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# Addicted Youth: The Understanding Of Smoking-Related Health Risks In Female College Students

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ADDICTED YOUTH: THE UNDERSTANDING OF SMOKING-RELATED HEALTH  
RISKS IN FEMALE COLLEGE STUDENTS

A thesis submitted In  
Partial Fulfillment of the Requirements  
for the Degree of  
Master of Science  
at Minnesota State University, Mankato

By  
Rebekah Morris

(July 2011)

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## **Endorsement Page**

Date: June 28<sup>th</sup> 2011

This thesis paper has been examined and approved.

Examining Committee:

Dr. Hans-Peter De Ruiter, Chairperson

Dr. Sue Ellen Bell, Committee Member

## **Abstract**

Young adults are at the greatest risk for initiation of smoking or becoming daily smokers. Smoking has a unique history in the United States and is associated with health risks beyond heart disease and lung cancer, many specifically affecting women. Although the majority of people are aware of the risks for heart disease and lung cancer, many other risks are not recognized. By evaluating the known knowledge of smoking-related health risks beyond and including heart disease and lung cancer in the high risk population of female college students, education programs and cessation teaching can be altered, potentially resulting in lower start rates and higher cessation rates. In order to accomplish these changes, known health risks and unknown or unrecognized health risks need to be identified. Data were analyzed using comparative descriptive statistics gathered by a survey tool that was dispersed to college students' email as a Survey Monkey questionnaire. All female students attending Minnesota State University, Mankato during the previous spring 2011, current summer 2011 and upcoming fall 2011 semesters received the email request. Data were included from 473 students aged 18 to 24. Questions addressed personal and family experience with smoking, current smoking status, perceived risk of smoking-related health conditions, participation in high-risk behaviors, and identification of the three most common health consequences of smoking. As indicated by previous research, the majority of current and former smokers began smoking between the ages of 16 and 19. The data corroborated with previous studies indicating low perceived risk for smoking-related health conditions. Correlations

between participation in high-risk behaviors and tobacco use were supported by the research. Positive family history with smoking-related health consequence appears to be a factor in tobacco use. Results from this study duplicate previous research indicating the health care system's failure in making advances in educating young women about smoking-related health risks. Additionally, the media's attempts at educating the public of the link between smoking and heart disease in women has failed with over 75% of respondents incorrectly identifying lung cancer as the most common health consequence of smoking. A need for assessment of the smoking status of and education regarding the health risks of tobacco use is indicated by the results.

## TABLE OF CONTENTS

	Page
LIST OF DEMOGRAPHIC FIGURES.....	vi
LIST OF GROUP FIGURES.....	vii
CHAPTER	
I. INTRODUCTION.....	1
Introduction to the Problem.....	1
Problem Statement.....	3
Purpose of the Study.....	4
Research Questions.....	4
Definition of Terms.....	4
Assumptions.....	6
Limitations.....	6
II. REVIEW OF THE LITERATURE.....	7
Introduction.....	7

Review of Literature.....	7
History of Tobacco and Smoking.....	7
Cigarette Marketing.....	9
Nicotine and Tobacco’s Addictive Nature.....	10
When and Why do Women Start Smoking.....	12
Smoking’s Dangerous Health Risks.....	14
Other Risks.....	18
Smoking Cessation.....	19
Theoretical Frameworks.....	20
<b>III. RESEARCH METHODOLOGY.....</b>	<b>22</b>
Design.....	22
Sample and Setting.....	24
Ethical Considerations.....	24
Data Collection and Analysis.....	25
Limitations.....	26
<b>IV. RESULTS OF ANALYSIS.....</b>	<b>28</b>
Sample Characteristics.....	28



	Data Analysis.....	29
V.	DISCUSSION AND CONCLUSIONS.....	33
	Background Literature.....	34
	Description of Sample.....	34
	Discussion and Conclusions.....	35
	Scope and Limitations.....	39
	Implications for Practice.....	40
	Implications for Research.....	40
	REFERENCES.....	43
APPENDIX A.	DATA COLLECTION TOOL.....	46
APPENDIX B.	DEMOGRAPHIC FIGURES 1 THROUGH 13.....	51
APPENDIX C.	GROUP FIGURES 1 THROUGH 4 OF LIFETIME RISK PERCEPTION.....	57
APPENDIX D.	SURVEY COMMENTS BY SMOKING STATUS.....	65

## LIST OF DEMOGRAPHIC FIGURES

Figure	Page
1. Ethnicity.....	51
2. Total ages.....	51
3. Smoking status.....	51
4. Age at initiation of smoking by smoking status.....	52
5. Respondents' reported experience with smoking cessation advice.....	52
6. Experience growing up with a family member who smoked.....	53
7. Experience with a family member's health being affected by smoking.....	53
8. Reported use of contraceptive pills containing estrogen.....	54
9. Percentages of respondents reported unprotected intercourse.....	54
10. Reported HPV infection and/or abnormal pap smear history.....	55
11. Reported number of alcoholic drinks consumed at one time.....	55
12. Reported number of alcoholic drinks consumed per week.....	56
13. Respondents' ranking of the three major health consequences of smoking.....	56

## LIST OF GROUP FIGURES

Group Figures	Page
1. Lifetime perception of risk for cardiovascular diseases and cancers.....	57
2. Lifetime perception of risk for respiratory diseases.....	60
3. Lifetime perception of risk for osteoporosis, menstruation, and reproductive complications.....	61
4. Perception of pregnancy complication risks.....	63

## **Chapter I**

### **Introduction**

This chapter contains information regarding morbidity and mortality related to tobacco smoking, health risks associated with tobacco smoking, and information indicating the high risk category of young adulthood and the female gender, and the reasons for assessment and intervention at this stage. The problem statement and purpose of the study are described; research questions are presented followed by definitions of select terms, study assumptions, and study limitations.

#### **Introduction to the problem**

Cigarette smoking is the leading cause of preventable death and morbidity in the United States. A person who smokes one pack per day loses a day of life for every week they smoke (O'Flaherty, 2005). Approximately one fourth of the population smokes with nearly 443,000 deaths yearly from smoking-related illnesses. One of the most commonly known smoking-related illnesses is cardiovascular disease, which takes the life of a woman every minute. A previous survey by the American Heart Association found only 46% of American women could identify cardiovascular disease as a leading cause of death for women, with younger women among those surveyed having the least knowledge about their disease risks (Hardesty and Trupp, 2005). Female smokers are at

higher risk than female non-smokers of developing cancers of the lung, cervix, mouth, larynx, pharynx, esophagus, kidney, pancreas, and bladder, along with increased risk for developing heart disease and stroke (Bell & Tingen, 2000).

Identified health risks related to smoking include cancers as described above, cardiovascular diseases including coronary heart disease, stroke, aneurysm, sudden cardiac death, and respiratory diseases including asthma, bronchitis, emphysema, and chronic obstructive pulmonary disease (COPD). Women smokers are nine times more likely to suffer a heart attack and twenty-two times more likely to suffer a stroke (O'Flaherty, 2005). Female specific health risks include dysmenorrhea, secondary amenorrhea, irregular periods, delayed conception, infertility, and increased risk for ectopic pregnancies and spontaneous abortions in comparison to nonsmoking females. An additional health risk of concern for women involves decreased bone density of approximately 7.7% when compared with women who have never smoked (Field, 2008).

It is essential to ensure that adolescent and young women are aware of all the health risks of smoking as adolescence and young adulthood are the most likely stages for initiation of smoking to occur. In these stages, many women are often not thinking about their future health potential and the influence of current actions and behaviors. Most smokers, with estimates as high as 90%, began smoking prior to age 18 with the highest incidence in young girls and the less educated; more than 1 million teenage girls begin smoking annually (Bell & Tingen, 2001). According to Ellis, Perl, Davis, and Vichinsky (2008), the young adult population is of particular interest to the tobacco industry for three main reasons. First, young adults are frequently role models for adolescents. By

marketing to the young adults, the tobacco industry is indirectly marketing to adolescents as well. Second, experimentation and the establishment of addiction are supported by the highly transitional nature of young adulthood. And third, the transition from the adolescent occasional and experimental smoking to that of daily smoking often occurs during young adulthood. Research has supported reduced risk of premature death when smoking cessation occurs at younger ages.

### **Problem Statement**

Women in the stage of young adulthood are at increased risk of initiating tobacco smoking and of becoming daily smokers. Additionally, women who smoke are at increased risk of a multitude of diseases directly associated with smoking that lead to significant morbidity and mortality. Previous studies have shown insufficient knowledge of health risks related to smoking with most persons continuing to identify lung cancer as the primary health risk when heart disease is the #1 killer of women and is directly associated with tobacco smoking. The majority of previous studies have been completed using middle-aged white men and assessing mainly cardiovascular risks. With the increased use of tobacco by females over the past 50 years and subsequent increases in tobacco-related diseases, the importance of assessing knowledge of health risks in the highest risk population, also the population with greatest potential to successfully quit, is essential. Few studies of the female young adult population have been completed with little emphasis on health risks beyond heart disease and lung cancer.

## **Study Purpose**

The purpose of this quantitative study is fourfold: (a) to describe the known knowledge base regarding smoking-related health risks in college-aged women, (b) to identify gaps in the knowledge of smoking-related health risks, (c) to identify potential association between smoking status and participation in other high-risk behaviors, and (d) to better guide future teaching of smoking's health consequences and cessation techniques.

## **Research Questions**

1. What are the perceived personal health risks of specific smoking-related-health conditions by college-aged female smokers, former smokers, and non-smokers?
2. Are there associated high risk behaviors among college-aged women with low perceived smoking-related health risks?

## **Definition of Terms**

### **Smoking.**

*Conceptual Definition.* Smoking is a derivative of the intransitive verb “smoke” meaning, “to inhale and exhale the fumes of burning plant material and especially tobacco” (Merriam-Webster, Incorporated, 2011).

*Operational Definition.* For the purpose of the study, smoking is defined as inhaling and exhaling tobacco products in any form which passes the tobacco smoke in

and out of the lungs, including cigarettes (clove cigarettes included), cigars, and pipe smoking.

### **High Risk Behaviors.**

*Conceptual Definition.* Risky is defined as “attended with risk or danger” (Merriam-Webster, Incorporated, 2011). Behavior is defined as “the manner of conducting oneself...the response of an individual, group, or species to its environment” (Merriam-Webster, Incorporated, 2011).

*Operational Definition.* For the purpose of this study, high risk behaviors are defined as those actions a person may engage in that puts their health at risk. Examples used include having unprotected intercourse and the misuse or abuse of alcohol.

### **College-Aged Women.**

*Conceptual Definition.* College-aged is a term used to describe a subset of the population whom attend college. However, there is no concrete definition of this group which could include persons of varying ages from teenagers to persons in their ninth decade of life.

*Operational Definition.* For the purpose of this study, college-aged women are defined as those of the female gender between and including the ages of 18 and 24. This age group is selected due to the high risk category of young adulthood into which this cohort falls.



**Assumptions**

Assumptions of this study include (a) all subjects answered the survey truthfully including demographics information questions, and (b) subjects only completed the survey once.

**Limitations**

This study was conducted via email on one university campus. Therefore, because this study was performed using current college students, their higher level of education may skew the results toward higher levels of knowledge when compared with women of the same age who have lesser education.

**Summary**

There are few studies assessing the knowledge of health risks related to smoking in this at risk population. Women in young adulthood have great potential for future health, happiness, careers, and family; all of which may be cut short by the decision to try smoking and the subsequent addiction to smoking. Thus, the purpose of this study is to determine the known and unknown smoking-related health risks within this population whom is at high risk of developing habitual and addictive smoking behaviors. By identifying the gaps in knowledge, future education can focus not only on heart disease and lung cancer, but on all the specific, and potentially devastating risks faced by female smokers. Such education may provide future generations of women with the knowledge and reasons to avoid smoking, giving them the opportunity for a healthier, longer life than many women of past generations.

## **Chapter II**

### **Review of the Literature**

Every year, 1 out of every 5 deaths can be attributed to smoking (Smith, Talley, Hubbard, & Winn, 2008, p.218). Smoking is the most preventable cause of death in the United States, killing approximately 178,000 women annually (Satcher, 2010). On average, the typical female smoker loses 14 to 15 years of life (Lewis, 2009; O'Flaherty, 2005; Satcher, 2010). To understand the addiction of smoking, its health risks, consequences, and necessity to improve cessation rates; it is necessary to first understand the history of tobacco and smoking in the United States, how nicotine affects the body and causes addiction, the multitude of health consequences, and why college-aged persons, specifically women, are at such a high risk of developing addictive smoking behaviors.

#### **History of Tobacco and Smoking**

The use of tobacco can be dated back to ancient civilizations including the Mayans and Aztecs among others (O'Flaherty, 2005). These civilizations used tobacco for many rituals including pre-battle rituals, sexual/reproductive rituals, and as gifts to the gods. Tobacco is derived from the plant *nicotiana tabacum*, and had been used as an effective insecticide for both crops and in treatment of lice and other parasites (Field, 2008). South American societies used tobacco as analgesics and antiseptics. Tobacco

was often used by tribes as a symbol of the rites of passage between adolescence and adulthood, thereby beginning tobacco's use as something youth aspire to as a sign of reaching adulthood and gaining independence. In the late 1500s, tobacco arrived in England where the "custom" of smoking spread rapidly, and its use continued to be justified as medicinal (Field, 2008). Prior to 1900, few men and very few women smoked tobacco; during the 19th and early 20th centuries, women were actively discouraged from smoking (O'Flaherty, 2005). At this time women who smoked were considered vulgar and associated with prostitution (Field, 2008). Therefore, women smokers are a 20th century phenomenon. Anti-tobacco movements began during the Civil War period; however, when women joined the labor force during World War I, they obtained new freedoms, their own source of money, and took up many previously male habits including smoking (O'Flaherty, 2005). After World War I, many women used smoking as a "weapon" in their fight to obtain the right to vote, which was granted in 1920. During World War II (1935-1945), and after, rates of women smoking increased from 18% in 1935 to 33% in 1965 (O'Flaherty, 2005). In the 1950s, light cigarettes were introduced in response to concern about possible health effects of smoking. These cigarettes were marketed as being a healthier option and even as a first step in smoking cessation (Kropp & Halpern-Felsher, 2004). These cigarettes were often directly marketed toward women as a means to lose weight, stay thin, and suppress their appetites (Field, 2008).

