

Relationship Between Tobacco Use and Mental Health Among Adolescents in  
Kuwait

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## ABSTRACT

The aim of this study is to assess the relationship between the use of tobacco and the mental health status among adolescents in Kuwait. This study used a data from the Global School-Based Health Survey (GSHS), which has been used to periodically monitor the prevalence of important mental health and protective factors related to the leading causes of mortality and morbidity among adolescents including tobacco use.

The results indicate that tobacco does indeed influence mental health, particularly teenagers whose brains are still developing and have an influx in hormones, making mental health more likely and smoking a more attractive coping mechanism to deal with problems and emotions. Since a major focus of this study includes tobacco use and its relation to mental health, Cross tabulations were performed to assess the relationships, and it was determined that a significant relationship does exist between tobacco and several variables including worrying to the point of sleep interference, feeling lonely, and feeling suicidal.

Further research should exist also in terms of how to reduce the stigma of receiving mental health care in Kuwait and other Arab countries, so that individuals can be treated for mental disorders, depression, and anxiety. This may reduce the likelihood of smoking as a coping mechanism, as mental health care could provide more effective and healthier coping mechanisms than smoking cigarettes or the waterpipe.

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## CHAPTER I: INTRODUCTION

Many individuals know that smoking poses a great risk to one's' physical health. Schools and educational programs that target good health and smoking avoidance typically focus on the physical symptoms and ailments that can accompany smoking. However, research shows that smoking also affects individuals' mental health.

Positive mental health is “a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community” (World Health Organization (WHO), 2002). Positive mental health enhances social cohesion and social capital, improves stability in the living environment, contributes to economic development, and is a principle of democratic society. Mental health problems occur across all ages, cultures, and populations (Jané-Llopis, Anderson, 2005). Persons who have experienced issues such as being away from family, increased responsibility, career changes, and marriage or have otherwise been under a lot of stress and trauma are at risk. Neglecting health status may cause irreparable damage to families and consequently to communities (Humphreys, 2003). Furthermore, people who live with mental illness are more likely to smoke and be at greater risk for smoking related health problems than the general population. Smoking and tobacco interact with some psychiatric medications. Therefore, people being treated for mental illnesses require clinical supervision when they quit or reduce smoking in order to address possible side effects and medication toxicity. Moreover, research has shown that there is link between smoking and mental health wherein people who have been diagnosed with a psychiatric disorder or a substance abuse disorder are two to four times more likely to smoke than those in the general population.

People living with mental health disorders may use cigarettes as a coping mechanism or form of self-treatment, although the risks of smoking greatly outweigh the benefits (Faculty of Public Health, 2008). Individuals prone to being depressed or having feelings of anxiety may be more likely to engage in tobacco use as a coping mechanism. The diagnosis of major depression, in contrast to the more common depressed mood, is characterized by the persistence of mood disturbance, often lasting months, along with a series of associated symptoms like anxiety and suicidal ideation.

Despite individuals with depression feeling more relaxed by smoking cigarettes, it has been proven that tobacco use can cause many problems. While physiological problems such as heart disease and various kinds of cancer are well known, and documented, smoking also has a psychological effect, as well. Research has shown a direct correlation between smoking and other negative effects, including anxiety, tension, and anger as well as depressed mood, or other depressive symptoms. Many individuals falsely believe that smoking has the potential to help people relax, when in reality smoking increases tension and anxiety. Nicotine may create a false and immediate sense of relaxation, but this feeling is temporary and gives way to increased cravings and withdrawal symptoms. Waal-Manning and de Hame (1980) showed that smokers rated higher on symptomatic measures of both anxiety and depressive symptoms than did nonsmokers. Pomerleau et al, (1979) demonstrated that smokers who identified negative affect as a reason for smoking were more likely to fail in their attempts to quit, and Shiffman (1996) found that negative affect is the most common antecedent of a smoking relapse. Kandel and Davies (1986) reported that depressive symptoms among 15- to 16-year-old children were associated with their smoking status 9 years later. More specifically, Hughes et al (2007) showed that patients in a current state of major depression were more likely to smoke later on than the general population.



Clearly, tobacco use has a large effect on mental health. It is particularly devastating to people with psychological symptoms because smoking offers a false sense of relief and acts as a coping mechanism, while at the same time increase symptoms related to negative mental health, making this population particularly vulnerable.

Because smoking has such detrimental consequences on mental health, it is important to determine the role that smoking has on populations across the globe. One such population that has very few studies on the role of smoking, particularly among young girls, is Kuwaiti individuals. Tobacco use among young girls in this population appears to be undergoing major changes. The most recent data from the Global Youth Tobacco Survey (GYTS) on the prevalence of smoking among girls is as high, or higher, than the prevalence of smoking among adult women in 9 of the 11 countries where comparisons can be made. In addition, the boy: girl ratio is less than the male: female ratio in 10 of the 11 countries. These findings indicate tobacco use among females may be increasing in the Eastern Mediterranean Region (EMR). Thus, tobacco use among females, especially young girls, should be a priority in the EMR countries. For decades, the tobacco industry has targeted females and continues to expand this market. They do this by appealing to women through advertisements showing smoking associated with independence, stylishness, weight control, sophistication and power. The industry markets the brands Virginia Slims, Capri, Misty and Camel No. 9 directly to women using feminine images. In addition, gender-neutral brands such as Marlboro are marketed to women using imagery of independence and “fun-loving”. These attributes in advertising may affect Arabic girls in particular, as culture in Kuwait and in the Middle East typically has strong gender roles that limit independence and power among females.

Furthermore, gender norms constantly change. GYTS data shows susceptibility to initiate smoking among newer smokers was significantly more prevalent than current cigarette smoking for girls in all sites. This might be an indication that EMR cultural traditions and social influences may be changing, thus making smoking among women and young girls more acceptable both at home and in public.

These important topics will be explored as it relates to Arabic culture, particularly in the country of Kuwait, using the Social Cognitive Theory as the theoretical background of the study. Understanding the culture of Kuwait, the gender roles and cultural traditions of Arabic countries, as well as the effect smoking has on mental health can shed light on the relationship between smoking and mental health among Kuwaiti female adolescents.

### **Objectives of Study**

There are many reasons this study is important and needs to be conducted. It is vital to determine the relationship between tobacco use and mental health among Kuwaiti adolescents and how this affects them both individually and at a societal level. There is currently limited research in Kuwait that has attempted to determine the relationship between tobacco use and mental health.

The purpose of this study is to contribute to a discussion that many find difficult to have in hopes of understanding and improving mental health among adolescents in Kuwait. This study also utilizes data from the Global School-Based Health Survey (GSHS), which has been used to periodically monitor the prevalence of important mental health and protective factors related to the leading causes of mortality and morbidity among adolescents including tobacco use.

This research seeks to contribute to the literature in ways that previous studies have not by simultaneously looking at the association between substance use and psychological health among girls in Kuwait. It will be helpful to governmental and institutional efforts in Kuwait to improve

public health measures. Furthermore, this research seeks to find appropriate solutions and scientific recommendations to clarify the effect that tobacco use has on health and wellness. Additionally, this study seeks to review and update regarding health issues and present them in a way that is simple and easily understood.

### **Importance of Study**

Tobacco use can have many detrimental effects on overall health, including mental health. Very few studies have been done in the region, particularly about the status of mental health and tobacco use among Kuwait adolescents. Furthermore, there is still a stigma surrounding both mental health problems and the idea of girls using tobacco in the country of Kuwait. Additionally, this study seeks to provide accurate baseline data on health risk behaviors and protective factors to help in developing priorities, establishing programs, and advocating for resources for adolescent health programs and policies using data from the 2011 Kuwait Global School-Based Student Health Survey. By studying data on the prevalence of health behaviors and protective factors in Kuwait for use in evaluation of school health and youth health promotion, better preventative measures for tobacco use can be instituted.

### **Definition of Terms**

The Global School-Based Student Health Survey (GSHS): is “a school-based survey conducted primarily among students aged 13-17 years. It measures behaviors and protective factors related to the leading causes of mortality and morbidity among youth and adults”. (Al Baho & Badr, 2011, p.9).

Mental Health: is “a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community” (Rutherford & Duggan, 2008).

Tobacco use: is defined as any habitual use of the tobacco plant leaf and its products. The predominant use of tobacco is through smoke inhalation of cigarettes, pipes, and cigars. Smokeless tobacco refers to a variety of tobacco products that are sniffed, sucked, or chewed. (Al-Ibrahim, Gross, 1990).

Depression: can be defined as a specific set of attributes, though psychologists disagree on the working definition of it. Depression is now defined in terms of several different characteristics, primarily being a specific alteration in mood including loneliness, anxiety and sadness; a negative self-concept related to self-blame and associated with self-reproaches; a desire to escape, die, or hide, as well as a change in activity levels (Beck, 1967, p. 4).

## CHAPTER II: REVIEW OF LITERATURE

### **Search Strategy**

The literature review begins with the search and selection criteria for inclusion in this literature review. It then follows by overview about the theoretical framework that is employed in this study, followed by a description and information about Kuwait and the effects that tobacco has on mental health in general, followed by what is known in the literature about the specific population, which is teenage girls in the country of Kuwait.

The Search strategy was as follows: Primary research was completed through access to Library databases at Middle Tennessee State University (MTSU), with articles searched through EbscoHost, Medline with Full Text and PsychINFO, Academic Search Premier and General Science Full text. Search terms used were “tobacco use and woman,” “tobacco use and depression,” “tobacco use and mental health,” “women and tobacco use,” “tobacco use and Saudi Arabia,” “tobacco use and Kuwait.”

