDHHS TCP with ACCESS and ACC since 2002, as noticed from the results that there is a change in beliefs about the harmful effects of hookah. Also, the current cigarette smoking rate is decreased significantly although this was associated with an increase in hookah use.

Recommendations

More public education about the dangers of Hookah smoking is needed to debunk the common myths that exist. It is also observed that lack of awareness even among health professionals, and decision-makers and opinion leaders on the issue hinders progress in addressing this growing public health problem.

Resources geared for a general audience that addresses the health consequences of Hookah use, risk of communicable diseases, risk of use becoming a gateway to cigarettes and other drugs, cultural practice versus social activity of youth, and occupational health & safety would contribute to an appropriate public health response. We offer the following additional recommendations about hookah use:

1. Hookah tobacco contents should be regulated and monitored by the Food and Drug Administration.
2. Hookah tobacco packages should have warning labels about its health hazards;
Educational campaigns should be created to increase awareness among health care providers, the public (particularly youth), and lawmakers about the risk of hookah smoking.
3. Further research is needed to: find trends and epidemiology of hookah among college students; evaluate the chemical constituents of hookah tobacco in the U.S. and analyze the toxicology of the smoke from hookah use.

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Table 1. Demographic characteristics of the participants in 2017 Compared to 2009

Characteristics		2009 % (N)	2017 % (N)
Sample size		2025	2056
Gender	Male	52.0 % (1,053)	56% (1,149)
	Female	48.0 % (972)	44% (901)
Age group	18 – 24 years	20.4% (412)	29.2 % (600)
	25 – 34 years	27.3% (553)	24.6% (505)
	35 – 44 years	23.3% (472)	20.6% (424)
	45 years and above	29% (587)	25.3% (521)
Country of origin	Lebanon	37% (7530)	25.8% (530)
	Iraq	29.6% (600)	34.3% (704)
	Syria	N/A	10% (205)
	Jordan	2.8% (56)	3.9% (80)
	Yemen	22% (439)	20.4% (419)
Location of birth	In US	19.6% (397)	30.8% (631)
	Outside US	80.1% (1,622)	69.1% (1,416)
Immigration status	Refugee/Asylee	N/A	23.8% (490)
	Immigrant	N/A	42.9% (883)
	Missing	-	33.2% (683)

Table 2. Socioeconomic status of the participants in 2017 compared to 2009

Educational level	2009 % (N)	2017 % (N)
Less than High School	26.7% (528)	15% (308)
High School Graduate	26.7% (528)	35.1% (721)
Some College and above	46.6% (924)	46.4% (954)
Household Income level		
< \$20,000	20.4 % (413)	28.7% (591)
\$20,000 - \$34,999	17.9 % (362)	24.7% (507)
\$35,000 - \$49,999	13.3 % (269)	14.6% (300)
\$50,000 - \$74,999	8.8 % (179)	13.6% (280)
> \$75,000	7.1 % (143)	5.5% (114)

Table 3. Percentages of Cigarette Smoking and Hookah Use Status in 2017 Compared to 2009

Cigarette smoking	2009 %	2017 %
Current	32.4%	18.4%
Former	7.4%	15.7%
Never	60%	65.9%
Hookah use		
Current	33.5%	34.1%
Former	N/A	7.4%
Never	N/A	58.5%
Dual smoking status		
Use both hookah and cigarettes	35%	26.3%

Table 4. Cigarette and Hookah Use by Demographic Group in 2017 Compared to 2009

Characteristics		Cigarette smoking %		Hookah use %	
		2009	2017	2009	2017
Gender	Male	72.1%	77.9%	64.6%	59.6%
	Female	27.9%	21.6%	35.4%	40.1%
Age Groups	18 – 24 years old	N/A	18.9 %	21.5%	34.6%
	25 – 34 years old	N/A	27.5%	25.8%	32.7%
	35 – 44 years old	N/A	27.2%	22.9%	21.9%
	45 years old and above	N/A	26.4%	28.6%	10.5%
Country of Origin	Lebanon	N/A	26.7%	N/A	30.1%
	Iraq	N/A	37.7%	N/A	34.4%
	Syria	N/A	10.4%	N/A	8.6%
	Jordan	N/A	4%	N/A	4.8%
	Yemen	N/A	15%	N/A	17.4%
Location of Birth	Born in US	37.6%	21.3%	N/A	47.4%
	Born outside US	62.4%	78.4%	N/A	27%
Immigration Status	Refugee/Asylee	N/A	28.8%	N/A	14.5%
	Immigrant	N/A	47.5%	N/A	38.6%

Table 5. Cigarette and Hookah Use By socioeconomic groups in 2017 compared to 2009

Characteristics		Cigarette smoking %		Hookah use %	
		2009	2017	2009	2017
Educational level					
Less than High School		26%	14.9%	28.7%	21.4%
High School Graduate		29.5%	44.3%	26.2%	35.9%
Some College and above		44.4%	37.3%	45.1%	35.7%
Household Income level					
< \$20,000		33%	33.3%	30.2%	25.7%
\$20,000 - \$34,999		22.5%	25.6%	28%	28.9%
\$35,000 - \$49,999		21.9%	14.4%	18.6%	17%
\$50,000 - \$74,999		13.6%	12.5%	10.9%	14.2%
> \$75,000		9.1%	4.8%	12.3%	7%

Table 6. Rates of Knowledge and Attitude among Hookah Users in 2017 compared to 2009

Characteristics	2009 %	2017 %	Characteristics	2009 %	2017 %
Reasons for smoking hookah			Do you think smoking hookah is safer than cigarette?		
Socialize with family and friends	55%	73.9%	Yes	22.3%	18%
Loneliness	5.4%	14.6%	No	56%	64.3%
Relieve Stress	16%	43.7%	Do not Know	20.8%	15.1%
Taste	18%	47.9%			
Do you think hookah is harmful to your health?			Do you think second hand smoke from the hookah is harmful?		
Yes	78.5%	86.7%	Yes	66.2%	77.4%
No	8.1%	6.7%	No	11%	8.3%
Do not Know	12.3%	4.2%	Do not Know	22.7%	11.9%

Table 7. Quitting behavior among current and former cigarette smokers

Characteristics	2009 %	2017 %
Quitting behavior		
Quit attempts	5.7%	39.4%
Methods of quitting used		
Counseling	0	4.2%
Quitline	0.1%	0.9%
Quit classes	0.3%	2.5%
Prescribed medications	0	2.3%
OTC medications	1.4%	3.6%
Cold turkey	3.9%	29.5%

Table 8. Frequency, Location, Flavored, Herbal and Using Delivery services among hookah users in 2017

Frequency of hookah use	%
Daily	18.1%
Twice a week	28.4%
Weekly	31.6%
Twice monthly	12.1%
Monthly	7.2%
Flavored tobacco	
Used flavored tobacco	91.2%
Used non flavored tobacco	3.4%
Tobacco vs Herbal	
Used tobacco	93.8%
Used Herbal	6.2%
Used Delivery services for hookah.	
Yes	31.9%
No	67.9%
Location of Using Hookah	
Mainly at home (and other locations)	50.4%
Mainly at hookah Lounge (and other locations)	40.4%
Mainly at restaurant/Café (and other locations)	9.2%
Mainly at cultural clubs (and other locations)	4.5%
Mainly near college campuses (and other locations)	1%