## **Cigarette Marketing**

After World War I, cigarettes were frequently offered to women from men as a token of courtship during social activities (Field, 2008). However, many women opted to buy their own cigarettes. It was at this time the tobacco industry faced a new and large market for their product. Since the 1920s, the tobacco industry has targeted women with their marketing and advertisements. One of the very first campaigns directed toward women occurred in 1925 with cigarettes advertised as a fat-free way to satisfy hunger and lose weight (Field, 2008). Within 20 years of directly targeting women, the percentage of Britain's female smokers increased to over 50% (Field, 2008). Advertisements have continued to link smoking with independence and beauty. In 1967, the American Tobacco Company put out new ads for Silva Thins that read, "Cigarettes are like girls. The best ones are thin and rich" (Boris, 2010). The media and entertainment industry often show young, slim, glamorous, independent, and desired women with cigarettes in their hands. Between 1995 and 1998, expenditures for domestic cigarette advertising and promotion increased from \$4.9 billion to \$6.7 billion (O'Flaherty, 2005). Although the tobacco industry continues to market their products to women and children with the use of cartoons on their packaging and commercials, recent movements to increase awareness of the potentially devastating and harmful health effects of smoking have fought back with their own brand of advertisement. In 2000, the Truth ® campaign was launched. This campaign uses advertisements, primarily TV commercials, to get the message of tobacco's harmful effects out to the nation's youth. Smoking rates in youth decreased dramatically in the first two years of the campaign. These commercials contain strong images that warn of the effects and dangers of smoking and continue to be used today. In

November 2010, the FDA and the Department of Health and Human Services announced the requirement of cigarette packaging to include graphic images in hopes to further reduce cigarette smoking. Recent studies have found higher quit rates among smokers who were exposed to highly emotional and personal testimonial style ads. These graphic portrayals tend to be significantly more memorable, thus generating more thought and discussion related to risks of smoking and the need to quit (Durkin, Biener, & Wakefield, 2009). The visually graphic warning label campaign is in use in Canada, the United States tobacco industry will have 15 months after final selection of images and phrases by the FDA in June of 2011 to comply with the new regulations requiring the graphic images and phrases to be printed on each cigarette package (Norman, 2010).

### **Nicotine and Tobacco's Addictive Nature**

More than 4,800 chemicals are contained in inhaled cigarette smoke, at least 69 of which are known carcinogens (O'Flaherty, 2005). Additionally, second hand smoke contains 250 toxic chemicals with at least 50 being carcinogenic (Lewis, 2009). To fully understand the addiction to tobacco, it is important to distinguish addiction from dependence. According to Lewis (2009), dependence is "cravings of the mind" and is characterized by urges which are satisfied by the simple motions and sensations of smoking and can be relieved to a degree even before nicotine enters the body. Addiction however is "cravings of the body" characterized by a viscerally felt need and cravings which are only fulfilled by nicotine administration in any form (p.92). Nicotine, the main addictive component of tobacco, acts by changing the levels of several neuroregulators in the brain resulting in temporary improvement in performance and affect. Nicotine

activates the neuronal nicotinic receptors in the mesolimbic dopamine system. This system is responsible for the senses of reward and pleasure; it is the same system that is stimulated by cocaine, heroine, and marijuana (Lewis, 2009). The stimulation of the dopamine system by nicotine and other drugs results in a sense of well-being, relaxation, and slight euphoria; however, these sensations are short lived and drive persons to repeatedly seek out the addictive substance in order to maintain the enjoyable sensations. Nicotine addiction is extremely strong, with cravings and withdrawal symptoms comparable to those of both cocaine and heroine.

Research has suggested the existence of gender differences in nicotine addiction, which may help to explain why and how women become addicted to tobacco smoking and some of the gender differences found in relation to some of the health consequences of smoking. Nicotine is primarily metabolized in the liver by the enzyme cytochrome P-450 2A6 (CYP2A6). This enzyme converts nicotine to cotinine and then further converts it to 3-hydroxycotinine. Cotinine has a half life of 16 to 20 hours and clears the system within two days. Genetic variations in the CYP2A6 gene have been found leading to lower nicotine conversion and subsequently, lower cigarette usage. The latter finding is true in males but not in females suggesting that “men and women smoke differently to regulate and obtain comparable nicotine levels” (Zeman, Hiraki, & Sellers, 2002). Zeman, Hiraki, and Sellers’ study examining gender differences in tobacco smoking found that women tend to choose lower nicotine content cigarettes, resulting in taking larger puffs to achieve the same nicotine intake, which in turn results in higher levels of carbon monoxide. Additionally they hypothesized that women are either less dependent on nicotine, develop less tolerance to nicotine than men, or have a lower sensitivity to the

addictive effects of nicotine, and therefore require lower levels of nicotine than men yet still become addicted. On July 13, 1995, The United States FDA announced that nicotine is a drug and in 1998 they determined that nicotine was an addictive substance.

Interestingly, prior to this in 1994, the American Psychiatric Association had already included nicotine dependence in its Diagnostic and Statistical Manual of Mental Disorders (Lewis, 2009).

### **When and Why Do Women Start Smoking**

Over eighteen percent of adult women smoke (Schnoll, Patterson, & Lerman, 2007; Lewis, 2009) and 22.4% of adolescent females smoke (Lewis, 2009). Hahn et al., stated that 95% of kindergarten students correctly identify cigarettes (as cited in Lewis, 2009). Nearly 80% of smokers start before age 18 (Green et al., 2007) with an average starting age of 12 years, and were regularly smoking by age 14 (Smith, Talley, Hubbard, & Winn, 2008). An additional 20% of smokers start during young adulthood (Fagan et al., 2007). Daily, thousands of young people become new smokers with an estimated 72% of those smoking as young adults remaining smokers into adulthood (Green et al., 2007). These statistics are alarming and reiterate the effectiveness of cigarette advertisements which are directed toward children and women. O’Flaherty (2005) noted the fact reported in The Surgeon General’s 2001 report that “Women smokers generally become addicted during the teenage years and become the adult smokers of the future” (p.29). Green et al. (2007) found the development of regular or daily smoking to occur between ages 20 and 21 (p.1427). Several studies have looked at causes of smoking initiation and have found reasons including positive mood enhancement, peer pressure,

weight control, depression, low self-esteem, parental smoking behaviors, low levels of parental closeness, poor academic performance, and entrance into transitional periods. Kelley, Thomas, and Friedmann (2003) reported women who were concerned about weight were twice as likely to smoke as those who were not (p.179). Hu, Davies, and Kandel (2006) found “smoking by at least one best friend in high school and smoking by parents during respondents’ adolescence were highly significant predictors of daily smoking, especially when both parents smoked” (p.302). Field (2008) found concerns about weight and self-confidence related to media images of female attractiveness, equating thinness with desirability, as particularly important reasons for the initiation of smoking in young women (p.983). Highly transitional periods of life also increase the risk of becoming a smoker or daily smoker. Some of these periods include leaving home, starting college, entering the workforce, marriage, parenting, exposure to new social networks, and the simple act of becoming more autonomous (Green et al., 2007). Additionally, Kelley et al. (2003) surveyed female college students and found the following reasons for smoking; “addiction, to enhance the “buzz” felt when drinking...relaxing, “like it,” others around them smoke, do not know...a need of something to do with her hands” (p.182). As Fagan et al. (2007) pointed out, for women, other transitional periods may open the doors to quitting, primarily the period of pregnancy.



## Smoking's Dangerous Health Risks

### Cardiovascular system.

Most people are able to identify at least two of the health risks associated with smoking; lung cancer and heart disease. However, up to 50% of people incorrectly identify lung cancer as the primary health risk of smoking when in fact cardiovascular disease (CVD) is the number one experienced health consequence of tobacco smoking and results in up to 41% of deaths from coronary heart disease in women under the age of 65 (Moran, Glazier, & Armstrong, 2003). Cardiovascular diseases include coronary heart disease, stroke, rheumatic aneurysm, and sudden cardiac death. The Moran et al. (2003) research suggested a greater awareness between smoking and lung cancer than smoking and CVD. Additionally, they found that smokers perceive their risks as increased compared to non-smokers yet continue to underestimate their personal risks of suffering from health-related consequences of their smoking behavior. Smoking contributes to the formation of atherosclerosis resulting in a two-to-four-fold chance of developing CVD (Kelley, Sherrod, & Smyth, 2009). Women smokers experience a 9-fold increase in their risk of myocardial infarction (MI) and a 22-fold increase in the risk of a cerebral-vascular accident/stroke (CVA) (O'Flaherty, 2005). Additionally; women who smoke and use oral contraceptives experience a 30-fold increase in risk for myocardial infarction and at least a 3-fold increase in risk of stroke when compared to non-smokers (Schnoll, Patterson, & Lerman, 2007, p.1212). Hardesty and Trupp (2005) found women to have higher cardiovascular risk than men stating, "Among women with an MI, female smokers, on average, are 19 years younger than nonsmokers at the time of first MI.

Compare this to men, who are 7 years younger. Even smoking as few as 1 to 4 cigarettes per day is associated with a doubled risk for developing CVD” (p. 435).

### **Cancer.**

Each year an estimated 67,000 women die from lung cancer with tobacco being responsible for approximately 30% of all cancer deaths in the United States (Bell & Tingen, 2000). In 1987 lung cancer surpassed breast cancer and remains the main cause of all female cancer deaths (Moran et al., 2003), increasing 600 times since 1950 (Schnoll et al., 2007) with 90% of lung cancer deaths being attributable to smoking (Moran et al., 2003). The most common form of lung cancer acquired by female smokers is non-small cell adenocarcinoma. This form of cancer is highly secretory, more aggressive than other forms, and is seen increasingly in women smokers. In addition; female smokers who use estrogen hormone therapy are associated with a 32-fold increased risk of adenocarcinoma of the lung (O’Flaherty, 2005). Previous studies have estimated that 1 in 8 female smokers will develop lung cancer, in comparison, 1 in 71 non-smokers were estimated to develop lung cancer (Moran et al., 2003) and women smokers are additionally 1.5 to 3 times more likely to develop lung cancer than male smokers (O’Flaherty, 2005; Bell & Tingen, 2001).

Although lung cancer is one of the most serious consequences of smoking, it is not the only cancer that smokers face an increased risk of developing. An additional 32,000 cancer deaths, unrelated to lung cancer, occur annually in female smokers (O’Flaherty, 2005). Female smokers experience a 2.5% higher risk of developing oral (mouth, larynx, and pharynx) cancer than male smokers; additionally, esophageal cancers

are increased in these women (O'Flaherty, 2005). The risk of developing estrogen-receptor negative breast cancer is elevated in post-menopausal female smokers compared to non-smokers. Women smokers experience increased incidence of several other cancers including stomach, pancreatic, colon/rectal, kidney, bladder, cervical, and vulvar cancer.

### **Respiratory system.**

Smoking affects the respiratory system beyond the risk of lung cancer. Smokers are at increased risk of developing several respiratory-related illnesses including asthma, bronchitis, emphysema, and COPD. Studies have found female smokers to be more susceptible to the development of COPD (Field, 2008), a predisposing factor for lung cancer, than male smokers, with estimates of up to 90% of female deaths resulting from COPD that was attributable to smoking (O'Flaherty, 2005). Additionally, female smokers' lung function was found to worsen with less duration and intensity of smoking compared to male smokers (Field, 2008).

### **Bone health.**

Osteoporosis, which can affect quality of life in women's later years, is a health risk more common to women than men. The risk of bone fracture related to osteoporosis is an important problem for postmenopausal women with estimates of 16% of white women and 5.5% of black women over age 50 sustaining a hip fracture within their lifetime. The resultant mortality from hip fracture is high with women smokers having a 1.5 to 2.0 age-adjusted relative risk (RR) for hip fracture compared with the RR of

women who do not smoke (Moran et al., 2003). In their 20s, women are establishing and finalizing their bone growth, maturity, and baseline bone density. Smoking during this important time frame may reduce the total bone density in the age group, further increasing the risk for future osteoporosis. Additionally, postmenopausal women who smoke have a 5 to 10% lower bone density than non-smokers (Field, 2008). Important to this potential health consequence of smoking, Moran et al. (2003) found “no level of smoking was associated with increased perception of osteoporosis risk, suggesting that there is little awareness of the correlation between smoking and osteoporosis risk” (p.368).

### **Reproductive system.**

Further health consequences of smoking specific to women, which many young adults may not yet be thinking about, involve the reproductive system. Women smokers may experience many problems with their reproductive capabilities including delayed conception, infertility(both primary and secondary), and increased risk for ectopic pregnancy as well as spontaneous abortion. It has been reported that female smokers trying to become pregnant are up to 60% more likely to face infertility (Schnoll et al., 2007). Additionally, female smokers often experience problems with menstruation including dysmenorrhea, secondary amenorrhea, irregular menses, and early menopause. All of these menstrual problems can in turn add to reproductive problems. Women who smoke during pregnancy not only face health consequences themselves but are putting their unborn child’s health at risk. Between 1990 and 2002, the rate of pregnant female smokers decreased from 40% to 11% (O’Flaherty, 2005). Unfortunately the 11% who

continue to smoke during pregnancy share the absorbed toxins of tobacco smoke with their fetuses, with both nicotine and carbon monoxide reaching the fetus through the placental barrier. This fetal exposure is linked to increased odds of developing asthma and decreased lung function as a child (O'Flaherty, 2005). Cigarette smoking during pregnancy is further associated with a 3-fold risk of low birth weight babies, a 2-fold risk of premature labor, and a 40% increased risk of experiencing prenatal death (Field, 2008). Additionally, cigarette smoking during pregnancy is thought to be responsible for an estimated 10% of all infant deaths in the United States (O'Flaherty, 2005). Although many women quit smoking during pregnancy, it is estimated that 70% to 85% resume smoking after delivery (Schnoll et al., 2007).

### **Other risks**

Kelly, Thomas, and Friedmann (2003) summarized the findings from previous research indicating increased participation in risk-taking behaviors by young smokers. Emmons et al found that the high risk behaviors of marijuana use, heavy alcohol consumption, and having sex with multiple partners were the highest correlates with smoking status in female college students (as cited in Kelly, Thomas, & Friedmann, 2003). Kelly et al further found report of frequent alcohol drinking in 95% of 21 college female smokers surveyed along with reports of frequent marijuana use by 52%. This potential association of female college smokers taking part in other risk-taking behaviors creates concern regarding several of the health risks associated with smoking. We are aware that smoking is related to high risk of developing cancers of the cervix, stomach, and pancreas; however, the increased use of alcohol may add to the increased risk for

both stomach and pancreatic cancers, while engaging in sexual intercourse with multiple partners greatly increases the risk of contracting the human papilloma virus (HPV), which is directly related to cervical cancer.