### **Selection Strategy**

Articles were selected if they included a full text, were from a scholarly and well respected academic journal, were peer reviewed and included information about the effects of tobacco use on women. They were also conducted in English, but some data from the Arabic literature were included in regional analyses, particularly those published by the United Nations. In this article, “Arab Region” refers to the 22 member countries of the Arab League. Some data are provided for Middle East and North Africa (MENA), as defined in the Burden of Disease project; and for the Eastern Mediterranean region (EMRO), as defined by the World Health Organization (WHO)—similar but not identical groupings of countries (Supplementary Table 1). As per the United Nations definitions, adolescents are aged 10–19 years, youth are aged 15–24 years, and young people are aged 10–24 years

## **The Country of Kuwait**

Kuwait is a country in Western Asia situated in the northern edge of Eastern Arabia at the tip of the Persian Gulf. It shares borders with Iraq and Saudi Arabia. As of 2014, Kuwait has a population of 4.2 million people; 1.3 million (30.95%) are Kuwaitis and 2.9 million (69.05%) are expatriates "Public Authority for Civil Information" (Government of Kuwait, 2015). The Government of Kuwait (2015) added to the oil reserves that were discovered in 1938. From 1946 to 1982, the country underwent large-scale modernization. In the 1980s, Kuwait experienced a period of geopolitical instability and an economic crisis following the stock market crash. In 1990, Kuwait was invaded by Iraq. The Iraqi occupation came to an end in 1991 after military intervention by coalition forces. At the end of the war, there were extensive efforts to revive the economy and rebuild national infrastructure.

Kuwait is a constitutional monarchy with a high-income economy backed by the world's sixth largest oil reserves. The Kuwaiti dinar is the highest valued currency in the world. The country has the fourth highest per capita income in the world. The constitution was promulgated in 1962, making Kuwait the most democratic country in the region (Ahmed, Abdallah, 2016; Kuwait's Democracy Faces Turbulence, 2016). Furthermore, 70% of the population includes expatriates, while only 30% of the population are Kuwaiti citizens (Ahmed & Abdullah, 2016). From 2001 to 2009, Kuwait had the highest Human Development Index ranking in the Arab world (Human Development Index, 2009). Additionally, Kuwait ranks highly in regional metrics of gender equality as it has the region's highest Global Gender Gap ranking in The Global Gender Gap Index 2014 - World Economic Forum (The Global Gender Gap Index, 2014).

## Theoretical Framework

The Social Cognitive theory framework is drawn upon to examine how social environment influences tobacco use. According to the Social Cognitive Theory (SCT), there are many constructs that could explain behavior in this population. Key constructs of the social cognitive theory are behavioral capacity, reciprocal determination, emotional coping responses, outcome expectations, self-efficacy, collective efficacy and observational learning, as well as incentive motivation. Behavioral capacity refers to the knowledge and skills that are required to perform a certain behavior. Reciprocal determinism is the interaction between smoking, the tobacco user, and the environment that the behavior is performed. This can relate to the environmental factors that have an effect on the tobacco user. For instance, in this population, reciprocal determinism is an important concept because tobacco rates differ among gender expectations. Girls in Arabic culture are expected to behave in a certain way, as described later in this literature review. They are held to different standards than males and are thus shamed when they smoke, making it more likely that they will either not smoke or not disclose smoking behavior to parents or even in a confidential survey for fear of negative repercussions. Related to this is outcome expectations, which could also explain why girls are less likely to smoke or why they are less likely to admit smoking and more likely to smoke the waterpipe, which is considered to be more socially expectable. When the outcome for a girl smoking is perceived as negative, such as being shamed or punished, they are more likely to hide or stay away from behaviors that would omit those results. Emotional coping responses is another important construct of the Social Cognitive Theory, which includes tactics or strategies that are used by a person to deal with emotional stimuli. This could explain the correlation between poor mental health and depression diagnosis and the use of tobacco as a coping mechanism. The Social Cognitive Theory states that behavior changes both

the environment and the person, and determines that people learn not only from their own experiences and backgrounds, but also by observing the actions and outcomes of others (Schwarzer & Luszczynska, 2005).

The results from my study can be used to understand how tobacco refusal can be predicted from framework based on the Social Cognitive Theory constructs and support. Furthermore, the theory constructs can predict future tobacco use and positive outcomes. My research uses retrospective data extracted from a comprehensive school survey conducted among children from thirteen to fifteen years of age, measuring behaviors and factors relating to the leading causes of mortality and morbidity among youth and adults. The Global School Based Student Health Survey is a collaborative project that helps countries measure and assess the risk and protective factors in ten different key areas with students who are aged 13 to 17. The survey uses a self-administered questionnaire to collect data from the students (World Health Organization, 2017). For the survey implemented in Kuwait, questions primarily related to loneliness, anxiety, suicide ideation, suicide planning, and suicide attempt. This will be useful in measuring constructs relating specifically to why girls smoke. It is important to understand the health habits of Kuwaiti girls and women and how it affects them both individually and at a societal level. Furthermore, it is important to understand how decisions regarding tobacco are made in order to ensure that interventions can be created and implemented to best serve girls and prevent the use of tobacco. This is particularly important as smoking tobacco can have many negative consequences.

The use of tobacco causes many increased risk factors for preventable disease. It can contribute to chronic lung disease such as COPD, emphysema, and bronchitis, as well as an increased risk of various cancers, heart disease and problems, and other chronic illnesses that can be devastating, and in many instances, fatal.



Smoking is a large problem all over the world, including in Kuwait. It is also highly prevalent among young adults. According to a study by Obermeyer (2015), prevalence of smoking tobacco was high among teenagers. 31 percent of males smoked tobacco, and 15.5 percent of females smoked tobacco. Therefore, 24.4 percent of adolescents smoked in Kuwait.

The Social Cognitive Theory is helpful to use in this regard because questions on the survey used include reasons why someone smokes (self-efficacy), what their family situation is like, their beliefs on how smoking can affect them (perceived outcomes), and whether or not their friends smoke (observational). Obermeyer (2015) also analyzed knowledge and attitudes for smoking. About one fourth of students who never smoked indicated that they believe boys who smoke have more friends, compared to one third of those who smoke who feel they have more friends. This shows that smokers are more likely to believe boys have more friends, which may influence boys' choices in regards to smoking. The same pattern exists in terms of perceptions of whether or not female smokers had more friends. 17.5 percent of students who never smoke indicated they believed female smokers had more friends, as compared to 29.5 percent of smokers who believe that girls have more friends.

Using the Social Cognitive Theory, we can determine that perceptions are related to tobacco use. It is important to apply these concepts to understand more about how social cognitive theory is helpful in terms of smoking tobacco for the Kuwaiti population. It is especially significant to understand girls because of increases in teenage girl smoking in Arabic nation-states.

## **Mental Health**

For all individuals, mental, physical and social health are vital and interwoven strands of life. As our understanding of this relationship grows, it becomes ever more apparent that mental health is crucial to the overall well-being of individuals, societies and countries (World Health Organization, 2011). Indeed, mental health can be defined as a state of well-being enabling individuals to realize their abilities, cope with the normal stresses of life, work productively and fruitfully, and make a contribution to their communities. Unfortunately, in most parts of the world, mental health and mental disorders are not accorded to anywhere near the same degree of importance as physical health. Rather, they have been largely ignored or neglected (World Health Organization, 2011).

Mental health problems are common in the general population and include depressive and anxiety disorders, eating and somatization disorders, and psychotic disorders such as schizophrenia, bipolar disorder and related disorders such as schizoaffective psychosis. Different mental disorders are characterized by different symptoms and are defined less by the occurrence of specific symptoms (subjective complaints) or signs (behaviors) than by their severity or clustering to the extent that causes distress and interference with personal function (Rutherford & Duggan, 2008). Furthermore, World Health Organization (2011) indicates that mental health is about enhancing competencies of individuals and communities and enabling them to achieve their self-determined goals. Mental health should be a concern for everyone, rather than only for those who suffer from a mental disorder. Mental health problems affect society as a whole and not just a small, isolated segment. They are therefore a major challenge to global development. No group is immune to mental disorders, but the risk is higher among poor, homeless, unemployed, persons

with low education, victims of violence, migrants and refugees, indigenous populations, children and adolescents, abused women and the neglected elderly.

### **Mental Health Stigma in Arabic Countries**

Figures represented in the literature in regards to prevalence of mental illness, depression and anxiety are likely to be understated because of the stigma associated with mental health in Kuwait. Being labeled as mentally ill can have detrimental consequences in several cultures. In Kuwait, the stigma associated with visiting the country's main provider of mental health services, the Psychological Medicine Hospital, is an obstacle for many seeking professional help for mental health (Almazeedi & Alsuwaidan, 2014). One of the most significant barriers to receiving mental health care or counseling is the reluctance among Arabs to seek counsel outside of the family for problems. Furthermore, many people do not want to go outside of their religious realm in order to receive counseling. Historically, mental health issues have been addressed by regular doctors, religious leaders, Quranic healers, and even fortune tellers and magicians (Nassar-McMillan & Hakim-Larson, 2003).

### **Tobacco Use**

Tobacco use is traditionally included in the social history with other habits but may fit just as appropriately when inquiring about the patient's pulmonary or cardiovascular status. Most patients are aware that smoking may affect their health and expect to be asked about this habit. Unlike cigarettes, the potential adverse health effects of smokeless tobacco are not well known, and patients are often surprised when questioned. Females and males, young and elderly, should be asked about the use of all forms of tobacco (Al-Ibrahim & Gross, 1990).