### **Smoking Cessation**

With all of the known and documented potential present and future health consequences of smoking, what is keeping women from quitting? It is estimated that 79% to 90% of current smokers want to quit (Giarelli, 2006) with more than half attempting to do so each year (O'Flaherty, 2005). According to Ellis et al. (2008) research has shown that (a) quitting at an earlier age is associated with decreased risk of premature death, and (b) the period of young adulthood (ages 18 to 24) is associated with increased likelihood of successful quit attempts (p.310). Essential to the process of quitting is the patients' readiness to quit. If the patient is not ready to quit, any attempt at doing so is likely to fail. Estimates as high as 80% to 90% of those attempting to quit will return to smoking within the first year. In general, it takes approximately 12 weeks for a smoker to move past the nicotine cravings associated with quitting, and over a year to experience a decrease in the behavioral cues and urges to quit smoking (Lewis, 2009). Schnoll et al. (2007) found women reporting lower levels of motivation to quit, less confidence in ability to quit, and a greater perceived difficulty of quitting when compared to men. Additionally, Schnoll et al. (2007) found women to exhibit higher pretreatment levels of depression with reliance on smoking to relieve the symptoms of depression and higher levels of negative mood and stress. Field (2008) noted women to report smoking to help relieve feelings of stress and the use of smoking in response to negative life

experiences (p.984). Of note, many studies have found women to fear post cessation weight gain as a primary barrier to cessation. Although it is true that a weight gain of 5-12 pounds is common with cessation (O'Flaherty, 2005; Kelley et al., 2003), this fear should be directly acknowledged and discussed with a plan of action to help increase likelihood of both quit attempts and successful cessation. Additionally, Field (2008) addressed the feeling of dependence on cigarettes, the thought of cigarettes as a main source of pleasure, and the use of smoking for confidence in social situations, as an issue for women more so than men.

### **Theoretical frameworks**

Erik Erikson's stages of development define young adulthood as ages 18 to 35, being in the stage of intimacy and solidarity versus isolation. During this stage persons seek to find companionship and love. This is done by finding and achieving mutually satisfying relationships, both intimate relationships that may lead to marriage and family and relationships with friends. In this way persons can experience intimacy. If a person is unable to achieve these relationships, they will experience isolation and distance from others. This stage of development may explain some of the reasons for initiation of smoking; to fit in and achieve relationships with peers and potential mates. An additional theory that helps to explain the initiation of continued use of smoking despite known risks is Piaget's cognitive development stages. According to Piaget, adolescent, young adults, and adults should be in the formal operational stage of their cognitive development. During this stage, "intelligence is demonstrated through the logical use of symbols related to abstract concepts. Early in this period there is a return to egocentric

thought” (Huitt & Hummel, 2003, para. 10). During these stages, persons often experience a sense of immortality; that nothing can hurt them. During this time, the risks of negative consequences of smoking are likely to be insufficient when attempting to deter adolescents and young adults from smoking. Additionally, Lewis (2009) pointed out the quick addiction to smoking many adolescents experience during a time when they feel invincible (p.89). Song et al. (2009) pointed out the poor decision making and risk-judging skills of persons in these stages who believe themselves to be invincible and invulnerable to health consequences of smoking (p.487).

### **Summary**

From the literature, it is clear that although the use of tobacco dates back centuries and was originally used for medicinal purposes, the current knowledge of the many health risks associated with tobacco use is astounding and alarming. The early initiation of use clearly identifies the populations that need to be educated regarding all the possible consequences. Additionally, there is a need to reeducate on a continuous basis in order to catch a window during which time the person may be susceptible to the education of health consequences and the importance of smoking avoidance and/or cessation. Women are clearly at increased risk of initiation and addiction. They also have the unfortunate risk of increased morbidity and mortality due to both heart disease and lung cancer as well as gender-specific health conditions. Women and smokers are known to access health care more than men and non-smokers. It is during these visits that health care providers must take the opportunity to educate and offer assistance in cessation.



## **Chapter III**

### **Methodology**

The purpose of this study was to assess the known knowledge of health risks beyond and including heart disease and lung cancer, related to smoking in college-aged women; as well as to identify gaps in the knowledge. This chapter will discuss the design, sample, and setting of the population assessed; any ethical considerations related to the study, the reliability and validity of the tool used for data collection, the data collection process, and analysis of collected data. Additionally, limitations of the study and data collection will be examined.

#### **Design**

This study was undertaken as a comparative descriptive study. The purpose of doing a comparative descriptive study was threefold (a) to provide basic and detailed assessment of the number of college-aged women who have or do not have knowledge of specific smoking-related health risks, (b) to compare this knowledge base between three groups; current smokers, former smokers, and non-smokers, and (c) to identify potential other high risk behaviors within the three groups. This type of study generates information about the current knowledge base of an at risk population and provides the potential to identify problems within current practice related to both smoking abstinence

education and smoking cessation. The main strength of this design is its ability to capture a picture of the studied problem in a way that does not cause manipulation of any variables; it simply looks at the knowledge of smoking risks as they are without intervention of any form that may alter knowledge base prior to or during data collection. This study was completed using a survey distributed via campus email at Minnesota State University, Mankato. The survey tool platform was Survey Monkey, which allowed for anonymous computerized replies from students. The survey included basic demographic information and assessment of health risk knowledge using a tool developed by Dr. Susan Moran for a study she undertook looking at perceptions of smoking-related health risks in post-menopausal women, published in 2003. With Dr. Moran's permission, her tool was utilized with the additions of the health consequences involving the cardiovascular system beyond cardiovascular disease (CVD), the respiratory system beyond lung cancer, several other types of cancer for which smokers are at risk, and conditions related to reproduction, menstruation, pregnancy, and risks to children. In addition, questions regarding other at risk behaviors which may affect some of the health conditions for which smokers are at higher risk were added to the survey. Survey participants were asked about and to rate their perceived risk of acquiring smoking-related health conditions using the same three point scale Dr. Moran utilized; 1 = below average risk, 2 = average risk, and 3 = above average risk. Additionally, as with Dr. Moran's study, a fourth option was given for those who may have already been diagnosed with any conditions in question. Lastly, respondents could skip over any of the questions within the survey if desired.

## **Sample and Setting**

The population studied consisted of women ages 18 to 24, currently attending college at Minnesota State University, Mankato (MNSU). Smokers, previous smokers, and non-smokers were surveyed via Survey Monkey received in their campus email. The survey was sent the first day of summer 2011 semester and was dispersed to students enrolled for the just completed Spring 2011 semester, current Summer 2011 semester, and upcoming Fall 2011 semester. The survey was sent on a Monday, the following Monday an email reminder was sent to the same email recipients with the survey closing at 12:01 am the next Monday, allowing two weeks time for respondents to complete the survey. The link provided in the email request could only be accessed once per email address allowing control of duplicate survey responses. The only inclusion criteria were age, gender, and ability to read and understand the English language.

## **Ethical Considerations**

Study approval was gained through the Minnesota State University Institutional Review Board prior to data collection. Replying to the Survey Monkey and completion of survey were considered consent. All replies were received anonymously, allowing participants to maintain their privacy while providing data for the study. A cover letter for the survey was enclosed in the email describing the reasons for and use of the study and results. Participants were informed of any possible harm from participation and provided with contact information should they desire further information about the study or feel the need to talk with someone after completing the survey. Participants were

made aware that by filling out the survey and submitting it, they were giving their consent for the use of their data.

### **Data Collection and Analysis**

This study utilized a survey tool for data collection. Surveys are common methods of data collection in descriptive statistics. The 3-point scale tool was developed by Dr. Susan Moran and permission was obtained to use the tool. Dr. Moran developed her questionnaire based on a literature review and semi-structured interviews of 24 women. The questionnaire was further refined to an eighth grade reading level (Moran et al., 2003). Similar to Dr. Moran's study, smoking status was defined for this study as never smokers (answered "no" to the question, "Have you ever smoked cigarettes including cloves?"), former smokers (answered "yes" to "Have ever smoked?" but answered "no" to the question "Do you still smoke?"), and current smokers (answered "yes" to "Have you ever smoked?" and "Do you still smoke?"). Current smokers were asked about the number of cigarettes smoked per day with light smokers smoking less than 10 cigarettes/day, average smokers smoking 10 to 20 cigarettes/day, heavy smokers smoking 21 to 39 cigarettes/day and severe smokers smoking 40 or more cigarettes/day (please note one pack contains 20 cigarettes). Utilizing Dr. Moran's tool as modified, subjects were asked to rate their lifetime risk of developing heart disease/heart attack, lung cancer, and osteoporosis on a 3-point scale (1 = below average; 2 = average; 3 = above average). Subjects were also be given a fourth choice if they already had the disease in question. In addition to the above conditions examined by Dr. Moran, this study included the following diseases/conditions in the questionnaire of lifetime risk;

stroke, oral cancers (mouth, pharynx, and larynx), esophageal cancer, breast cancer, stomach cancer, pancreatic cancer, colon/rectal cancer, kidney cancer, bladder cancer, cervical cancer, and vulvar cancer. Respiratory conditions assessed included asthma, bronchitis, emphysema, and COPD. Reproductive conditions assessed included painful periods (dysmenorrhea), lack of period (amenorrhea), irregular menstrual cycles, early menopause, delayed conception, infertility, and pregnancy complications (ectopic pregnancy and spontaneous abortion/miscarriage). Additionally, perceived risk of the following pregnancy-related complications if a woman smokes during pregnancy; low birth weight baby, premature labor/early delivery, prenatal death of mother, and infant death was assessed. Lastly, subjects were asked to identify the first (cardiovascular disease), second (lung cancer), and third (osteoporosis) most common health consequences of smoking. Demographic information was collected for age and race. Subjects were also asked about family history of smoking and smoking-related illnesses, the use of estrogen containing contraceptive pills (COCs), participation in unprotected intercourse, and alcohol consumption including the number of drinks consumed at one time and the number of drinks consumed in one week's time. Descriptive statistics were used to analyze the data on perceived risks and figures including pie charts and bar graphs were created to compare statistical results between non-smokers, former smokers, and current smokers.

### **Limitations**

This study was conducted at only one university, thereby limiting the sample characteristics such as race and making generalizations to larger populations more

difficult. Additionally, since the study was conducted on a university campus, the education level of participants was likely higher than the majority of female smokers; thereby, potentially giving results indicative of a higher level of knowledge regarding health consequences of smoking than that of the majority of female smokers in the general public. Lastly, the presence of a family history of smoking-related illness/es was likely to affect the individuals knowledge base of health consequences related to smoking and may have caused the existence of some outliers in knowledge base and perceived risk. This possibility was partially controlled for with the assessment of family history of smoking-related illness.

### **Summary**

In an attempt to understand the knowledge base and gaps in knowledge of the college-aged female population in regard to the health consequences of smoking, a comparative descriptive study was undertaken to assess knowledge of health consequences and perceived health risks of tobacco use. The study was undertaken by email distribution of a survey utilizing a previously created and used assessment tool by Dr. Susan Moran who gave permission for use of her tool in the study. Data were analyzed using descriptive statistics; results were provided for smokers, former smokers, and non-smokers; and figures were created to compare knowledge and perceived risk among the groups of college-aged women.

## **Chapter IV**

### **Results**

This chapter provides a description of the sample characteristics and provides data analysis. Research questions are answered and findings are discussed with figures located in the appendices. Research questions answered during data analysis are:

1. What are the perceived personal health risks of specific smoking related-health conditions by college-aged female smokers, former smokers, and non-smokers?
2. Are there associated high risk behaviors among college-aged women with low perceived smoking-related health risks?

#### **Sample Characteristics**

Demographic and respondent characteristics are presented in Figures 1 through 13 of Appendix B. A total of 746 responses were received. Of these, 264 respondents (35.4%) reported being age 25 or older and were, therefore, excluded from the survey. Eight respondents (1.1%) reported being under the age of 18 and were, therefore, excluded from data analysis completely along with one respondent who declined to provide their age (0.13%). The majority (91%) of the remaining 473 respondents were Caucasian, ( see Figure 1) with a mean age of 22 years (see Figure 2). The average ages based on smoking status were identical at 21 years of age per group. Of the 473

respondents, 13% reported themselves as current smokers, 31% as former smokers, and 56% as never-smokers; one respondent did not answer the question (0.21%) (see Figure 3). The majority of both current smokers (68.9%) and former smokers (58.9%) began smoking between the ages of 16 to 19 (see Figure 4). The vast majority (82%) of current smokers reported smoking less than 10 cigarettes/tobacco products per day, placing them into the category of light smokers. None of the respondents reported smoking 40 or more cigarettes and a very small number (3%) reported smoking 21 to 39 tobacco products daily. Thirty-eight percent of current smokers reported receiving smoking cessation advice from their health care providers, while an almost equal number (31%) reported never disclosing to their providers their tobacco use. The majority of former smokers (49%) declined to answer this question, while 38% of former smokers reported never receiving smoking cessation advice from a health care provider (see Figure 5).

## **Data Analysis**

### **Previous experience with smoking and family.**

Differences in smoking status and having a family member who smoked while growing up had minimal variation between groups (see Figure 6). However, the vast majority of current smokers (71%) reported not having a family member who suffered from a health consequence of smoking, while relatively equal numbers of former smokers (60%) and never smokers (56%) reported not having a family member's health affected by smoking (see Figure 7).



**Related high risk behaviors.**

All respondents, regardless of smoking status, had relatively equal percentages of using or not using estrogen containing contraceptive pills; two never smokers declined to answer (see Figure 8). The majority (72%) of current smokers report engaging in sexual intercourse without condoms while fewer former smokers and never smokers reported unprotected intercourse, the variation was minor (see Figure 9). The majority of all three smoking status groups reported never testing positive for HPV nor having an abnormal Pap test (see Figure 10). With little variation in percentages, the majority of all three groups reported consuming 3 to 4 alcohol containing beverages at a time with the never smokers having the highest percentage of respondents reporting no alcohol consumption (see Figure 11). Similarly, the majority of all three groups reported consuming 1 to 7 alcohol containing drinks per week with the never smokers reporting the highest percentage of not drinking alcohol at all (see Figure 12).

**Knowledge of heart disease risk.**

None of the three groups could correctly identify heart disease as the number one health consequence of smoking nor could they identify lung cancer correctly as the number two health consequence of smoking; however, all three groups did correctly identify osteoporosis as the third most common health consequence of smoking (see Figure 13).