In addition, nicotine, an alkaloid present in all tobacco products, is well absorbed from mucosal surfaces, the respiratory tract, and skin. It acts at the preganglionic–postganglionic synapse, resulting in stimulation of sympathetic and parasympathetic nerve fibers. It exerts a complex action with a transient depressant effect on the autonomic nervous system and a sympathetic effect on the cardiovascular system. The latter can be summarized as increased heart rate, blood pressure, stroke volume, and cardiac output. Combustion products from smoked tobacco also yield tar, nitrous oxides, and carbon monoxide. Tar and related products have been associated with increased cancer risk (Al-Ibrahim & Gross, 1990).

Moreover, Al-Ibrahim and Gross (1990) indicated that autopsy studies in cigarette smokers and patients dying of lung cancer show increased morphologic changes such as squamous metaplasia, acanthosis, dyskeratosis, and mitotic figures in bronchial epithelial cells when compared to controls. These changes are generally considered to be precursors of bronchogenic cancer. Inhaled carbon monoxide leads to increased levels of carboxyhemoglobin by as much as 15%, resulting in reduced tissue oxygenation. In experimental animals, smoke inhalation has been shown to cause focal swelling of aortic endothelial cells and the appearance of microvilli-like processes. Subsequently, these create intimal ridges and folds and may serve as initial areas of mural thrombosis and plaque formation. Cigarette smoking also increases platelet adhesiveness. Must be cited throughout this section.

### **Tobacco in the Arabic World**

Because the English literature on smoking tobacco is limited in Kuwait, it is necessary to examine shared characteristics of tobacco culture in Arabic society, as Kuwait shares many cultural aspects with its Arabic country counterparts. The Arab world is comprised of 22 countries

with a combined population of ~360 million. The region is still at the initial stages of the tobacco epidemic, where it is expected to witness an increase in smoking levels and mounting tobacco-related morbidity and mortality in the future. Still, the bleak outlook of the tobacco epidemic in the Arab world continues to be faced with complacency in the form of underutilization of surveillance systems to monitor the tobacco epidemic and prioritize action, and failure to implement and enforce effective policies to curb the tobacco epidemic (Wasim et al, 2013). Understandably, the focus on the Arab world carries the risk of trying to generalize to such a diverse group of countries at different level of economic and political development. Yet, tobacco control in the Arab world faces some shared patterns and common challenges that need to be addressed to advance its cause in this region. In addition, forces that promote tobacco use, such as the tobacco industry, and trends in tobacco use, such as the emerging waterpipe epidemic tend to coalesce around some shared cultural and socio-political features of this region. Generally, available data from Arab countries point at three major trends in the tobacco epidemic: (1) high prevalence of cigarette smoking among Arab men compared with women; (2) the re-emergence of waterpipe (also known as hookah, narghile, shisha, argchile) smoking as a major tobacco use method, especially among youth and (3) the failure of policy to provide an adequate response to the tobacco epidemic (Maziak et al, 2013).

. The escalating trend in cigarette smoking among men in the Arab world is contrasted by traditionally low levels of smoking among women and girls, although under-reporting of this socially unacceptable behavior by women cannot be ruled out. According to Eriksen et al (2012) most Arab countries have a 10 to 1 gender-based ratio in cigarette smoking. This disparity is due mostly to the unacceptability of cigarette smoking by women within the prevailing culture of Arab societies. A 2016 court case in Kuwait revealed that a mother lost custody of her children and was

ruled a legally unfit parent, as her behavior was seen as "odious and socially inappropriate, and her ability to raise her children with the rich social and moral values was questioned" (Alaraby, 2016). Clearly, Kuwaiti society does not accept the idea of a woman or girl smoking. Evidence from youth supports this notion. For example, in a study of 2443 students (age  $\approx$  15 years) in Lebanon, girls who smoked cigarettes were less likely to be open with their parents about their practice compared to girls who smoked waterpipe, which is a more traditional form of smoking in Arab societies (Tamim et al. 2007). Lebanon provides another case in support of the culturally driven gender-divide in cigarette smoking. Being perhaps the most socially liberal Arab country, Lebanon has the least male/female disparity in cigarette smoking, and the highest level of women cigarette smoking in the region (Maziak et al, 2004). From this study, one could infer that the more liberal the Arabic country, the higher smoking prevalence is among women. Kuwait is a relatively close minded country and there is a larger gender gap between men and women, which could be reason for either two possibilities of girls smoking at a far less prevalent rate than boys, or perhaps underrepresenting that they have smoked due to fear of being caught or shamed by their families.

### **Gender Considerations for Smoking Tobacco in Arabic Culture**

Tobacco use is detrimental to an individual's health. Risk factors such as smoking tobacco account for a large proportion of early and premature chronic diseases and deaths among adults. Many of these individuals began engaging in smoking tobacco through the use of cigarettes or the water pipe during their adolescent years. A study by the United Nations Children's Fund estimated that rates of tobacco use in the Middle East and Northern Africa are significantly higher than the developing country average. A study by Obermeyer (2015) found that 11-42% of boys

aged 13-15 in Arab countries reported using tobacco through cigarettes or the water pipe in the past thirty days. Girls in Arab countries had lower tobacco use at 10 percent, which is attributed to cultural norms about appropriate female behavior. However, these norms are changing, resulting in higher prevalence in tobacco use among girls in Bahrain, Jordan, Kuwait, Lebanon, Qatar, Syria, Iraq, and United Arab Emirates.

Arab culture is authoritarian and collective, and collective norms and values over-ride the individual's needs and self-actualization. Thus, individuals who adhere to the rules and relinquish self-actualization receive support, love, and protection, and the close social and familial relationships that are a vital component of a happy life. Conversely, individuals who dare to disobey, in particular females, are subjected to rejection, imprisonment, and punishments that may include death when the "honor of the family" is threatened. Thus, in this culture, mothers are expected to teach their girls to be compliant and to respect and abide by the norms and values of the society. (Ben-Zur & Michael, 2007). Such culture dictates that females adhere to strict cultural gender stereotypes, some of which include that a "good girl" does not smoke or engage in other behaviors that are perceived as "shameful." For this reason, it is unlikely that current statistics portray an accurate reflection of prevalence of females smoking in Kuwait.

### **Tobacco in Kuwait**

According to The Tobacco Atlas (2015), every year more than 700 people in Kuwait are killed by tobacco-caused disease, while more than 18,000 children and more than 529,000 adults continue to use tobacco each day. Because of the stigma attached to female smoking, this figure is probably lower than the actual number of individuals who smoke in Kuwait. Comprehensive tobacco control policies, covering all forms of tobacco use, would reduce the death toll from

tobacco, which otherwise would grow with each passing year. It would also help to ensure that the tobacco industry cannot rule over the lives of the people of Kuwait.

Even though fewer men, on average, die from tobacco use in Kuwait compared with other high-income countries, still 13 men are being killed by tobacco every week, necessitating action from policymakers. Even though 4.4% of Kuwaiti women, which is less than other high-income countries, die from tobacco use, still 1 woman is being killed by tobacco every week, necessitating action from policymakers (The Tobacco Atlas, 2015). The combined revenues of the world's 6 largest tobacco companies in 2013 were \$342 Billion, 59% larger than the Gross National Income of Kuwait. The industry is a powerful force that does not fear the actions of nation states because its resources are often much larger. Adults using tobacco daily in 2013 were 31.3% of men and 3.4% of women. More men, on average, smoke in Kuwait compared to other high-income countries (The Tobacco Atlas, 2015). Moreover, The Tobacco Atlas (2015) indicated that fewer women on average smoke in Kuwait compared with other high income countries. Still 32,400 women smoke cigarettes each day, which is a sign of an ongoing and dire public health threat. In addition, there were 23.7% of boy and 7.5% of girl children smoking or using tobacco daily in 2013. More boys smoke, on average, in Kuwait compared with other high-income countries. More girls smoke, on average, in Kuwait compared with other high-income countries.

Although ethnic and gender differences in adolescent smoking have been well documented, factors influencing susceptibility to smoking and experimentation among the ethnic group of Muslim Arab-American youth have received little research attention. A study by Islam & Johnson (2003) examined the smoking prevalence, the associations of known smoking risk factors, religious and cultural influences with adolescents' susceptibility to smoking and experimentation



with cigarettes among the ethnic group of Muslim Arab-American adolescents. Because there are very few studies about Kuwaiti girls' smoking habits and prevalence, studies such as this can shed a light on smoking differences among gender and smoking habits of adolescents of Muslim background. This is particularly relevant because most of the Kuwaiti population is Muslim. Furthermore, Arabic culture has been found to have a slow cultural lag; tradition is important among this population, meaning that culture takes longer to change than other societies. The study found that Culturally based gender-specific norms were significantly associated with increased risk of susceptibility to smoking for males only, while religious influence was protective against susceptibility to smoking for females only.

An article by Choi et al (1997) studied the same population and determined that age was a major influencer on Muslim Arab adolescents smoking. The authors determined that during the middle school years, specifically ages 12 to 13, students denied they would ever smoke and were primarily unsusceptible to smoking. However, as they approached fifteen or older, they were more likely to engage in experimentation and attitudes may be changed, making them more susceptible to experimenting with cigarettes and or the waterpipe.

Both Islam & Johnson (2003) and Choi et al (1997) used a self-reporting questionnaire to examine smoking behavior among Arab or Arab-American adolescents, with a major limitation being that this population is very likely to underreport smoking behavior, even after being assured of their anonymity. This is particularly true among females in an attempt to remain within the bounds of being socially correct.

## **Waterpipe Smoking**

The waterpipe, which is also called hookah, sheesha, and hubble-bubble, allows smokers to inhale smoke from a special blend of tobacco after it has passed through water. It is a very old mechanism with a long history in the Middle East and is very popular in Arabic countries, including Kuwait. It is difficult to estimate the prevalence of the waterpipe use. It is suggested that globally there are more than 100 million people that smoke waterpipes on a daily basis. In Kuwait, it is estimated that more than half of men and women have smoked a waterpipe at least on one occasion and most of them started during their adolescent years.