### **Perception of lifetime risk of disease.**

Graphs detailing the percentages of respondents reporting below average, average, or above average perception of lifetime risk for developing disease processes within the cardiovascular, respiratory, skeletal, reproductive systems, and various high risk cancers discussed previously are provided in group Figures 1 through 4 in Appendix C. In general, current smokers had a tendency to rate and acknowledge above average risk compared to former smokers and never smokers with many conditions. However, current smokers rated their perception of personal risk equally with former smokers and non-smokers for the conditions of breast cancer, colon/rectal cancer, vulvar cancer, dysmenorrhea, amenorrhea, and early menopause. For the conditions of irregular menses, delayed conception, and infertility; current smokers reported higher percentages of below average perception of risk than both former smokers and never smokers. A higher percentage of former smokers reported their perceived risk for many conditions as below average compared to both never smokers and current smokers, with the exceptions of breast, cervical, colon/rectal, and vulvar cancers. Additionally, the majority of former smokers perceived their risk for respiratory conditions as below average for all diseases except bronchitis (see Group Figures 2), and for menstruation and reproduction concerns with the exceptions of amenorrhea and delayed conception in which their perceived risk was similar to never smokers (see Group Figures 3). Never smokers consistently reported their perceived risks as average or below average with the exceptions of breast cancer and heart disease in which they reported more above average perceived risk than for other conditions.

## Summary

A total of 473 of the 746 returned questionnaires were used for data analysis. The mean age of the 473 respondents included in the analysis was 22 years of age. Responses were analyzed from ever smokers; divided into current smokers and former smokers, and never smokers; 44% and 56% respectively. Data were analyzed using descriptive statistics providing percentages for interpretation. The majority of respondents answered all questions in the survey; questions left unanswered were categorized as N/A and were only included in figures if a significant percentage was calculated. Analysis showed that both current smokers and former smokers underestimate their own perceived risk for health conditions associated with smoking with the exception of current smokers' perceived risks for heart disease and lung cancer. Former smokers greatly underestimated their lifetime risk of smoking related conditions. Analysis of concurrent high-risk behaviors found that all three groups participate in high risk behaviors with a slightly higher percentage of current smokers engaging in unprotected intercourse than former smokers; however, both current and former smokers engage in higher unprotected intercourse than never smokers by 22% and 16% respectively.

## **Chapter V**

### **Discussion and Conclusions**

Statistical analysis of data results from a survey tool dispersed to women on one college campus was used to answer the following two research questions:

1. What are the perceived personal health risks of specific smoking-related-health conditions by college-aged female smokers, former smokers, and non-smokers?
2. Are there associated high risk behaviors among college-aged women with low perceived smoking related health risks?

The purpose of this study was fourfold: (a) to describe the known knowledge base regarding health risks related to smoking in college-aged women, (b) to identify gaps in the knowledge of health risks related to smoking, (c) to identify potential association between smoking status and participation in other high-risk behaviors, and (d) to better guide future teaching of smoking's health consequences and cessation techniques. Data were analyzed using comparative descriptive statistics and figures were created for interpretation of results.

## **Background Literature**

Over time cigarette marketing has been directly aimed at women resulting in a large proportion of females choosing to smoke tobacco products. Tobacco has been proven to be as addicting as cocaine and heroin, and just as difficult to quit. The review of the literature highlighted the health risks associated with tobacco use in women. Many of the potential health consequences of smoking are increased in women, and several gender-specific risks exist including health conditions related to bone health, menstruation, and reproductive capabilities. Additionally, smoking during pregnancy creates health risks for both mother and baby. Several studies have found women to continually and incorrectly identify lung cancer as the primary health risk of smoking over heart disease. Smoking affects all body systems and can result in debilitating and life-threatening health conditions. Additionally, smoking behaviors have been correlated to other high risk behaviors including engaging in unprotected intercourse with multiple partners, binge drinking, and alcohol abuse. It is necessary to assess and address the potential use and abuse of tobacco by women at all ages, specifically during the young adult years when they are more vulnerable to initiating smoking and becoming addicted. Education of health risks and consequences of smoking beyond heart disease and lung cancer may help many young women make the choice to not smoke.

## **Description of Sample**

A total of 473 women, ages 18 to and including 24, responded to a survey emailed to their college email accounts requesting their participation in a study to assess knowledge of smoking and its related health risks. The mean age of participants included

in analysis was 22 years of age. Forty-four percent of the respondents were ever smokers (current or former) and 56% were never smokers. The age range of initiation of smoking for both groups of ever smokers was identified as 16 to 19 with only 20% of ever smokers initiating smoking at or after age 20. This correlates with initiation statistics found in the review of literature. Over 80% of current smokers reported smoking less than 10 cigarettes a day categorizing them as light smokers. Related to lack of previous studies specifically focused on this age group, it is difficult to relate this sample to previous studies.

### **Discussion and Conclusions**

The first research question addressed in this study was, “What are the perceived personal health risks of specific smoking related-health conditions by college-aged female smokers, former smokers, and non-smokers?” Group figures 1 through 4, located in Appendix C, break down each health risk into percentages by smoking status and perceived personal risk. Similar to previous studies, specifically Dr. Susan Moran’s 2003 study of post-menopausal women smokers, the data found current smokers to have an increased perceived risk compared to former smokers and never smokers for the majority of assessed health risks; however, they underestimated their own personal risk for developing health consequences of smoking. Interestingly, the majority of former smokers greatly underestimated their personal risk for development of smoking-related health consequences. Perhaps this is related to the belief that because they quit smoking they are no longer in danger of smoking-related health consequences or to higher levels of perceived health after quitting. Never smokers consistently rated their perceived

personal risk for smoking-related health conditions as average or below average. All three groups rated perceived risk for pregnancy-related health consequences of smoking during pregnancy as above average. Results correlate with the literature reporting that approximately 11% of pregnant women continue to smoke and that although many women quit smoking during pregnancy, it is estimated that 70% to 85% resume smoking after delivery (Schnoll et al., 2007). During data analysis it was found that these sensitive questions regarding pregnancy loss and sudden infant death syndrome (SIDS), were the questions not answered (N/A) most often.

The second research question addressed in this study was “Are there associated high risk behaviors among college-aged women with low perceived smoking related health risks?” As discussed above the perceived smoking-related health risks were underestimated by both current and former smokers. The data analysis of other high risk behaviors corroborates with previous research indicating that more women who smoke tend to engage in other high risk behaviors compared to women who no longer or do not smoke. This study found that 72% of current smokers, 66% of former smokers, and 50% of never smokers have engaged in unprotected intercourse. Associated with unprotected intercourse is infection with the human papillomavirus (HPV). The majority of current, former, and never smokers reported never being diagnosed with HPV or having an abnormal pap smear (77%, 77%, and 73% respectively). An unexpected finding showed that never smokers had the highest percentage of respondents; 23% versus 12% of current smokers and 10% of former smokers, report that they have never had a pap smear done or been tested for HPV. The majority of all three groups reported consuming 3 to 4 alcoholic beverages at one time with the current smokers reporting the highest percentage

(29.5%) engaging in binge drinking, or the consumption of 5 or more alcoholic beverages at one time, while never smokers have the highest percentage (24%) report that they do not drink alcohol at all. Weekly consumption of alcoholic beverages corresponded with the reports of consumption at one time by all three groups. It can be reasonably concluded that the consumption and use of alcohol directly affects young women's decisions to smoke and is likely to influence their decision to engage in unprotected intercourse.

Several previous studies indicated that both ever smokers and never smokers repeatedly and incorrectly identify lung cancer as the number one health consequence of smoking over heart disease. Despite efforts in the past few years by the media to educate the public that heart disease is the number one killer of women and is directly related to smoking; the data from this study again found current, former, and never smokers to incorrectly identified lung cancer as the number one smoking-related health condition (69%, 77%, and 82% respectively). Heart disease was only identified as the number one smoking-related health condition by 30%, 22%, and 17% of current, former, and never smokers respectively. The majority of all three groups correctly identified osteoporosis as the third leading smoking-related health condition; however, it is extremely probable that this result was directly related to how the question was asked and that respondents had only the top three smoking-related health conditions to choose from rather than other possible health conditions.

An interesting finding during data analysis of comments by respondents found that many respondents report smoking only socially, only a couple cigarettes ever, from



shishas or hookas, or only on special occasions but do not smoke consistently (see Appendix D). These comments were reported by respondents within all three smoking groups. This finding clearly indicates that the actual definitions of smoker, former smoker, and never smoking have varying and differing definitions among young adult women. Based on the literature, having ever smoking even 1 or 2 cigarettes increases a woman's risk for many smoking-related conditions; this is an area that appears to require further education by health providers. The main finding from respondents' comments exhibits the concurrent use of alcohol and tobacco or other smoking products. Many respondents from all three groups reported only smoking when drinking alcohol (see Appendix D). This is consistent with the previous research and current study findings indicating a connection between smoking and other high risk behaviors.

The results of this study indicated that previous experience with family members' use of tobacco likely does not influence smoking behaviors of young adult women. Current, former, and never smokers were found to have similar percentages of family members who do/did smoke (52.5%, 49%, and 47% respectively) with current smokers reporting slightly higher numbers. However, results of reported experience with family members who had/have experienced smoking-related health consequences are slightly more varied between current, former, and never smokers (29.5%, 39%, and 41% respectively). This indicates that both former and never smokers have had more experience with the health consequences of smoking, and it can be hypothesized that this experience may have influenced their decisions to quit smoking or never start. Further data analysis from the survey regarding decision making and education relate to smoking cessation advice provided from health care professionals. Although 31% of current

smokers and 12% of former smokers (of note 42% of former smokers declined to answer this question) reported never disclosing to their health care providers their tobacco use, another 28% and 38% respectively reported never receiving any advice regarding smoking cessation from their health care providers. This finding clearly indicates a gap in health care and the need for health care providers to be educated regarding their potential impact with smoking cessation and the need to address this health risk during every encounter with reported smokers and tobacco users.

### **Scope and Limitations**

For this study, data were collected from college students, aged 18 through 24, regarding smoking history, habits, perceived personal risk of smoking-related health conditions, history of family smokers or members with smoking-related health conditions, participation in other high-risk behaviors including unprotected intercourse and HPV infection and screening, daily and weekly alcohol consumption, and levels of disclosure regarding tobacco use to health care providers. Due to the scope of this study, specific differences between ethnicities, individual age groups (18, 19, 20, 21, 22, 23, and 24), data received from respondents not within the range of “young adult hood” and the responding young adults, and specific differences between respondents with and without family history of smoking-related health conditions were not analyzed. Additionally; differences between college educated young adult women and lesser educated young adult women were not studied.

### **Implications for Practice**

Study results indicated a clear need for better assessment of smoking status and interventions to encourage smoking cessation by health care providers. Women cannot be expected to make an informed decision regarding their health and habits if they are not informed of all the potential health risks, nor can they be expected to find this information by themselves. It is essential for health care providers to address the habit and addiction of tobacco use and the benefits of smoking cessation with smokers of all ages, ethnicities, social statuses, education levels, and backgrounds. The reasons for smoking initiation and continuation vary but are highly linked to alcohol consumption; therefore, it is also indicated that health care providers address the use of alcohol and its ability to impair decision making processes in regards to using other substances including tobacco and engaging in other risky behaviors such as unprotected intercourse. Lastly, results indicated further need for education of the general public regarding the strong link between tobacco use and heart disease. As previously discussed, heart disease is the number one killer of women in the United States but remains unacknowledged as such by respondents.

### **Implications for Research**

Data collected in this study provided a broad base and scope of information for future research. Limitations identified above provide several areas for future research alone. Additionally, future research regarding tobacco use and other high-risk behaviors could provide a great deal of information and aid providers in educating and encourage women of all ages to make healthy choices that will affect their health for years to come.

Further research on reasons why women begin smoking could provide information for providers to aid in intervening with young teens in an attempt to prevent initial use of tobacco, which may result in lower levels of tobacco use among women in general.

Additional research to help guide providers in smoking cessation discussion and techniques could include researching the reasons many women do not disclose their tobacco use to providers, daily activities or triggers that make women smoke and result in physical and/or psychological addiction to tobacco, and researching specific reasons why former smokers decided to quit.

### **Summary**

Results from this study remain consistent with results from previous studies found in the literature. The perceived personal risk related to smoking remains underestimated for both current and former smokers and is supported by previous research. Results indicating high rates of tobacco use and other high risk behaviors are supported by previous research and indicate an area for future study and need for intervention.

Although history of having a family member who smokes did not appear to influence smoking behaviors, the impact of having a family member suffer health consequences related to smoking does appear to impact smoking behaviors as indicated in current and previous research. It is obvious from this current and previous research that knowledge of smoking-related health risks is far below ideal and may directly affect smoking behaviors of young adult women. In addition, participation in other high risk behaviors such as alcohol consumption is indicated in the initiation and use of tobacco products and may be directly related to the high risk behavior of engaging in unprotected

intercourse. It is absolutely essential that health care providers understand, acknowledge, and address these deficits in knowledge related to health consequences of smoking and participation in high risk behaviors in order to provide the best care for their patients.