Many smokers have the perception that smoking the waterpipe is actually less harmful than smoking cigarettes. They believe that the nicotine content in tobaccos is lower than in cigarettes and that the harmful particles in the smoke are filtered through the water. Waterpipe smoke is also thought to be less harmful to the throat and respiratory system than cigarette smoke (Akl et al, 2015; Mohammed, Zhang, Newman & Shell, 2010). Waterpipe smokers believe that fewer carcinogens are inhaled because the tobacco is heated and not actually burned. Furthermore, fruit and honey are often added to the tobacco, thus furthering the perception that hookah smoking is healthier than smoking cigarettes.

Contrary to what most people believe about smoking waterpipe, studies suggest that waterpipe smoking is actually more destructive than cigarette smoking. Many of the tobacco's mixes and products are unregulated. Compared with smoking a cigarette, 45 minutes of waterpipe smoking is equivalent to double the carbon monoxide (CO) exposure and triple the nicotine exposure. Long-term use of waterpipes has been associated with lung cancer gastrointestinal cancer and decreased lung function (Haddad et al, 2016). A typical session of shisha smoking

lasts 20-80 min, with shisha smokers taking up to 200 puffs. In contrast, cigarette smoking typically takes about 5-8 min with 8-12 puffs. These facts may raise the possibility of higher levels of second-hand smoke with shisha smoking compared to cigarette smoking (Husain, 2015).

### **Females and Waterpipe Smoking**

Waterpipe smoking is culturally somewhat more acceptable for women and girls than cigarette smoking. It is more acceptable for younger people to smoke the waterpipe, probably because it is a group activity. A study by Mohammed, Zhang, Newman & Shell (2010) found that of those who smoked either cigarettes or hookah, females (79.9%) smoked more waterpipe than men (20.1%). Research suggests that women favor waterpipe smoking over cigarette smoking because it is traditional and smoked in social settings with friends.

Mental health problems, particularly depressive symptoms, are statistically higher among Arab adolescents compared with other regions. Depression, anxiety, and suicidal ideation are higher among girls than boys. Studies in Kuwait document significant rates of anxiety among students. GSHS surveys have found substantial levels of suicidal thoughts among students in the region. Evidence about correlates of mental health conditions and smoking among Arab adolescents is limited.

### **Effect of Cessation on Mental Health**

Services and policies to help people quit using tobacco consist of a variety of evidence-based, individual and population-level approaches aimed at reducing the toll of tobacco use by helping users quit. According to the U.S. Public Health Service Clinical Practice Guideline, tobacco cessation treatments are effective across a broad range of populations. It is critical that health care providers screen for tobacco use and provide advice to quit to tobacco users (Fiore,

2008). The National Epidemiologic Survey on Alcohol and Related Conditions, a nationally representative longitudinal study, found that persons with a psychiatric diagnosis were 25% less likely to successfully quit using tobacco (Smith et al. 2014). However, many studies find that the intentions of quitting are just as high, if not higher, among those with mental illness than the general population (Joseph, 2004). Further, while at the population level, persons with mental illness have lower quitting rates, studies show they can achieve equal quitting rates with access to appropriate cessation services (Hickman, 2015).

In 2014, British Medical Journal noted that there is consistent evidence that stopping smoking is associated with improvements in depression, anxiety, stress, psychological quality of life, and positive affect compared with continuing to smoke (Taylor, McNeil & Girling, 2014). The strength of association is similar for both the general population and clinical populations, including those with mental health disorders. Smoking cessation interventions (whether brief interventions, intensive individual or group support, or pharmacotherapies) are among the most cost-effective interventions available in preserving life, even if an individual has smoked for many years (Parrott, Godfrey & Raw, 1998). Cochrane Review in 2013 found that nicotine replacement therapy (NRT), bupropion and varenicline had been shown to improve the chances of quitting. Combination NRT and varenicline are equally effective as quitting aids. The review also notes that based on current evidence, none of the treatments appear to have an incidence of adverse events that would mitigate their use (Cahill K, Stevens S, Perera R, Lancaster, 2013).

### **Depressive Symptoms and Smoking**

Individuals with psychiatric disorders carry a disproportionate burden in cigarette consumption and nicotine dependence (Grant, Hasin, Chou, Stinson, & Dawson, 2004; Lasser,

2000). Mood disorders in particular, have been shown to be risk factors for smoking prevalence. There is also evidence that current depressive symptoms are associated with smoking prevalence (Anda et al., 1990) and reduced smoking cessation (McClave et al., 2009; Niaura et al., 2001). Some studies have found a stronger relation of current depressive symptoms (Anda et al., 1990) to reduced smoking cessation for women compared with men in adulthood. However, the relation of depressive symptoms to smoking is complex (Hayes, Dunsiger, & Borrelli, 2010), particularly among older smokers, most of whom started when they were adolescents, and the National Institute of Mental Health has called for additional longitudinal research on depressive symptoms and smoking (Ziedonis et al., 2008).

### **Mental Health Conditions Among Adolescents in Arabic Countries**

Mental health problems, particularly depression, account for a greater proportion of DALYs lost among Arab adolescents compared with other regions. The proportion of DALYs lost to depression and anxiety is higher among adolescent girls than boys, whereas the proportion lost to behavioral and drug use disorders is higher among boys similar to other parts of the world. Evidence about correlates of mental health conditions among Arab adolescents is limited.

### **Prevalence by Gender**

Hormonal changes that accompany women's developmental and reproductive processes may also play a role in mental health. For some girls, the simple changeability of estrogen levels during puberty in adolescent years and possible pregnancy in young adulthood is sufficient to lead to depression (Studd & Panay, 2004). Hormone fluctuations related to the menstrual cycles can also profoundly influence mood changes for many women. The symptoms associated with the menstrual cycle such as bloating, irritability, and fatigue might make some women feel distressed

and lead to depressed symptoms. For most adolescence, this transitional period is uncomfortable and often embarrassing. As they learn about their sexuality and experience the physical changes occurring to their bodies, adolescent girls avoid discussing their feelings with others, which results in separation or division from their everyday lives (Keenan & Hipwell, 2005). (Moreh & O'Lawrence, 2016). There is increasing evidence that female adolescents and adults are more likely than their male peers to become depressed. Previous research identified the fact that by the age of 14 years old, depressive disorders are more than twice as common in girls as in boys (Bhatia & Bhatia, 2007). During the literature review for this study, it was noted that the incidence of depressive disorders noticeably increases as adolescents reach puberty (Studd & Panay, 2004). Physical transformations during adolescents such as hormonal variations or body image changes could contribute to adolescent girls' increased vulnerability to anxiety and stress. Therefore, gender is explored in this research to examine whether the findings in previous research could be supported by this study. The study found a statistically significant relationship between gender and adolescent depression. In this study, both genders reported having signs and symptoms of depression; however, females reported feeling anxious more often than males (Moreh & O'Lawrence, 2016).

### **Smoking Patterns, Depressive Symptoms, and Long-Term Effect**

It has been estimated that between 80 and 89% of daily adult smokers become daily tobacco users by the age of 18 years (American Health Association, 1995; CDC, 1994). For adolescent smokers with psychiatric disorders, the risk of tobacco dependence by adulthood is even higher than for those without psychiatric disorders (Myers & Brown, 2005). Although most adults progress to smoking from adolescence, the smoking patterns of young people differ substantially from those of adults. Research has shown that young people smoke at higher rates than older adults

but are less likely to be daily smokers or to smoke as many cigarettes. In the early stages of smoking onset, it is common for adolescents to alternate between periods of smoking and abstinence. For instance, many adolescents are likely to smoke several cigarettes in 1 day and then abstain from smoking for several days.

The CDC reports that 43% of people between the ages of 10 and 22 years who smoke as few as three cigarettes per day will become habitual smokers. It has additionally been estimated that adolescent smokers who consume a cumulative number of at least 100 cigarettes will continue to smoke for another 16-20. Qualitative findings from a study conducted by Fritz et al. (2008) found that adolescents who smoke frequently fail to consider their future health and thus continue to be unaware of the harmful effects of smoking and the addictive nature of nicotine, despite efforts to educate and warn children at a young age.

### **Tobacco Related Morbidity, Mortality, and Functional Impact**

The use of tobacco has very grave consequences. The World Health Organization estimates that about fifty percent of adolescent smokers globally will die of tobacco-related diseases in later life (WHO, 2006). This is very concerning and a large public health issue that many countries work on addressing and reducing. At the same time, people with mental illnesses, including depression, die on average about twenty-five years earlier than the general population. A great deal of the individuals who die earlier, die from tobacco-related illnesses, which shows that adolescents with mental illnesses who also smoke tobacco are at an alarmingly increased risk of future chronic illness and premature death.

Many adolescents go on to smoke throughout the duration of their lives and are thus at an increased risk to succumb to respiratory problems, increased infections, lung cancer, and cardiovascular disease. Adolescents who smoke are also three times more likely to engage in

abuse of alcohol and are eight times more likely to smoke marijuana and 22 times more likely to abuse heavier drugs such as cocaine than their nonsmoking peers. Additionally, smoking adolescents are at an amplified risk of suffering from increased anxiety, depression, and stress. Furthermore, smoking nicotine can impair serotonin function and maximize depressive symptoms in individuals with mental illness (Malone et al., 2003).

Many other problems exist for teenagers that smoke tobacco. There are functional and social consequences of tobacco use in adolescents and young adults. Adolescents who smoke are more likely to have poor school performance, have lower academic ambition, and be less involved in sports and other healthy extracurricular activities (Tyas & Pederson, 1998). For individuals with mental illnesses, smoking can have a negative impact on their functioning, in part because it alters the metabolism of psychiatric medications and reduces blood levels, and therefore effectiveness, of neuroleptics and some antidepressants and benzodiazepines (Dehay et al, 2012).

### **Increased Depressive Symptoms**

The literature suggests that teenagers who smoke are more likely to be depressed, while people who are depressed are more likely to smoke. This is a cycle that perpetuates both poor mental health and tobacco use, making it difficult to deal with and difficult to determine whether smoking makes one mentally unstable or if one smokes more because he or she is predisposed to mental illness. A study by SOURCE sought to determine the strength in the relationship between smoking, mental health, intention to smoke, in addition to other psychosocial and environmental factors. High school students age 16-19 completed a survey called the Multiscore Depression Inventory (MDI), as well as items regarding smoking behaviors and other variables. Correlation, stepwise regression, and discriminant analyses were then conducted. It was found that participants were more likely to smoke if their parents smoked, if their scores on the MDI indicated



instrumental helplessness and social isolation/withdrawal, or if they were older. Participants were more likely to state intention to smoke in the future if they had MDI scores indicating instrumental helplessness, if they were older, if their parents smoked, or if their MDI scores indicated social introversion. Participants were also more likely to have smoked for more years if their parents smoked or if their scores on the MDI indicated instrumental helplessness. Furthermore, participants were more likely to have scores on the MDI indicative of higher depression levels if they had low grades or if their parents smoked.

### **Mental Health and Smoking**

Depressive symptoms such as suicidal ideation and anxiety have been found to have a strong association with cigarette smoking. Adults who suffer from depressive symptoms are 40% to 50% more likely to smoke than adults who do not (Schoenborn & Horm, 1993). Depressive symptoms have also been found to predict continued smoking in adolescents (Zhu et al., 1999). Studies have found that even after a recovery from major depression (diagnosed), smokers often remained symptomatically depressed. Interestingly, smokers who have less stable mental health tend to smoke more cigarettes than more emotionally stable individuals who smoke. In addition, depressed individuals are less successful in their efforts to stop smoking, likely because smoking is used as a coping mechanism, which perpetuates the cycle of smoking causing increased depressive symptoms like anxiety and suicidal ideation, and they are more prone to mental illness following quitting smoking. According to the DSM-IV, "depressive symptoms post cessation may be associated with a relapse to smoking" (American Psychiatric Association, 1994, p. 246). Despite the significant body of literature associating mental health with smoking, the nature of this relationship remains unclear, and theories attempting to explain the observed correlation are sometimes contradictory. Proposed theories include both noncausal and causal relationships

between mental health and smoking. A noncausal relationship suggests that a predisposition of common factors, such as psychological vulnerabilities, contributes to the observed correlation between smoking and depressive symptoms for adults (Breslau, 1995) and adolescents (Koval et al., 2000). For example, Hughes (1988) proposed that low self-esteem might act as a common predisposition for both poor mental health and smoking. Causal theories, in contrast, suggest a direct link between mental health and smoking. Many of these theories propose a biological link. Ingesting nicotine through smoking has been thought to be an attempt to self-medicate one's negative affective states (Eysenck, 1973; Hughes, 1988; Warburton, Wesnes, & Revell, 1983). In fact, Glover et al (1996) has argued that nicotine may be an effective antidepressant. Balfour and Ridley (2000) propose that poor mental health sensitizes people to stress and that drugs such as nicotine, which stimulates dopamine release in the forebrain and can relieve stress. They also suggest that chronic exposure to tobacco smoke may elicit serotonin-related changes in the brain that cause increased depressive symptoms when smoking ceases. In short, the relationship between smoking and mental health is complex, and most likely involves both causal and noncausal explanations.

Several variables have been associated with both smoking and depressive symptoms in adolescents. Smoking prevalence is highest among those with lower levels of education, and academic performance has been found to be predictive of not only current smoking habits but also initiation of smoking and intention to smoke in the future. Education level has also been associated with poor mental health (Anda et al., 1990). Individuals who are less educated are also more likely to suffer from depressive episodes.

Family-related variables have also been associated with both smoking and mental health. Botvin, Epstein, Schinke, & Diaz (1995) found that students who did not live with two parents

were at increased risk of experimenting with cigarettes. In addition, adolescents are at substantially higher risk of smoking if at least one of their parents smokes (Goddard, 1990; Patton et al., 1996). Parental smoking is also predictive of levels of major depression in their children (Chassin, Presson, Rose, Todd & Sherman, 1998; Kendler et al., 1993). It is important to remember that the exact nature of the relationship between parental and adolescent smoking and mental health is unclear, as it has been found that mental health alone has familial components, with an individual having a 25% chance of becoming depressed if one family member is depressed (Blumenthal & Pike, 1996). Vogel et al results of limited longitudinal studies are controversial.

## CHAPTER III: METHODS

After reviewing the literature, the study will attempt to determine the relationship between tobacco use and mental health among adolescents in Kuwait. This chapter discusses the target population and sample, data source and data analysis plan.

GSHS is considered a base of surveillance system for health risk behaviors and protective factors at schools and need to be conducted periodically. The selected independent variable will be tobacco use. The dependent variables will be as follows: feeling lonely in the 12 months preceding the survey; how often anxiety has affected sleep in the person in the 12 months preceding the survey; considered suicide (suicide ideation); suicide planning; and suicide attempt. Complex samples frequency analysis will be used to calculate prevalence estimates with 95% confidence intervals for the independent and dependent variables. Complex sample tables (cross-tabulation) analysis will carried out to assess the relationship between the independent variable (tobacco use) and each of the dependent variables (mental health) when considering grade level.

### **Research Questions**

Because tobacco use can be correlated with mental health, it is important to recognize that while situational depression may pass, it can take a toll on an individual's long-term health. For the purposes of this research, data on tobacco usage will be examined for possible relationship to perceived mental health. The research questions guiding this study is as follows:

1. When considering gender and grade level, what is the relationship between tobacco use and feeling lonely in the last year among adolescents in Kuwait?
2. When considering gender and grade level, what is the relationship between tobacco use and how often anxiety has affected sleep in the last year among adolescents in Kuwait?
3. When considering gender and grade level, what is the relationship between tobacco use and suicide ideation among adolescents in Kuwait?
4. When considering gender and grade level, what is the relationship between tobacco use and suicide planning among adolescents in Kuwait?
5. When considering gender and grade level, what is the relationship between tobacco and suicide attempts among adolescents in Kuwait?

### **Data Source**

This study will use data from the 2011 Kuwait Global School-based Student Health Survey (GSHS) which was a school based cross-sectional survey designed to be representative of students in all governmental schools in Kuwait. The survey targets students in grades eight, nine and ten. The questionnaire addressed the following topics: Respondent demographics, Hygiene, Mental health, and Tobacco use.

### **GSHS Sampling Procedures and Participants**

The 2011 Kuwait GSHS employed a two-stage cluster sample design to produce a representative sample of students in grades 8, 9 and 10. The first-stage sampling frame was

performed on the school level. It consisted of all governmental schools of boys and girls containing grades 8, 9, and 10. The six governorates in Kuwait were included in the sampling frame. Grades eight, nine and ten classes were selected because they contained the target groups of the 13 to 15-year age groups. Enrollment of schools was obtained from the Ministry of Education. Schools were selected systematically with probability proportional to school enrollment size. A total of 31 schools (16 girls' schools and 15 boys' schools) were selected to participate in the Kuwait GSHS study in the academic year 2010-2011. Thirty schools participated with 97% response rate. Participants for this study selected from all six governments that shape the Kuwaiti demography were included in the study design. The 2011 Kuwait GSHS employed a two-stage cluster sample design to produce a representative sample of students in grades 8-10 in all governorates. The first-stage sampling frame consisted of all governmental schools in the six governorates containing any of the grades 8-10 classes (Al Baho, A.& Badr, H., 2011).

The second stage of sampling was performed on the class level. Randomly selected intact classrooms (using a random start) from each school took place. All classrooms in each selected school were included in the sampling frame. All students in the sampled classrooms were eligible to participate in the GSHS. A total of 2,674 students of the 3,051 sampled students completed questionnaires with a response rate of 88%. The overall response rate (school response rate student response rate) was 85% (Al Baho, A.& Badr, H., 2011).

## Selected Measures

### Independent and Dependent Variables

The independent variable is tobacco use. The specific Kuwaiti GSHS questions are: question 35, and 36. While dependent variable is mental health: questions 28, 29, 30, 31, and questions 32.

Question 35 and question 36 deal with the independent variable of tobacco use. Question 35 asks how many days did you smoke cigarettes during the past 30 days. Question 36 asks how many days did you use any tobacco products other than cigarettes, such as hubble bubble.

The dependent variables in the questionnaire focus on mental health. Question 28 asks how often the person has felt lonely in the last year. Question 29 asks how often anxiety has affected sleep in the person in the past year. Question 30 asks whether or not the surveyed population has seriously considered suicide in the past twelve months. Question 31 expounds on this by asking if the person has created a plan regarding suicide. Question 32 continues the questioning by asking about actual suicide attempts in the past year.

Below are details of each question, answers, and an indication the answer options. Proposed recording for answer options for analysis are indicated below the original answer options:

### Independent Variables

QN29: Percentage of students who smoked cigarettes on one or more days during the past 30 days

1 Yes

2 No

QN30: Percentage of students who used any tobacco products other than cigarettes on one or more days during the past 30 days

1 Yes

2 No

### **Dependent Variables**

QN22: Percentage of students who most of the time or always felt lonely during the past 12 months

1 Yes

2 No

QN23: Percentage of students who most of the time or always were so worried about something that they could not sleep at night during the past 12 months

1 Yes

2 No

QN24: Percentage of students who ever seriously considered attempting suicide during the past 12 months

1 Yes

2 No

QN25: Percentage of students who made a plan about how they would attempt suicide during the past 12 months

1 Yes



2 No

QN26: Percentage of students who actually attempted suicide one or more times during the past  
12 months

1 Yes

2 No

### **Considering Variables**

Q3: In what grade are you?