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## APPENDIX A

## Data Collection Tool

## Perceived Health Risks of Smoking Assessment Tool

1. What is your Age?
  - a. Under 18
  - b. 18
  - c. 19
  - d. 20
  - e. 21
  - f. 22
  - g. 23
  - h. 24
  - i. 25 or older
2. What is your Ethnicity?
  - a. Caucasian/white
  - b. African America/Black
  - c. Hispanic
  - d. Other
3. Have you ever smoked (cigarettes, cloves, cigars, or tobacco pipe)?
  - a. Yes
  - b. No

4. If yes, do you still smoke?
  - a. Yes
  - b. No
5. At what age did you first start smoking?
  - a. 12-14 years old
  - b. 15-18 years old
  - c. 19-21 years old
  - d. 22-24 years old
6. If you are a current smoker, how many cigarettes/tobacco products do you smoke per day?
  - a. Less than 10
  - b. 10-20
  - c. 21-39
  - d. 40 or more
7. Have you ever received smoking cessation advice from your health care provider?
  - a. Yes
  - b. No
  - c. I haven't told my provider that I smoke
  - d. N/A
8. Did you grow up with a family member who smoked?
  - a. Yes
  - b. No
9. Do/Did you have a family member who suffered a serious health consequence related to smoking?
  - a. Yes
  - b. No

10. Do you use oral contraceptive pills that contain estrogen?
  - a. Yes
  - b. No
11. Have you ever engaged in unprotected intercourse/sex without condoms?
  - a. Yes
  - b. No
12. Have been diagnosed with HPV (human papilloma virus) infection or had an abnormal pap smear?
  - a. Yes - HPV infection only
  - b. Yes - abnormal Pap smear only
  - c. Yes - both HPV and abnormal Pap
  - d. No - neither
  - e. I have never been tested or had a pap smear done.
13. How many alcoholic beverages do you drink at one time?
  - a. 1-2
  - b. 3-4
  - c. 5 or more
  - d. I do not drink alcohol
14. How many alcoholic beverages do you drink per week?
  - a. 1-7
  - b. 7-14
  - c. 15-21
  - d. More than 21 drinks a week
  - e. I do not drink alcohol
15. Please identify the first most common health risk related to smoking.
  - a. Osteoporosis
  - b. Lung Cancer

- c. Heart Disease/Heart Attack
16. Please Identify the second most common health risk related to smoking.
- a. Heart Disease/Heart Attack
  - b. Osteoporosis
  - c. Lung Cancer
17. Please Identify the third most common health risk related to smoking.
- a. Lung Cancer
  - b. Heart Disease/Heart Attack
  - c. Osteoporosis
18. Please rate what you think your lifetime risk of getting the following health conditions is using the following scale:  
1-below average risk 2-average risk 3-above average risk 4-already diagnosed with condition.
- a. Heart Disease/Heart Attack
  - b. Stroke
  - c. Lung Cancer
  - d. Oral Cancer (Mouth, Larynx, Pharynx)
  - e. Esophageal Cancer
  - f. Breast Cancer
  - g. Stomach Cancer
  - h. Pancreatic Cancer
  - i. Colon/Rectal Cancer
  - j. Kidney Cancer
  - k. Bladder Cancer
  - l. Cervical Cancer
  - m. Vulvar Cancer
  - n. Asthma

- o. Bronchitis
  - p. Emphysema
  - q. COPD (Chronic Obstructive Pulmonary Disease)
  - r. Osteoporosis
  - s. Painful periods (Dysmenorrhea)
  - t. Lack of periods (Amenorrhea)
  - u. Irregular Menstrual Cycles
  - v. Early Menopause
  - w. Delayed conception
  - x. Infertility
19. Please rate what you think your lifetime risk of getting the following health conditions is if smoking during pregnancy using the following scale:  
1-below average risk 2-average risk 3-above average risk 4-already diagnosed with condition.
- a. Pregnancy complications (ectopic pregnancy or early miscarriage)
  - b. Having a baby with low birth weight
  - c. Going into premature labor
  - d. Prenatal Death (death of baby before birth, 2nd or 3rd trimester loss)
  - e. Infant Death (SIDS)

## APPENDIX B

## Demographic Figures 1 through 13

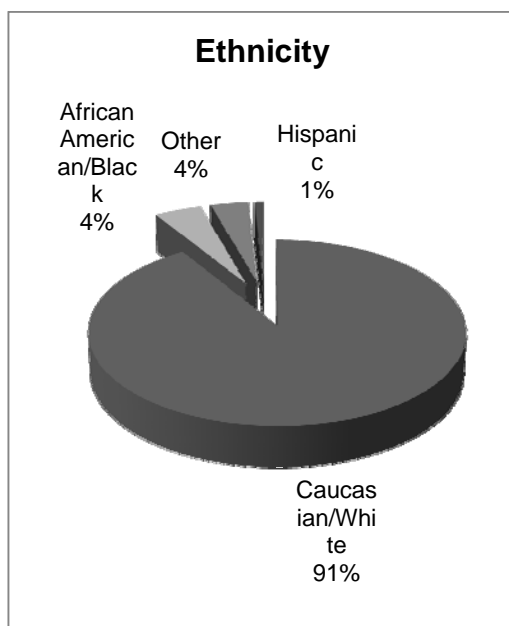


Figure 1. Ethnicity of respondents.

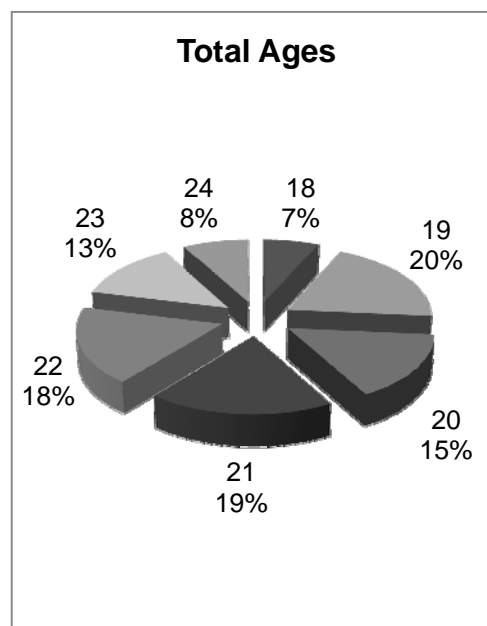


Figure 2. Ages of all respondents.

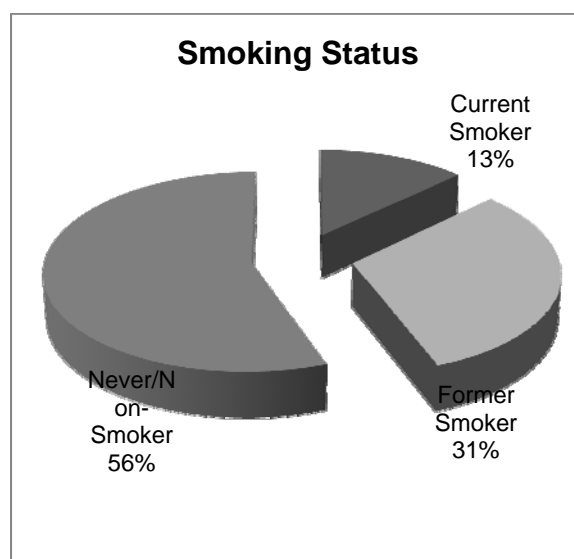


Figure 3. Smoking status of respondents.

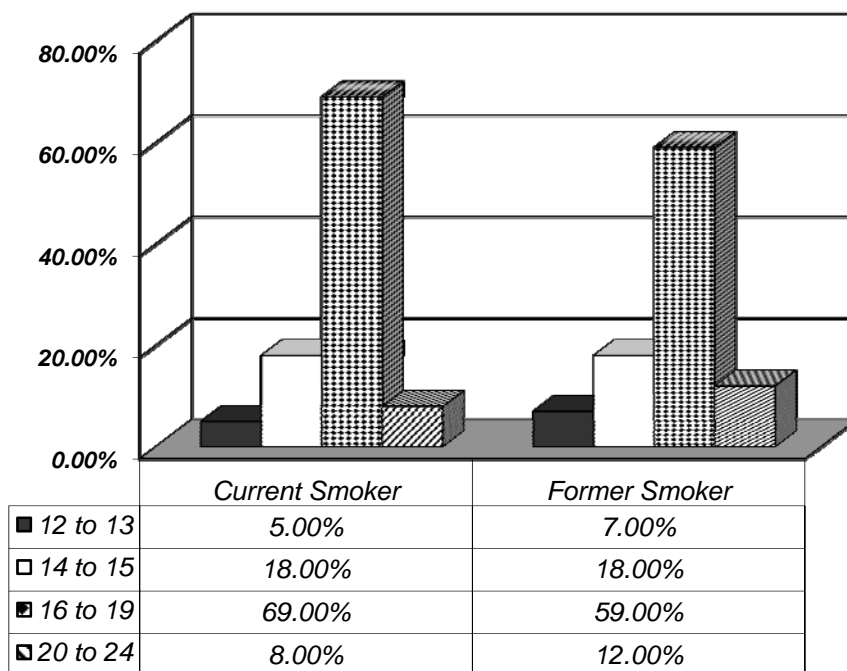


Figure 4. Age at initiation of smoking by smoking status.

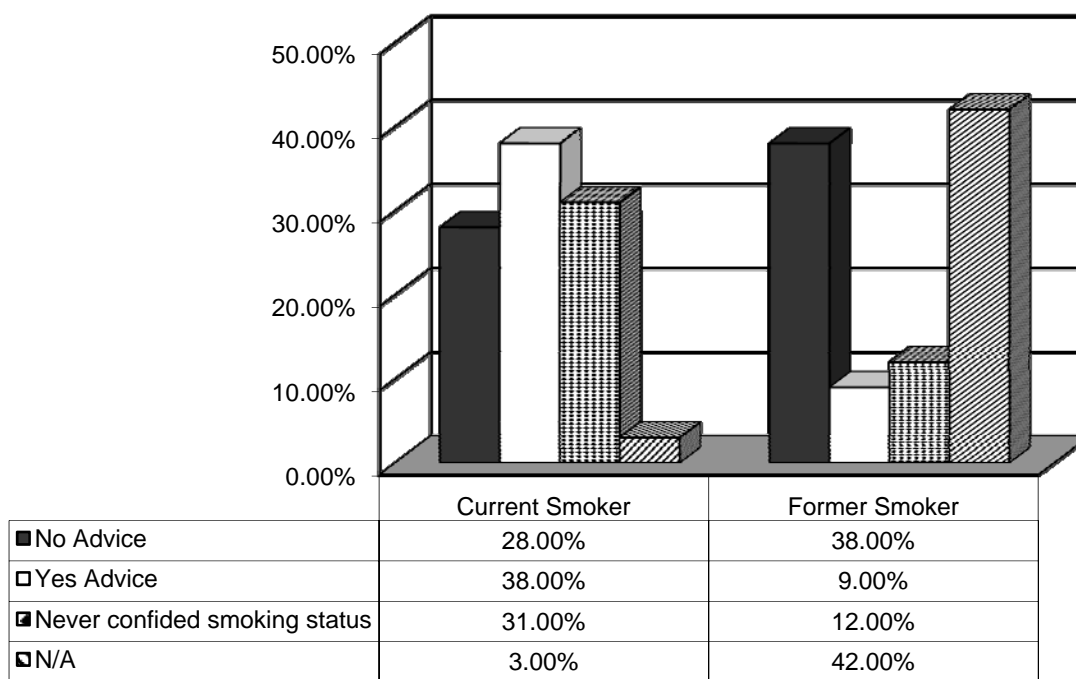


Figure 5. Respondents' reported experience with smoking cessation advice.

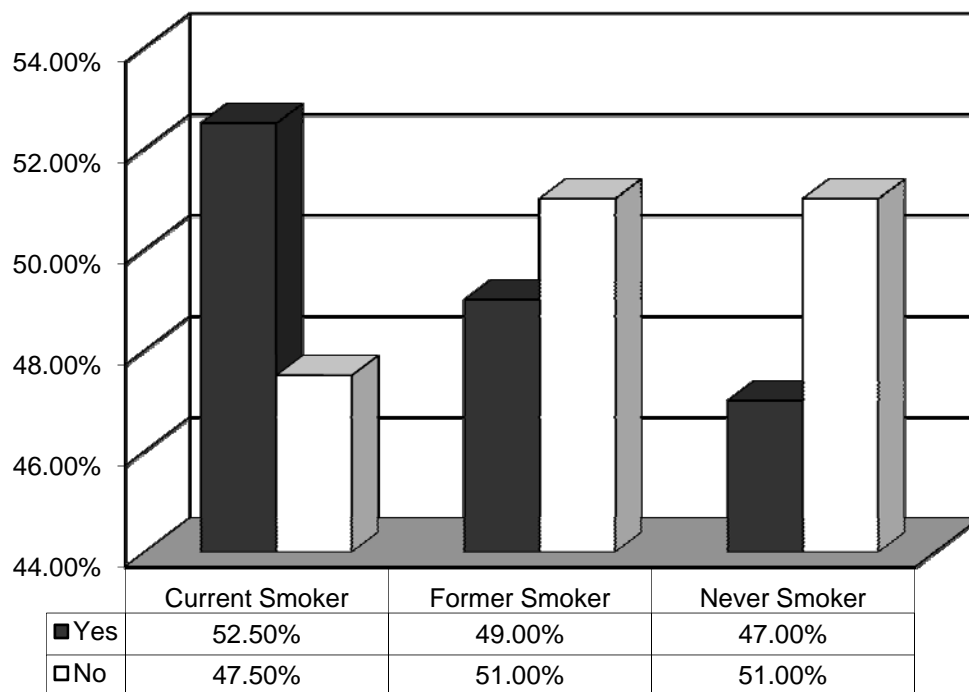


Figure 6. Reported experience growing up with a family member who smoked.

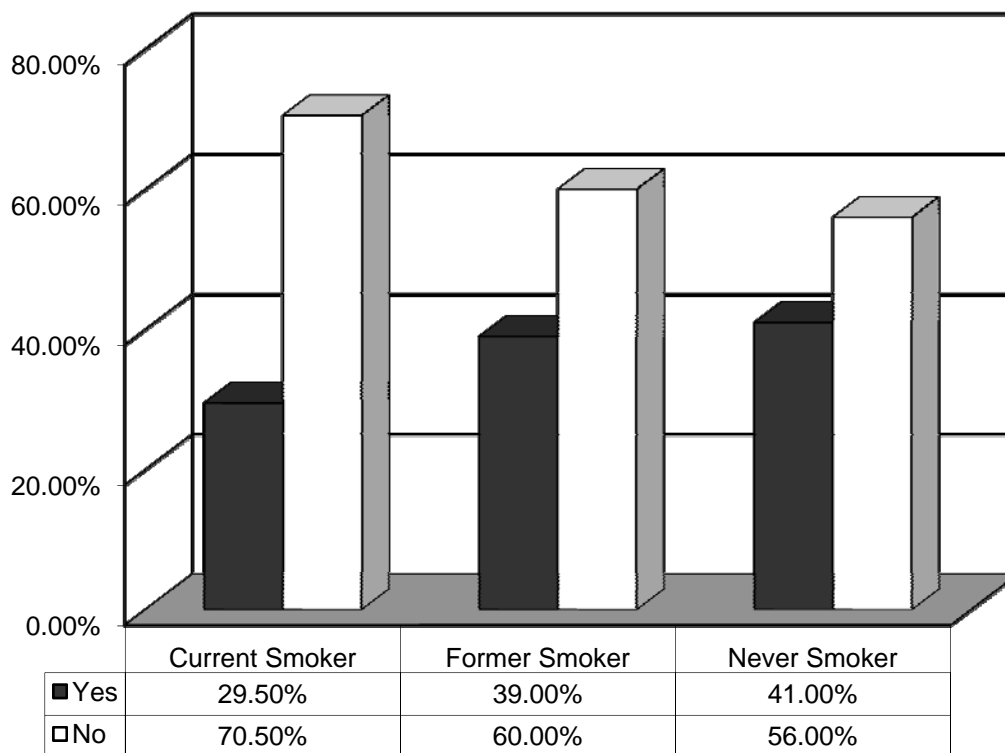


Figure 7. Reported experience with a family member's health being affected by smoking.



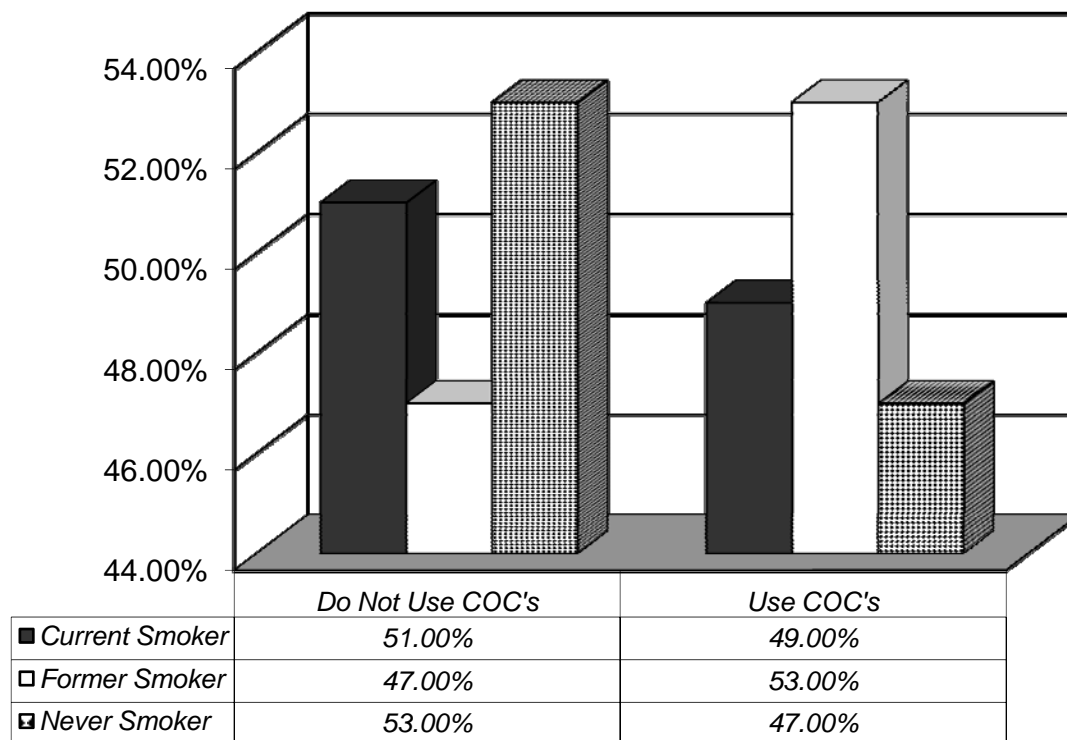


Figure 8. Reported use of contraceptive pills containing estrogen/ combination oral contraceptives (COC)

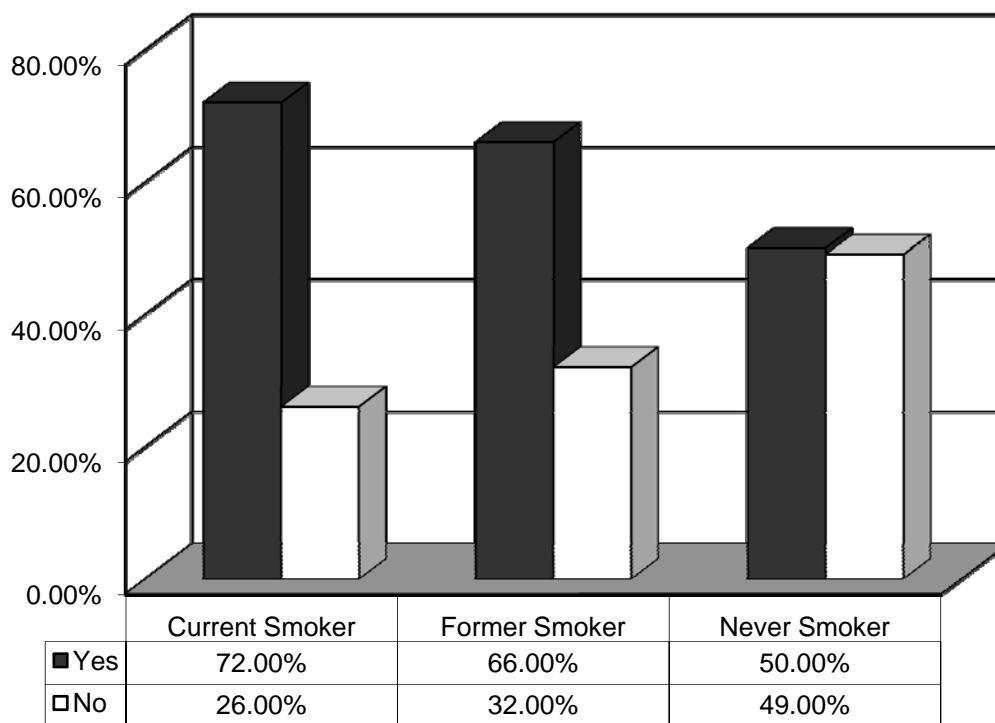


Figure 9. Percentages of respondents reported unprotected intercourse.

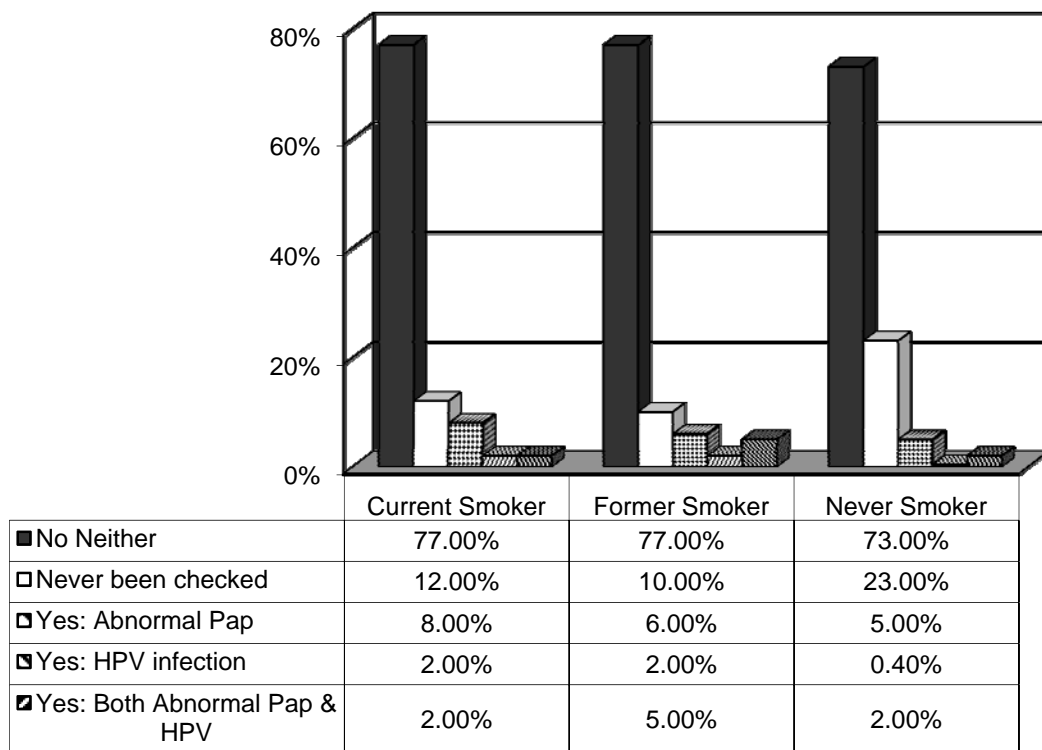


Figure 10. Reported HPV infection and/or Abnormal Pap smear history.

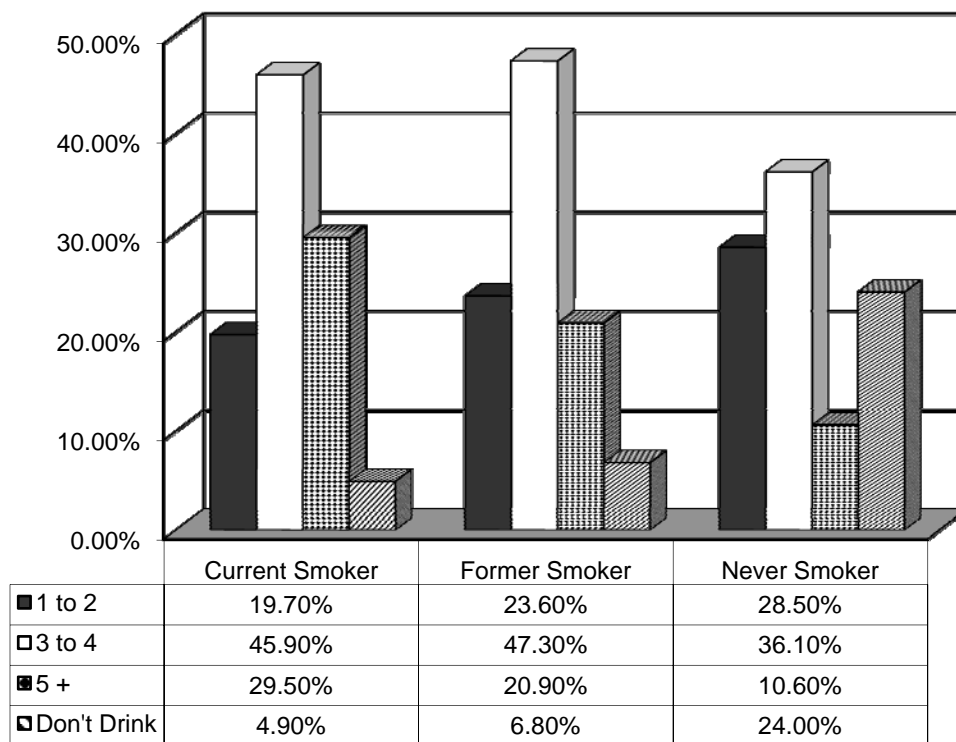


Figure 11. Reported number of alcoholic drinks consumed at one time.

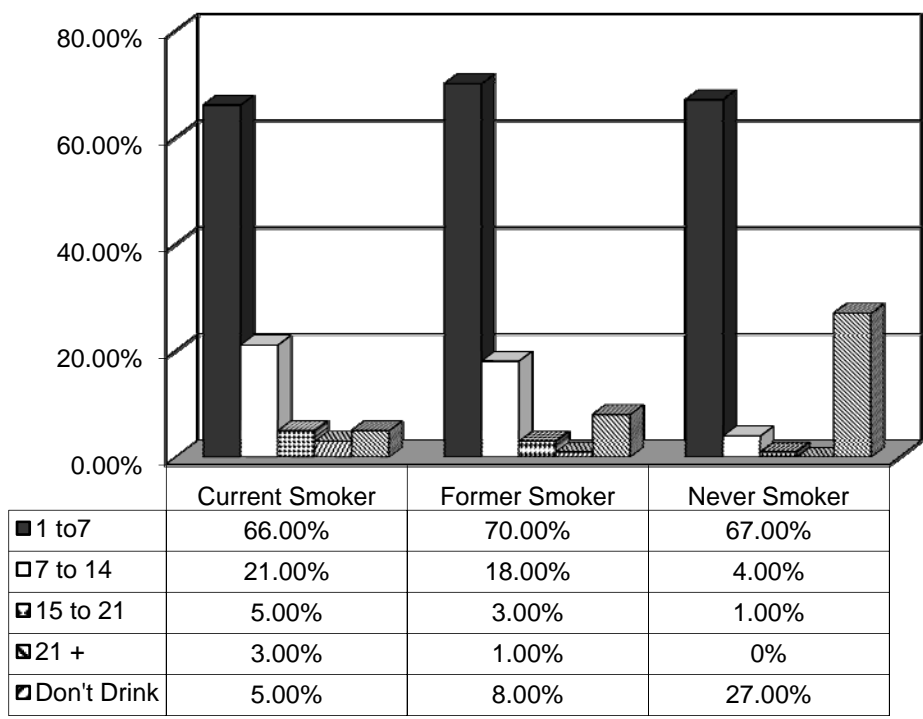


Figure 12. Reported number of alcoholic drinks consumed per week.