A. Grade 7

B. Grade 8

C. Grade 9

D. Grade 10

E. Grade 11

F. Grade 12

Q2: what is your sex?

1 Male

2 Female

### **Data Analysis**

The selected independent variable will be two variables relating to tobacco use. The dependent variables will be; felt lonely in the last year, how often anxiety has affected sleep in the person in the past year, considered suicide, suicide planning, and suicide attempt. The control variables are gender and grade level. Complex samples frequency analysis will be used to calculate prevalence estimates with 95% confidence intervals for the independent and dependent variables. Complex sample tables (cross-tabulation) analysis will be carried out to assess the relationship between the independent variables (tobacco use) and each of the dependent variables (mental health) when considering gender and grade level.

## CHAPTER IV: RESULTS

### Data Analysis

The focus of this study was to assess the relationship between the use of tobacco and the mental health status of students in Kuwait. As Tables 1,2 and 3 illustrate, of 2664 students, the majority were between the ages of 13 to 15 and they were closely distributed among grades 8, 9, and 10 (about one-third in each of these grades). Just a handful of students were in grades 7 and 11 and only 14 percent were younger than 13 or older than 15.

Table 1: Age of Students

		How old are you				
		Estimate	Standard Error	95% Confidence Interval		Unweighted Count
				Lower	Upper	
% of Total	11 years old or younger	0.1%	0.1%	0.0%	0.4%	4
	12 years old	1.7%	0.6%	0.8%	3.6%	44
	13 years old	21.3%	3.2%	15.3%	28.8%	566
	14 years old	30.7%	3.0%	24.7%	37.3%	813
	15 years old	33.4%	4.4%	24.9%	43.2%	875
	16 years old or older	12.8%	2.7%	8.1%	19.6%	362
	Total	100.0%	0.0%	100.0%	100.0%	2664

Table 2: Gender

		<b>Sex</b>				Unweighted Count
% of Total		Estimate	Standard Error	95% Confidence Interval		
				Lower	Upper	
	Male	52.3%	3.3%	45.2%	59.2%	1336
	Female	47.7%	3.3%	40.8%	54.8%	1320
	Total	100.0%	0.0%	100.0%	100.0%	2656

Table 3: Grade Level

		<b>In what grade are you</b>				Unweighted Count
% of Total		Estimate	Standard Error	95% Confidence Interval		
				Lower	Upper	
	Grade 7	0.1%	0.0%	0.0%	0.2%	2
	Grade 8	33.9%	4.1%	25.9%	43.0%	899
	Grade 9	31.5%	3.5%	24.7%	39.2%	790
	Grade 10	32.1%	7.2%	19.0%	48.8%	894
	Grade 11	2.3%	2.0%	0.4%	13.1%	72
	Grade 12	0.0%	0.0%	0.0%	0.3%	1
	Total	100.0%	0.0%	100.0%	100.0%	2658

Table 4: Percent of Students Who Smoke

**Smoked cigarettes 1+ of past 30 days**

		Estimate	Standard Error	95% Confidence Interval		Unweighted Count
				Lower	Upper	
% of Total	1	17.6%	1.7%	14.3%	21.5%	450
	2	82.4%	1.7%	78.5%	85.7%	2163
	Total	100.0%	0.0%	100.0%	100.0%	2613

The percent of student who smoke was 17.6 percent (Table 4).

Table 5: Percent of Students Who Used Any Tobacco Products Other Than Cigarettes

**Used other tobacco 1+ of past 30 days**

		Estimate	Standard Error	95% Confidence Interval		Unweighted Count
				Lower	Upper	
% of Total	1	6.7%	0.9%	5.1%	8.8%	180
	2	93.3%	0.9%	91.2%	94.9%	2475
	Total	100.0%	0.0%	100.0%	100.0%	2655

The percent of student who used any tobacco products other than cigarettes was 6.7 percent (Table 5).

Table 6: Percent of Students Who Felt Lonely

**Lonely most times/always past 12 months**

		Estimate	Standard Error	95% Confidence Interval		Unweighted Count
				Lower	Upper	
% of Total	1	18.7%	1.1%	16.5%	21.0%	492
	2	81.3%	1.1%	79.0%	83.5%	2138
	Total	100.0%	0.0%	100.0%	100.0%	2630

When asked about feeling lonely within the past 12-month, 18.7 Percent admitted feeling lonely most times or always. 81.3 percent checked never or rarely felt lonely.

Table 7: Percent of Students Who Could Not Sleep Due to Worry

**Worry prevented sleep most time/always past 12 mos**

		Estimate	Standard Error	95% Confidence Interval		Unweighted Count
				Lower	Upper	
% of Total	1	20.2%	1.2%	17.9%	22.8%	547
	2	79.8%	1.2%	77.2%	82.1%	2077
	Total	100.0%	0.0%	100.0%	100.0%	2624

When asked about Anxiety within the past 12-month, 20.2 Percent admitted worry caused them to lose sleep most times or always. 79.8 percent checked never or rarely worry caused them to lose sleep.

Table 8: Percent of Students Who Considered Suicide

<b>Considered suicide past 12 months</b>						
% of Total		Estimate	Standard Error	95% Confidence Interval		Unweighted Count
				Lower	Upper	
	1	19.9%	1.6%	16.8%	23.5%	519
	2	80.1%	1.6%	76.5%	83.2%	2132
	Total	100.0%	0.0%	100.0%	100.0%	2651

Table 9: Percent of Students Who Made Suicide Plans

<b>Made suicide plan past 12 months</b>						
% of Total		Estimate	Standard Error	95% Confidence Interval		Unweighted Count
				Lower	Upper	
	1	14.0%	1.3%	11.4%	17.0%	368
	2	86.0%	1.3%	83.0%	88.6%	2271
	Total	100.0%	0.0%	100.0%	100.0%	2639

Table 10: Percent of Students Who Attempt Suicide

<b>1+ times attempt suicide 12 mos.</b>						
% of Total		Estimate	Standard Error	95% Confidence Interval		Unweighted Count
				Lower	Upper	
	1	17.3%	1.3%	14.7%	20.2%	455
	2	82.7%	1.3%	79.8%	85.3%	2188
	Total	100.0%	0.0%	100.0%	100.0%	2643

Regarding suicide, 19.9 percent responded that they considered suicide within the past year and 14 percent stated they had a suicide plan (see Tables 8 & 9). Regarding at least one suicide attempt, 17.3 percent responded affirmatively (see Table 10).

Table 11: Complex Sample of Students Who Felt Lonely

**Smoked cigarettes 1+ of past 30 days \* Lonely most times/always past 12 months**

Smoked cigarettes 1+ of past 30 days			Lonely most times/always past 12 months			
			1	2	Total	
1	% within Smoked cigarettes 1+ of past 30 days	Estimate	29.1%	70.9%	100.0%	
		95% Confidence Interval	Lower	21.6%	62.1%	100.0%
			Upper	37.9%	78.4%	100.0%
2	% within Smoked cigarettes 1+ of past 30 days	Estimate	16.4%	83.6%	100.0%	
		95% Confidence Interval	Lower	14.7%	81.7%	100.0%
			Upper	18.3%	85.3%	100.0%
Total	% within Smoked cigarettes 1+ of past 30 days	Estimate	18.6%	81.4%	100.0%	
		95% Confidence Interval	Lower	16.4%	79.1%	100.0%
			Upper	20.9%	83.6%	100.0%

**Used other tobacco 1+ of past 30 days \* Lonely most times/always past 12 months**

Used other tobacco 1+ of past 30 days			Lonely most times/always past 12 months			
			1	2	Total	
1	% within Used other tobacco 1+ of past 30 days	Estimate	33.1%	66.9%	100.0%	
		95% Confidence Interval	Lower	27.8%	61.1%	100.0%
			Upper	38.9%	72.2%	100.0%
2	% within Used other tobacco 1+ of past 30 days	Estimate	17.7%	82.3%	100.0%	
		95% Confidence Interval	Lower	15.7%	80.0%	100.0%
			Upper	20.0%	84.3%	100.0%
Total	% within Used other tobacco 1+ of past 30 days	Estimate	18.7%	81.3%	100.0%	
		95% Confidence Interval	Lower	16.6%	78.9%	100.0%
			Upper	21.1%	83.4%	100.0%



### Measures of Association

		Estimate	95% Confidence Interval	
			Lower	Upper
Smoked cigarettes 1+ of past 30 days * Lonely most times/always past 12 months	Odds Ratio	2.093	1.378	3.178
Used other tobacco 1+ of past 30 days * Lonely most times/always past 12 months	Odds Ratio	2.299	1.893	2.793

Statistics are computed only for 2-by-2 tables with all cells observed.

When considering gender and grade level, what is the relationship between tobacco use and feeling lonely in the last year among adolescents in Kuwait? Table 11 shows that students who smoke (29.1%: Confidence Interval 21.6 – 37.9) are significantly more likely to report Feeling Lonely compared to student who do not smoke (16.4%: Confidence Interval 14.7 – 18.3). Odds Ratio = 2.093 means students who smoke are 2.093 times more likely to also report “Feeling Lonely”. We know statistically significant because the Lower and Upper confident intervals are great than “1”.

Table 11 shows that students who used any tobacco products other than cigarettes (33.1%: Confidence Interval 27.8 – 38.9) are significantly more likely to report Feeling Lonely compared to student who do not used any tobacco products (17.7%: Confidence Interval 15.7 – 20). Odds Ratio = 2.299 means students who used any tobacco products other than cigarettes are 2.093 times more likely to also report “Feeling Lonely”.