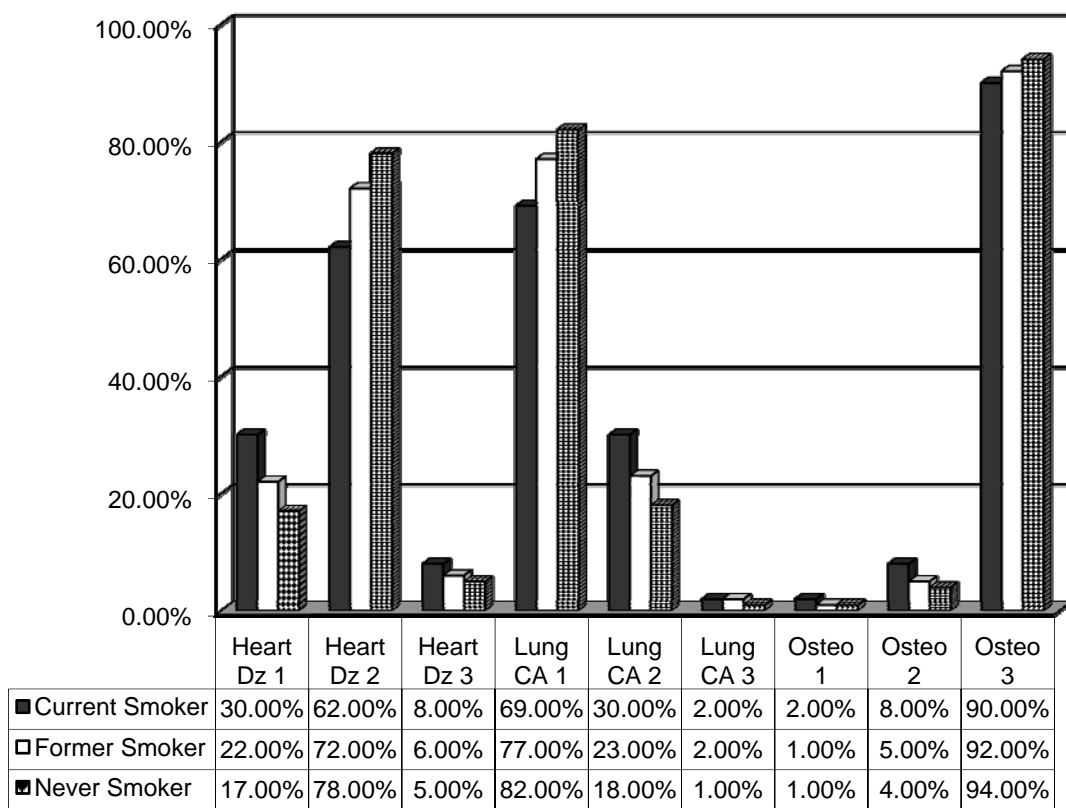
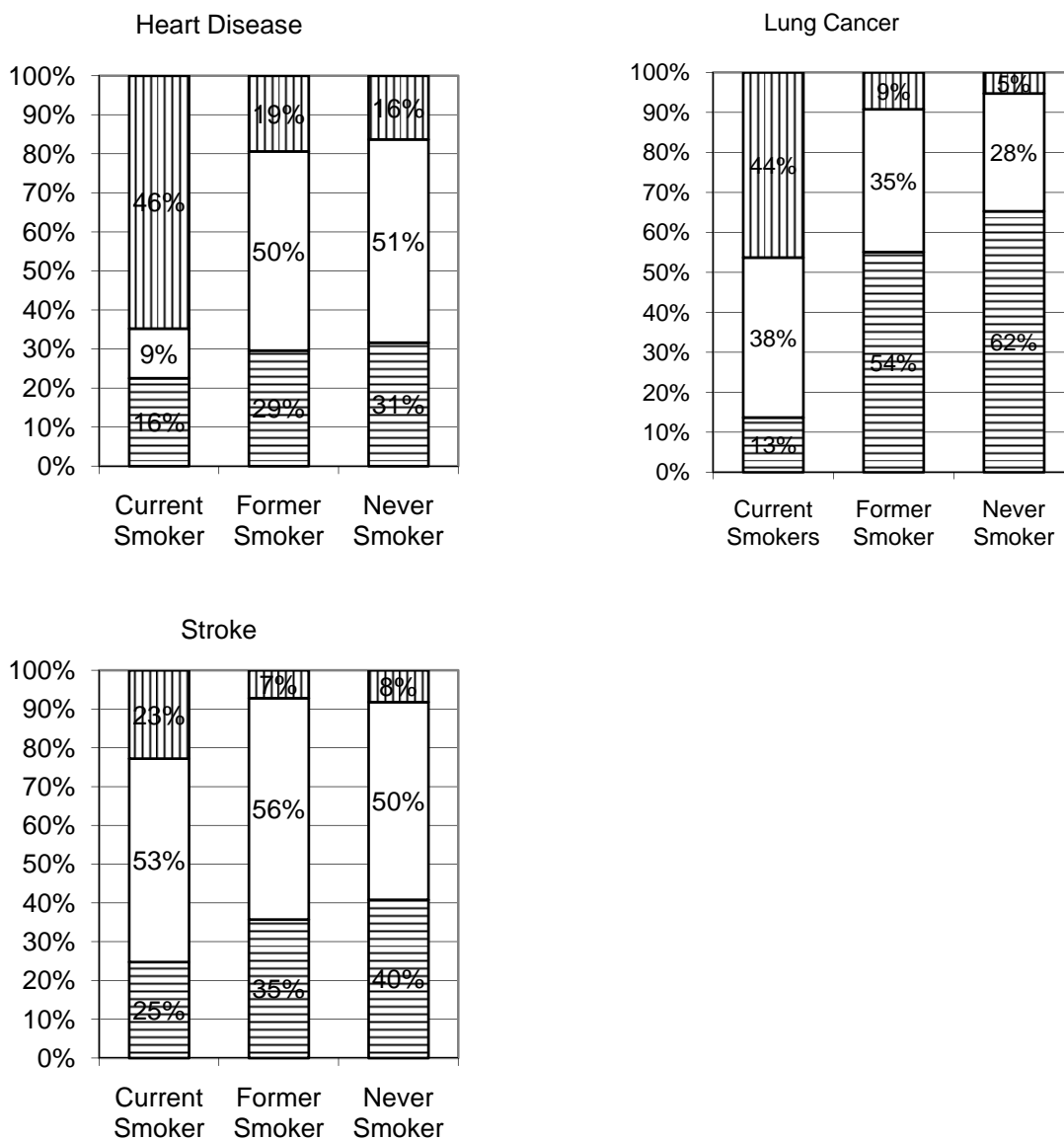
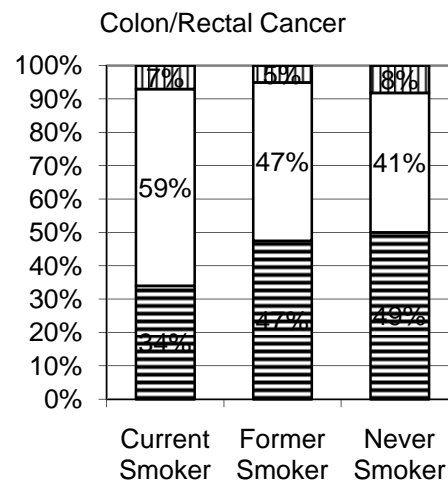
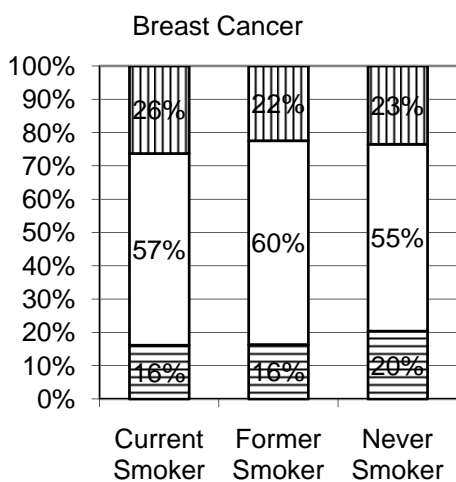
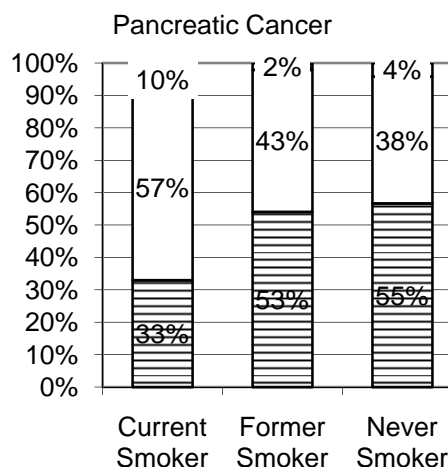
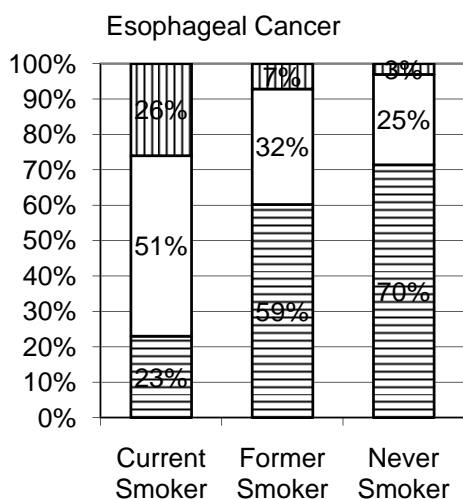
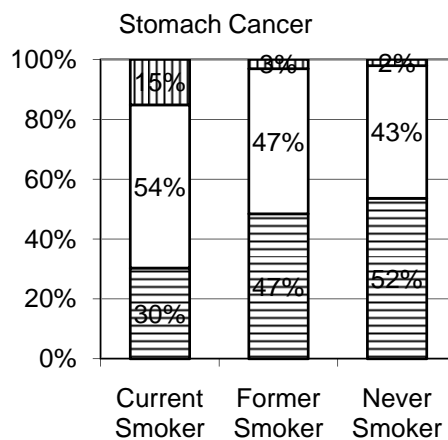
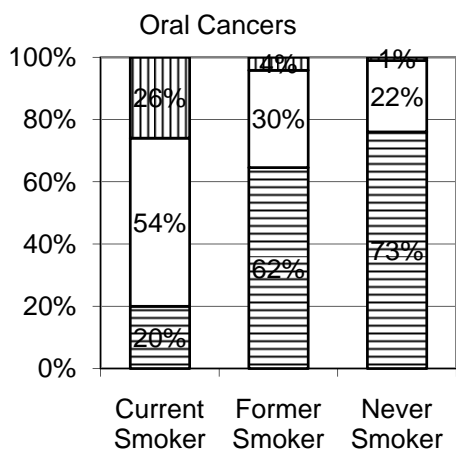


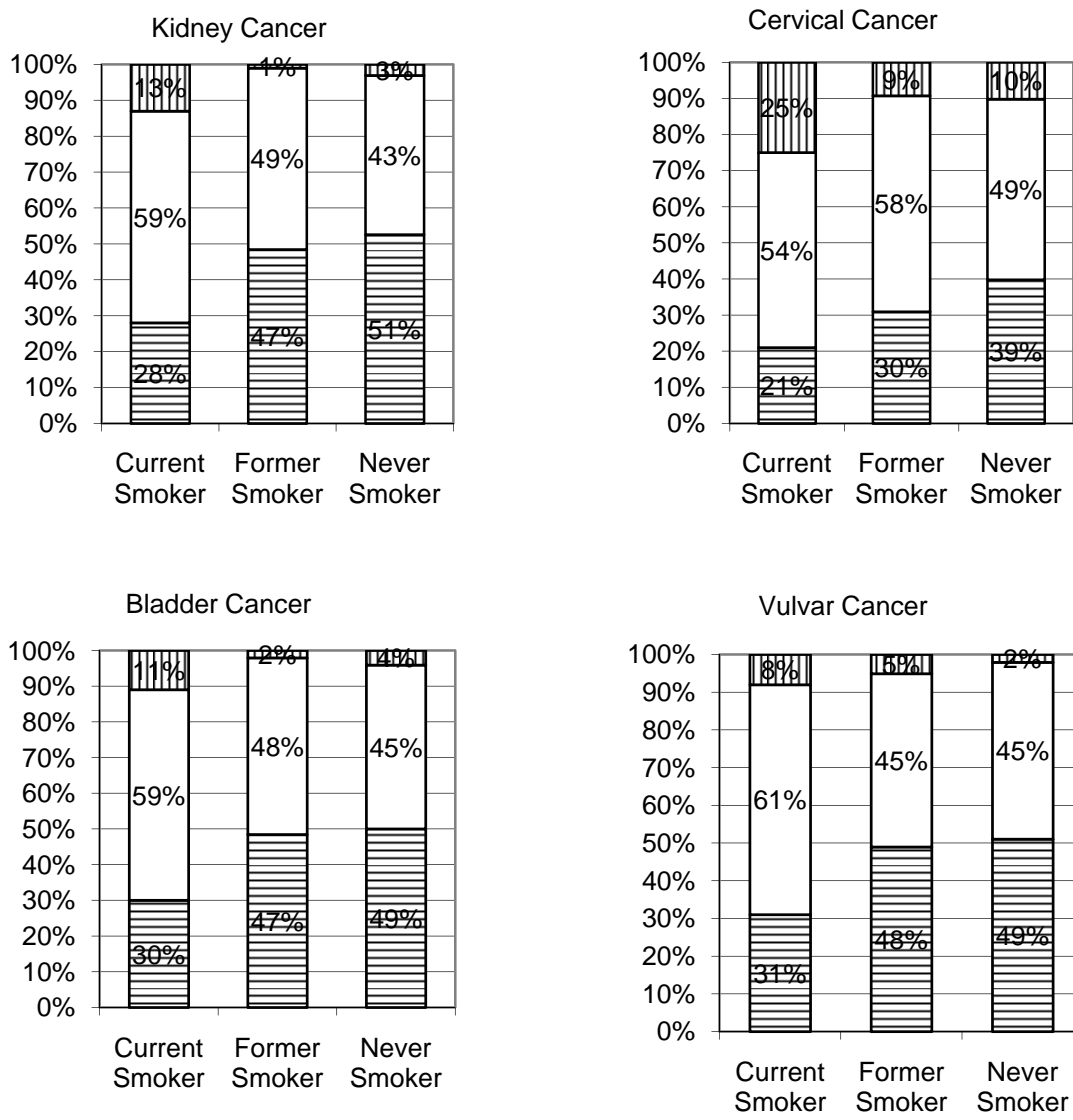
Figure 13. Respondents' ranking of the three major health consequences of smoking

APPENDIX C

Group Figures 1 through 4 of Lifetime Risk Perception

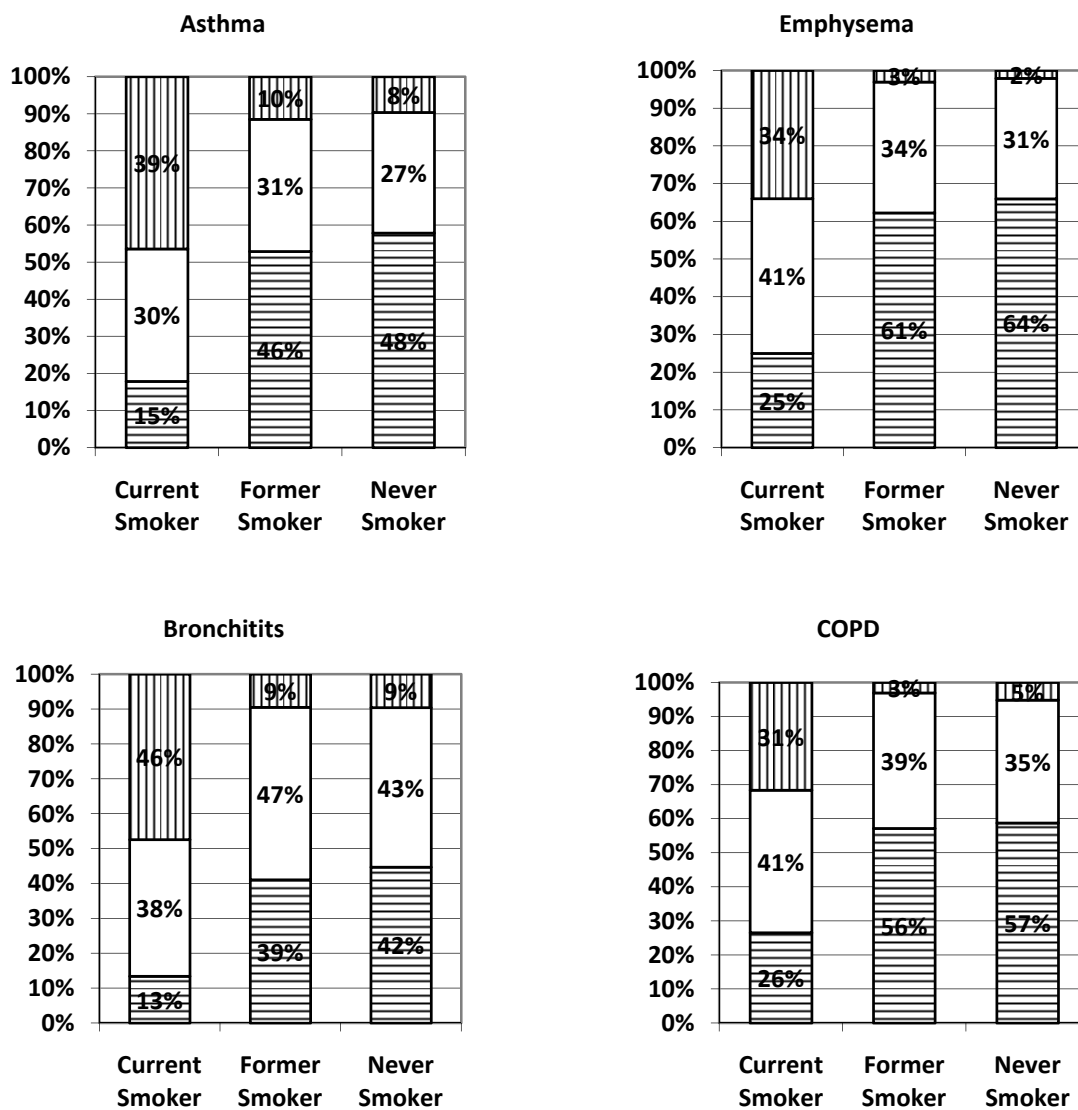






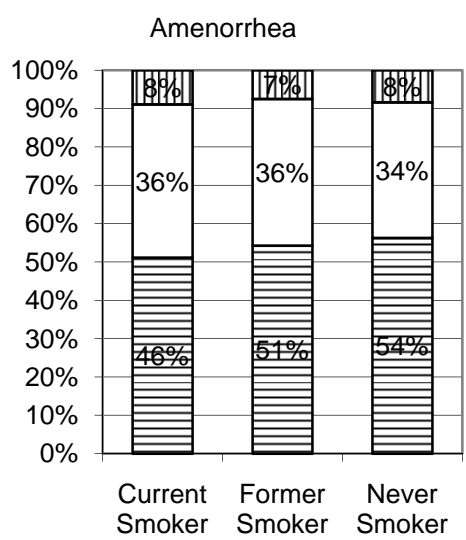
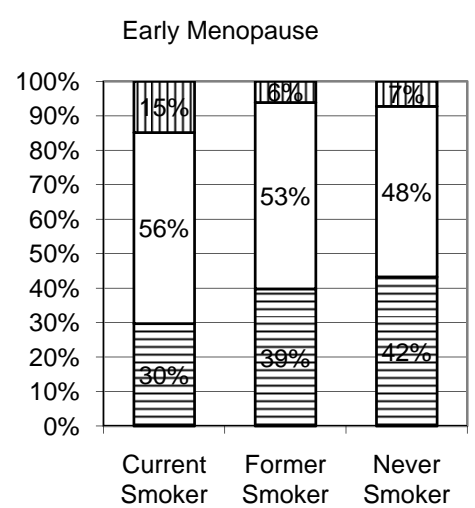
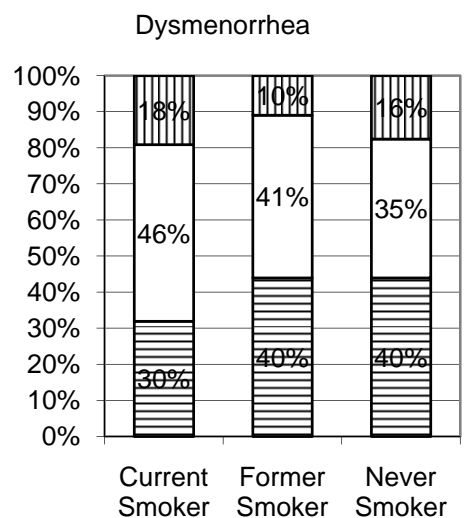
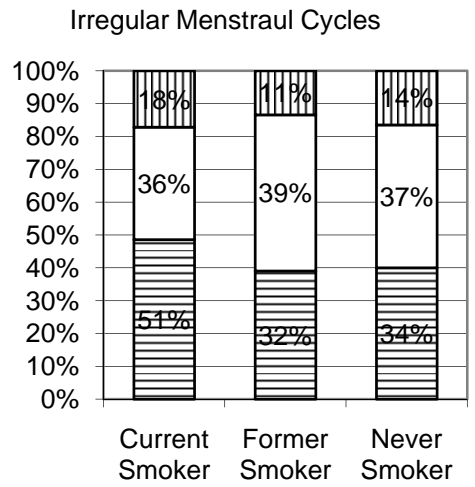
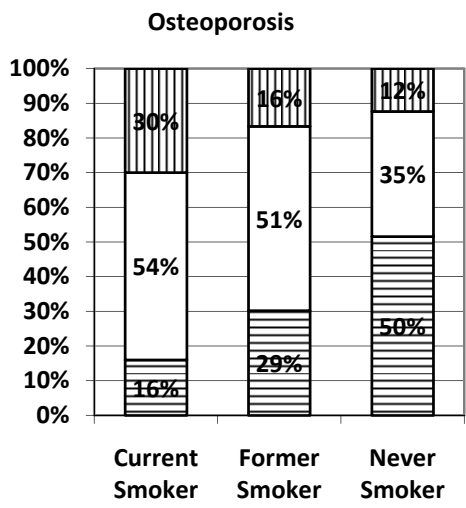
Group Figure 1. Perceptions of lifetime risk for developing cardiovascular diseases and high risk cancers for person's who smoke by smoking status. Percentages are shown for women of each smoking status group who rated their lifetime risk for the above conditions as below average, average, or above average. Respondents who replied with "already have condition" or N/A were not included.



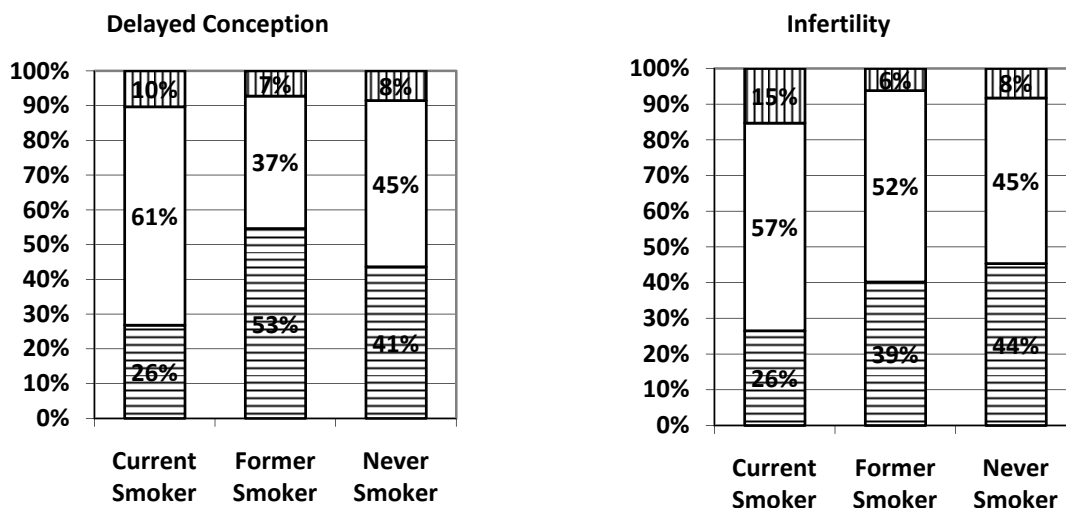


Group Figure 2. Perceptions of lifetime risk for developing respiratory diseases by smoking status. Percentages are shown for women of each smoking status group who rated their lifetime risk for the above conditions as below average, average, or above average. Respondents who replied with “already have condition” or N/A were not included.





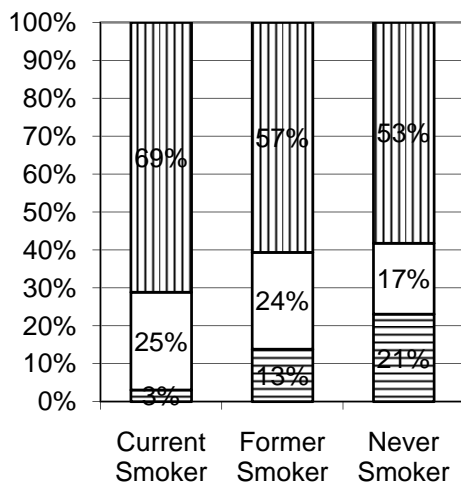




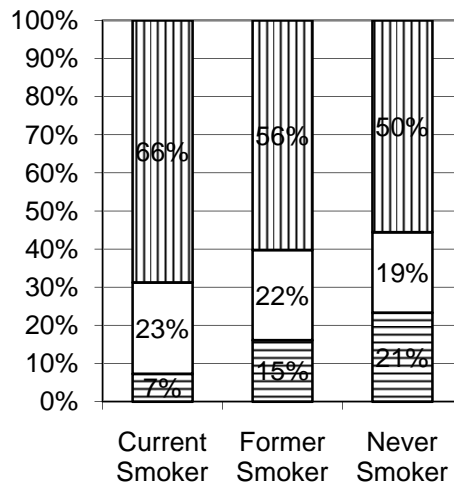
Group Figure 3. Perceptions of lifetime risk for developing osteoporosis, menstruation, and reproductive complications by smoking status. Percentages are shown for women of each smoking status group who rated their lifetime risk for the above conditions as below average, average, or above average. Respondents who replied with “already have condition” or N/A were not included.



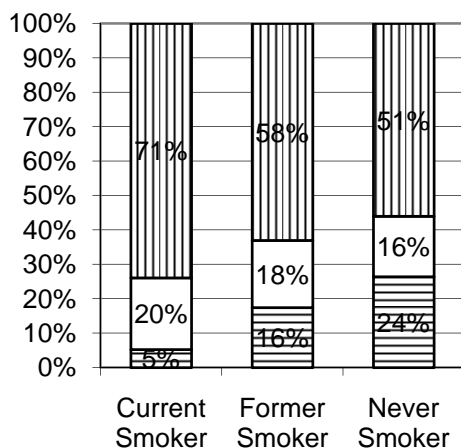
Complications of Pregnancy



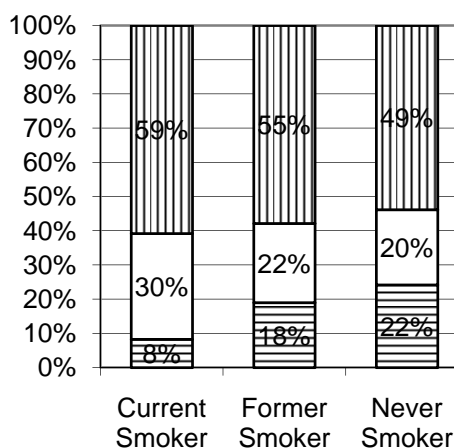
Experiencing Premature Labor

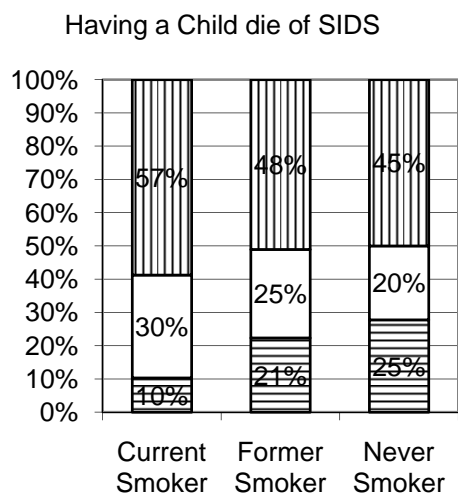


Delivering a Low Birth Weight Baby

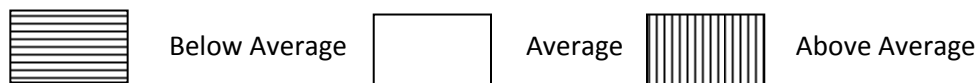


Prenatal Death of Baby (during 2nd or 3rd trimester)





Group Figure 4. Perception of lifetime risk for developing complications of pregnancy (ectopic pregnancy or early miscarriage), having a baby with a low birth weight, going into premature labor, experiencing prenatal death (death of baby in 2<sup>nd</sup> or 3<sup>rd</sup> trimester prior to birth), and having an infant death related to SIDs, if respondents were to engage in smoking during pregnancy. Percentages are shown for women of each smoking status group who rated their lifetime risk for the above conditions as below average, average, or above average. Respondents who replied with “already have condition” or N/A were not included on the graphs.



## APPENDIX D

## Survey Comments by Smoking Status

1. Comments received from respondents reporting themselves as “never smokers” include;  
  
I always found smoking to be disgusting.  
  
I've only smoked 2 1/2 cigars in my life (each 1/2 was on two different occasions).  
  
I only smoked a few times while I drink, but otherwise I don't.
  
2. Comments received from respondents reporting themselves as “former smokers” include;  
  
Was the "cool" thing to do. did it cause friends were.  
  
Tried it once when I was 7.  
  
Started when I was 14, smoked heavily until I was nearly 19.  
  
Have tried cigarettes when younger, but have not done so since then.  
  
I smoked one time and than never again  
  
I have only tried smoking once.  
  
I just tried smoking for once or twice. I never got used to it and I never will.  
  
I was 19 and smoked 1/2 of a flavored cigar.  
  
Tried a cigarette once or twice when I was sixteen, never have again!  
  
I rarely smoke cigars, just for a social/fun thing to do. Not even once a year.  
  
It was just for fun. No intentions of smoking forever.  
  
Didn't really "start" smoking, just experimented.  
  
I only did it every once in awhile, not a daily occurrence.

I have only smoked hookah and one cig here or there at a party. I do not consider myself a "smoker".

Started at 18. Didn't call myself a smoker. But a social one.

I've smoked two cigarettes in my life.

Tried my first cigarette in college age 18.

It was only once in awhile usually when I was drinking. I never smoked regularly but did at parties and when drinking.

I first tried it in college, after drinking.

Socially smoked when at parties.

I hate to say this, but I've only smoked a few (less than 5) when I am heavily under the influence of alcohol.

3. Comments received from respondents reporting themselves as "current smokers" include;

Stupid idea! Never thought about it until a friend saw one of my parent's cigarettes on the floor. She said, "If you take a few puffs, I will." Regardless, I had to go first and she never did... Ever since then I found joy/comfort in smoking.

Cigars only on special occasions.

I do not smoke cigarettes, I occasionally have a couple puffs of my boyfriends cigar or shisha with a hooka.

Slowly as I also started to drink alcohol.

Smoking happens only when I go out downtown, and not even all of those times. I'd say I only smoke half a cigarette in a 3 month time period.

I have never smoked while sober...only on rare occasions when I drink.