Table 12: Complex Sample of Students Who Have Anxiety

**Smoked cigarettes 1+ of past 30 days \* Worry prevented sleep most time/always past 12 mos**

Smoked cigarettes 1+ of past 30 days			Worry prevented sleep most time/always past 12 mos			
			1	2	Total	
1	% within Smoked cigarettes 1+ of past 30 days	Estimate	34.2%	65.8%	100.0%	
		95% Confidence Interval	Lower	28.8%	60.0%	100.0%
			Upper	40.0%	71.2%	100.0%
2	% within Smoked cigarettes 1+ of past 30 days	Estimate	17.3%	82.7%	100.0%	
		95% Confidence Interval	Lower	15.3%	80.6%	100.0%
			Upper	19.4%	84.7%	100.0%
Total	% within Smoked cigarettes 1+ of past 30 days	Estimate	20.2%	79.8%	100.0%	
		95% Confidence Interval	Lower	17.8%	77.3%	100.0%
			Upper	22.7%	82.2%	100.0%

**Measures of Association**

		Estimate	95% Confidence Interval	
			Lower	Upper
Smoked cigarettes 1+ of past 30 days * Worry prevented sleep most time/always past 12 mos	Odds Ratio	2.493	1.959	3.172
Used other tobacco 1+ of past 30 days * Worry prevented sleep most time/always past 12 mos	Odds Ratio	2.818	1.991	3.987

Statistics are computed only for 2-by-2 tables with all cells observed.

**Used other tobacco 1+ of past 30 days \* Worry prevented sleep most time/always past 12 mos**

Used other tobacco 1+ of past 30 days			Worry prevented sleep most time/always past 12 mos			
			1	2	Total	
1	% within Used other tobacco 1+ of past 30 days	Estimate	39.6%	60.4%	100.0%	
		95% Confidence Interval	Lower	33.1%	53.5%	100.0%
			Upper	46.5%	66.9%	100.0%
2	% within Used other tobacco 1+ of past 30 days	Estimate	18.9%	81.1%	100.0%	
		95% Confidence Interval	Lower	16.4%	78.4%	100.0%
			Upper	21.6%	83.6%	100.0%
Total	% within Used other tobacco 1+ of past 30 days	Estimate	20.2%	79.8%	100.0%	
		95% Confidence Interval	Lower	17.9%	77.2%	100.0%
			Upper	22.8%	82.1%	100.0%

When considering gender and grade level, what is the relationship between tobacco use and how often anxiety has affected sleep in the last year among adolescents in Kuwait?

Table 12 shows that students who smoke (34.2%: Confidence Interval 28.8 – 40.0) are significantly more likely to report ANXIETY compared to student who do not smoke (17.3%: Confidence Interval 15.3 – 19.4). Odds Ratio = 2.5 means students who smoke are 2.5 times more likely to also report “ANXIETY”.

Table 12 also shows that students who used any tobacco products other than cigarettes (39.6%: Confidence Interval 33.1 – 46.5) are significantly more likely to report ANXIETY compared to student who do not used any tobacco products (18.9%: Confidence Interval 16.4 – 21.6). Odds Ratio = 2.818 means students who used any tobacco products other than cigarettes are 2.093 times more likely to also report “ANXIETY”.

Table 13: Complex Sample of Students Who Considered Suicide

**Smoked cigarettes 1+ of past 30 days \* Considered suicide past 12 months**

Smoked cigarettes 1+ of past 30 days			Considered suicide past 12 months			
			1	2	Total	
1	% within Smoked cigarettes 1+ of past 30 days	Estimate	33.9%	66.1%	100.0%	
		95% Confidence Interval	Lower	26.1%	57.3%	100.0%
			Upper	42.7%	73.9%	100.0%
2	% within Smoked cigarettes 1+ of past 30 days	Estimate	16.8%	83.2%	100.0%	
		95% Confidence Interval	Lower	14.1%	80.1%	100.0%
			Upper	19.9%	85.9%	100.0%
Total	% within Smoked cigarettes 1+ of past 30 days	Estimate	19.8%	80.2%	100.0%	
		95% Confidence Interval	Lower	16.5%	76.5%	100.0%
			Upper	23.5%	83.5%	100.0%

**Measures of Association**

		Estimate	95% Confidence Interval	
			Lower	Upper
Smoked cigarettes 1+ of past 30 days *	Odds Ratio	2.541	1.796	3.595
Considered suicide past 12 months				
Used other tobacco 1+ of past 30 days *	Odds Ratio	3.859	2.908	5.121
Considered suicide past 12 months				

Statistics are computed only for 2-by-2 tables with all cells observed.

**Used other tobacco 1+ of past 30 days \* Considered suicide past 12 months**

Used other tobacco 1+ of past 30 days			Considered suicide past 12 months			
			1	2	Total	
1	% within Used other tobacco 1+ of past 30 days	Estimate	45.8%	54.2%	100.0%	
		95% Confidence Interval	Lower	37.8%	45.9%	100.0%
			Upper	54.1%	62.2%	100.0%
2	% within Used other tobacco 1+ of past 30 days	Estimate	18.0%	82.0%	100.0%	
		95% Confidence Interval	Lower	15.1%	78.7%	100.0%
			Upper	21.3%	84.9%	100.0%
Total	% within Used other tobacco 1+ of past 30 days	Estimate	19.9%	80.1%	100.0%	
		95% Confidence Interval	Lower	16.8%	76.6%	100.0%
			Upper	23.4%	83.2%	100.0%

When considering gender and grade level, what is the relationship between tobacco use and suicide ideation among adolescents in Kuwait?

Table 13 shows that students who smoke (33.9%: Confidence Interval 26.1 – 42.7) are significantly more likely to report Considered Suicide compared to student who do not smoke (16.8%: Confidence Interval 14.1 – 19.9). Odds Ratio = 2.541 means students who smoke are 2.541 times more likely to also report “Considered Suicide”.

Table 13 also shows that students who used any tobacco products other than cigarettes (45.8%: Confidence Interval 37.8 – 54.1) are significantly more likely to report Considered Suicide compared to student who do not used any tobacco products (18%: Confidence Interval 15.1 – 21.3). Odds Ratio = 3.859 means students who used any tobacco products other than cigarettes are 2.093 times more likely to also report “Considered Suicide”.

Table 14: Complex Sample of Students Who Made Suicide Plans

**Smoked cigarettes 1+ of past 30 days \* Made suicide plan past 12 months**

Smoked cigarettes 1+ of past 30 days			Made suicide plan past 12 months			
			1	2	Total	
1	% within Smoked cigarettes 1+ of past 30 days	Estimate	24.4%	75.6%	100.0%	
		95% Confidence Interval	Lower	19.6%	70.0%	100.0%
			Upper	30.0%	80.4%	100.0%
2	% within Smoked cigarettes 1+ of past 30 days	Estimate	11.4%	88.6%	100.0%	
		95% Confidence Interval	Lower	9.1%	85.7%	100.0%
			Upper	14.3%	90.9%	100.0%
Total	% within Smoked cigarettes 1+ of past 30 days	Estimate	13.7%	86.3%	100.0%	
		95% Confidence Interval	Lower	11.1%	83.2%	100.0%
			Upper	16.8%	88.9%	100.0%

**Used other tobacco 1+ of past 30 days \* Made suicide plan past 12 months**

Used other tobacco 1+ of past 30 days			Made suicide plan past 12 months			
			1	2	Total	
1	% within Used other tobacco 1+ of past 30 days	Estimate	38.8%	61.2%	100.0%	
		95% Confidence Interval	Lower	31.5%	53.3%	100.0%
			Upper	46.7%	68.5%	100.0%
2	% within Used other tobacco 1+ of past 30 days	Estimate	12.0%	88.0%	100.0%	
		95% Confidence Interval	Lower	9.9%	85.5%	100.0%
			Upper	14.5%	90.1%	100.0%
Total	% within Used other tobacco 1+ of past 30 days	Estimate	13.8%	86.2%	100.0%	
		95% Confidence Interval	Lower	11.3%	83.3%	100.0%
			Upper	16.7%	88.7%	100.0%

### Measures of Association

		Estimate	95% Confidence Interval	
			Lower	Upper
Smoked cigarettes 1+ of past 30 days * Made suicide plan past 12 months	Odds Ratio	2.505	1.872	3.353
Used other tobacco 1+ of past 30 days * Made suicide plan past 12 months	Odds Ratio	4.650	3.567	6.061

Statistics are computed only for 2-by-2 tables with all cells observed.

When considering gender and grade level, what is the relationship between tobacco use and suicide planning among adolescents in Kuwait?

Table 14 shows that students who smoke (24.4%: Confidence Interval 19.6 – 30) are significantly more likely to report Suicide planning compared to student who do not smoke (11.4%: Confidence Interval 9.1 – 14.3). Odds Ratio = 2.505 means students who smoke are 2.505 times more likely to also report “Suicide planning”.

Table 14 shows that students who used any tobacco products other than cigarettes (38.8%: Confidence Interval 31.5– 46.7) are significantly more likely to report Suicide planning compared to student who do not used any tobacco products (12%: Confidence Interval 9.9 – 14.5). Odds Ratio = 4.650 means students who used any tobacco products other than cigarettes are 2.093 times more likely to also report “Suicide planning”.

Table 15: Complex Sample of Students Who Attempt Suicide and Smoke/ Do Not Smoke

**Smoked cigarettes 1+ of past 30 days \* 1+ times attempt suicide 12 mos.**

Smoked cigarettes 1+ of past 30 days			1+ times attempt suicide 12 mos.			
			1	2	Total	
1	% within Smoked cigarettes 1+ of past 30 days	Estimate	32.7%	67.3%	100.0%	
		95% Confidence Interval	Lower	26.8%	60.7%	100.0%
			Upper	39.3%	73.2%	100.0%
2	% within Smoked cigarettes 1+ of past 30 days	Estimate	13.7%	86.3%	100.0%	
		95% Confidence Interval	Lower	11.4%	83.7%	100.0%
			Upper	16.3%	88.6%	100.0%
Total	% within Smoked cigarettes 1+ of past 30 days	Estimate	17.0%	83.0%	100.0%	
		95% Confidence Interval	Lower	14.4%	80.0%	100.0%
			Upper	20.0%	85.6%	100.0%

**Used other tobacco 1+ of past 30 days \* 1+ times attempt suicide 12 mos.**

Used other tobacco 1+ of past 30 days			1+ times attempt suicide 12 mos.			
			1	2	Total	
1	% within Used other tobacco 1+ of past 30 days	Estimate	50.3%	49.7%	100.0%	
		95% Confidence Interval	Lower	39.6%	39.0%	100.0%
			Upper	61.0%	60.4%	100.0%
2	% within Used other tobacco 1+ of past 30 days	Estimate	14.7%	85.3%	100.0%	
		95% Confidence Interval	Lower	12.3%	82.6%	100.0%
			Upper	17.4%	87.7%	100.0%
Total	% within Used other tobacco 1+ of past 30 days	Estimate	17.1%	82.9%	100.0%	
		95% Confidence Interval	Lower	14.6%	80.1%	100.0%
			Upper	19.9%	85.4%	100.0%



### Measures of Association

		Estimate	95% Confidence Interval	
			Lower	Upper
Smoked cigarettes 1+ of past 30 days * 1+ times attempt suicide 12 mos.	Odds Ratio	3.067	2.329	4.040
Used other tobacco 1+ of past 30 days * 1+ times attempt suicide 12 mos.	Odds Ratio	5.888	3.730	9.292

Statistics are computed only for 2-by-2 tables with all cells observed.

When considering gender and grade level, what is the relationship between tobacco and suicide attempts among adolescents in Kuwait?

Table 15 shows that students who smoke (32.7%: Confidence Interval 26.8 – 39.3) are significantly more likely to report Suicide Attempt compared to students who do not smoke (13.7%: Confidence Interval 11.4 – 16.3). Odds Ratio = 3.067 means students who smoke are 3.067 times more likely to also report “Suicide Attempt”.

Table 15 shows that students who used any tobacco products other than cigarettes (50.3%: Confidence Interval 39.6– 61) are significantly more likely to report Suicide Attempt compared to students who do not used any tobacco products (14.7%: Confidence Interval 12.3 – 17.4). Odds Ratio = 5.888 means students who used any tobacco products other than cigarettes are 2.093 times more likely to also report “Suicide Attempt”.

Complex Sample was run and each of the five mental health questions were positively related to tobacco use with statistical significance. As indicated in Tables 11-15, students who smoke are significantly more likely to report feeling lonely, worry interfering with sleep, and suicide

attempts. Cross tabulation for each mental health question with smoking confirmed the strong relationship between each of the mental health questions and the use of tobacco products.

Considering the above-mentioned data findings, Complex Sampling analysis ensued using the Enter procedure. The independent variable was “smoking/use of tobacco products”, and each of the mental health questions were originally treated separately as the dependent variable.

## CHAPTER V: DISCUSSION

The analysis of data reveals interesting and meaningful findings. The 2664 participants were between the ages of 11-16, with age 14 as the average. The students were equally distributed among grades 8, 9, and 10 with about one-third in each of the three grade levels. Between 17.6 and 6.7 percent of students smoke cigarettes or use other tobacco products.

What is equally alarming is the number of students who have attempted suicide, in addition to those having a plan which suggests seriousness of intent. The data reveals that the rate of suicidal ideation is twice as high (21%) as the use of tobacco. About 19.9 percent responded that they considered suicide within the past year; 14 percent stated they had a suicide plan, and 17.3 percent responded affirmatively for at least one suicide attempt. Of equal concern is the number of students who reported being worried enough for it to interfere with sleep; 20.2 Percent admitted worry caused them to lose sleep most times or always. Similar results were found for those who reported feeling lonely; Approximately 19 percent (18.7%) admitted feeling lonely most times or always.

This study raises some questions and concerns about the mental health status and use of tobacco products among adolescents in Kuwait. It is suggested that additional studies be ascertained in order to decipher the contributing factors to unhealthy behaviors such as smoking and abnormal mental health status of a fairly large percent of middle and high school students. Further study could assess the events and/or circumstances that may be contributing to the quality of life of young students in Kuwait. This study reveals a strong association between students who use tobacco products and mental health status reflecting feelings of loneliness, worry, suicidal thought, intent, and suicidal behavior. In this study, the hypothesis of smoking negatively impacting the mental health status of students is supported; however, there may also be cause to investigate the mental health status of students who do not use tobacco. Yes, smoking does negatively impact the

mental health of students and teens, but many non-smoking students are also worrying, feeling lonely and suicidal, and have a suicide plan, in addition to attempting suicide one or more times. Research has been done and determined that in this population, reciprocal determinism is an important concept because tobacco rates differ among gender expectations. This may be related to the differing expectations among the genders in Kuwait and could contribute to the mental health disparity between tobacco users and nonusers. Social Cognitive Theory dictates that this may also be due in part to youths looking for a way to cope with their current situations (Schwarzer & Luszczynska, 2005). Obermeyer (2015) showed that tobacco use in Kuwait was definitely an issue, with 24.4 percent of adolescents smoking. It seems, however, as though tobacco use is merely a symptom of the problem, and further study may reveal additional insight into the phenomena of poor mental health among girls in Kuwait that was found within this study. Steps should then be taken to remediate this damage and improve mental health, thereby decreasing tobacco usage.

This research does show a correlation between smoking and increased depression and anxiety. Twenty percent (20%) of students admitted to considering suicide within the past twelve months and 14 percent indicated that they did have a suicide plan. Of students that actively attempted suicide, 17.3 percent did so one time during the past year of the study. These results show there is a great need to increase public awareness of the dangers of tobacco use and the correspondent increased depression, anxiety, and negative mental health. This is an issue that should be of great concern to public health officials in Kuwait.

The results indicate that tobacco does indeed have an effect on mental health, particularly teenagers whose brains are still developing and have an influx in hormones, making mental health more likely and smoking a more attractive coping mechanism to deal with problems and emotions. Since a major focus of this study includes tobacco use and its relation to mental

health, Cross tabulations were performed in order to assess the relationships, and it was determined that a significant relationship does exist between tobacco and several variables including worrying to the point of sleep interference, feeling lonely, and feeling suicidal.

## CHAPTER VI: CONCLUSION

Smoking is a public health concern all over the world, particularly among young adults. Young adults are more likely to succumb to peer pressure and smoke as a result of being stressed and depressed. Because teenagers are going through many hormonal changes, it is very likely that depression and anxiety are more likely to occur, and smoking could act as both a coping mechanism, as well as perpetuate the cycle of depression and anxiety among young adults in Kuwait. Tobacco use is associated with anxiety, depression, suicidal thoughts, and other mental health problems. Furthermore, tobacco use is becoming increasingly popular due to the rising popularity of the traditional water pipe, which is just as dangerous, if not more dangerous, to health than cigarette smoking. With the rise of the traditional waterpipe and females smoking it due to less perceived danger, less perceived shame, and that it is a group activity, female prevalence is increasing in terms of waterpipe smoking alone. This is particularly problematic, since the literature suggests that females are more likely to experience depression and anxiety than men, due to genetics, hormonal influences, as well as socio-environmental concerns.

Future studies should include determining health outcomes over a long period of time from teenagers who smoke waterpipe or cigarettes. To the best of my knowledge, there are no longitudinal studies about individuals in Kuwait who began smoking when they were teenagers. While the research does suggest that individuals who start smoking at or before the age of fourteen are more likely to smoke throughout the course of their adulthood, there is little research if this is true globally or specifically to Kuwait. Further research should exist also in terms of how to reduce the stigma of receiving mental health care in Kuwait and other Arab countries, so that individuals can be treated for mental disorders, depression, and anxiety. This may reduce the likelihood of smoking as a coping mechanism, as mental health care could provide more effective and healthier

coping mechanisms than smoking cigarettes or the waterpipe. In addition, further research should be done to determine the other factors that contribute to poor mental health among adolescents in Kuwait. Poor mental health was apparent in both smokers and nonsmokers, so it is clear that other factors may be at play.

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## APPENDICES

## APPENDIX A: THE 2010 GSHS QUESTIONS

## Independent Variables:

QN29: Percentage of students who smoked cigarettes on one or more days during the past 30 days

1 Yes

2 No

QN30: Percentage of students who used any tobacco products other than cigarettes on one or more days during the past 30 days

1 Yes

2 No

## Dependent Variables:

QN22: Percentage of students who most of the time or always felt lonely during the past 12 months

1 Yes

2 No

QN23: Percentage of students who most of the time or always were so worried about something that they could not sleep at night during the past 12 months

1 Yes

2 No

QN24: Percentage of students who ever seriously considered attempting suicide during the past 12 months

1 Yes

2 No

QN25: Percentage of students who made a plan about how they would attempt suicide during the past 12 months

1 Yes

2 No

QN26: Percentage of students who actually attempted suicide one or more times during the past 12 months

1 Yes

2 No

Considering Variables:

Q3: In what grade are you?

- A. Grade 7
- B. Grade 8
- C. Grade 9
- D. Grade 10
- E. Grade 11
- F. Grade 12

Q2: what is your sex?

1 Male

2 Female