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Smoking and Cessation Behaviors Among College Students

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Smoking is one of the leading causes of morbidity and mortality in the United States (CDC, 2011a). Research has shown that 21.8% of adults aged 18-34 smoke, which increases their risk of developing serious health complications in their later years (CDC, 2011a). Some of these complications include diseases such as lung cancer and COPD which if not caught early could mean death (U.S. Department of Health and Human Services, 2012). Also, secondhand smoke is detrimental to children's lungs and causes a greater chance for heart disease in adult nonsmokers (Centers for Disease Control and Prevention, 2012). Numerous researchers have studied smoking behaviors in college-age students, adolescents and adults, including smoking differences based on educational backgrounds (Green et al., 2007; Solberg, Asche, Boyle, McCarty, & Thoele, 2007); students' perspectives on smoking cessation (Houston, Scarinci, Person, & Greene, 2005; Staten & Ridner, 2006; Steinberg, Delnevo, Foulds, & Pevzner, 2004); smoking differences by gender (Ellis, Perl, Davis, & Vichinsky, 2008; Grogan, Conner, Fry, Gough, & Higgins, 2009; McGrady & Pederson, 2002); factors associated with initiation of smoking (Ridner, 2005); and evidenced-based smoking cessation programs (Abdullah & Simon, 2006; Bauld, Bell, McCullough, Richardson & Greaves, 2009; Sussman, Sun, & Dent, 2006). Despite these studies, there is a gap in the evidence on college-age students' attitudes and patterns of smoking cessation and their perceptions of what should be included in smoking cessation programs. Research that involves these topics is needed and would provide a unique perspective on smoking cessation in this age group.

The purpose of this study is to describe smoking and cessation behaviors among college students at the University of North Carolina at Wilmington (UNCW). The research questions were:

1. What are the smoking behaviors among UNCW students?
2. How many UNCW students indicate an interest in smoking cessation?
3. What factors influence the decision to engage in smoking cessation programs?
4. What do students prefer to be included in smoking cessation programs?

Background Literature Review

Physiological Effects of Smoking

Multiple studies have noted the physiological effect of cigarette smoking on major body systems (Centers for Disease Control and Prevention, 2011b; Office on Women's Health, 2010). Cigarettes contain nicotine, a highly addictive substance that enters the bloodstream and reaches the brain quickly. Persons with a nicotine addiction may have symptoms of anxiety, nervousness, dizziness, moodiness, and headaches. The effect on the gastrointestinal system may include:

yellow stains on teeth, halitosis, gum disease, and cancers of the mouth and throat. Nicotine's effect on the cardiovascular system include: vasoconstriction of the blood vessels and subsequent increases in blood pressure and heart rate, which leads to increased risks for cardiac disease. Lessened oxygenation due to vasoconstriction leads to poor respiratory functioning making it more difficult for individuals to breathe or perform activities of daily living or physical activities. Prolonged use of tobacco over time leads to increased risks of emphysema, bronchitis, and lung cancer (Office on Women's Health, 2010). Smoking also makes individuals more at risk for developing other cancers, such as: acute myeloid leukemia, bladder cancer, cancer of the cervix, cancer of the uterus, kidney cancer and stomach cancer (Centers for Disease Control and Prevention, 2011b).

Smoking Differences by Educational Background

Several researchers compared smoking patterns among persons of different educational backgrounds. Green et al. (2007) examined the smoking behaviors of young adults aged 18-24 who were college-educated and non-college-educated. Data for the study was drawn from the 2003 Tobacco Use Supplement (TUS) of the Current Population Survey (CPS). The CPS is a complex survey administered to households nationwide conducted by the US Census Bureau every month. There were 47,987 respondents aged 18-34 used in the study. The authors looked at the respondents answers to how often they smoke, how many times they have tried to quit in the past twelve months, their intention to quit in the next thirty days and whether they were enrolled in college (or had a college degree) or were not enrolled in college. The limitations to the study included the following: the TUS-CPS survey is cross-sectional so it did not represent trends of any one group of people over time; most of the respondents were women; the TUS-CPS survey did not differentiate between a two-year and four-year college degree so any disparity between those smoking rates were masked; lastly the TUS-CPS survey was an in-person household survey so there may have been bias especially if the respondent felt that smoking was socially unacceptable. The authors found that respondents who were not enrolled in college had smoking rates twice as high as those enrolled in college or had a college degree (30% vs. 14.2% respectively). The authors further suggested that there be advertisement for smoking cessation programs at places that are heavily populated by the 18-24 age group such as clubs, bars and sporting events.

Solberg et al. (2007) studied how the educational backgrounds of young adult smokers affected their cessation attitudes and behaviors. The intent was to use the data collected to improve smoking interventions. The authors surveyed 5,580 members of a large care organization called HealthPartners, which was

located in the Minneapolis and St. Paul area. The age range of the randomly selected members was 18-24 years old. The follow-up survey, conducted 12 months after the original survey, consisted of 1,352 of the original respondents who had indicated that they were current, former or infrequent smokers. The baseline survey was used to identify which category (smoker, former smoker, infrequent smoker or nonsmoker) each member represented and to collect information about health status, demographics, interest in smoking cessation, nicotine dependence and other characteristics. The follow-up survey was used to determine change in smoking status and attitudes towards smoking cessation programs. The limitations of the study were as follows: low percentage of non-White, rural and low income respondents; 63% response rate for the follow-up survey; and the members surveyed were a part of the same health plan. The authors concluded that smoking rates of young adults who had low educational levels were high, which is consistent with what Green et. al (2007) found. However, most young adults regardless of their educational background were interested in quitting.

Perspective on Smoking Cessation

Researchers have studied smoker's perspectives or attitudes about smoking cessation as a means of developing effective smoking cessation programs. Houston et al. (2005) assessed the differences by ethnicity, socioeconomic status, and health profile in receiving advice from health care providers to quit smoking. The authors used questions from the Behavioral Risk Factor Surveillance System (BRFSS), a cross-sectional telephone survey used to collect state-wide health data, to collect data from 14,623 identified current adult smokers. Smokers were asked a series of questions regarding smoking cessation advice given by healthcare providers. The authors analyzed responses given by three ethnic minorities: Hispanic, Native American, and African American (N=14,089). The biggest limitation of the study was the BRFSS did not assess the causality. The authors found that Hispanics (50%) and African Americans (61%) claimed receiving smoking cessation advice less frequently compared to Whites (72%). Ethnic minority status, lower education and poor health status were associated with receiving less advice to quit smoking from health care providers. The lower education component is consistent with the articles mentioned in the previous section.

Staten and Ridner (2006) used qualitative focus-group methods to identify factors that would improve smoking cessation program experiences in 18 to 24 year old college students (N = 19) who were former smokers, smokers struggling to quit, and smokers with no desire to quit. The participants were recruited on campus by flyers and ads placed in several locations. The group interviews

started with a broad discussion about the participants' first cigarette and then continued on to discussion about when the participants realized quitting was going to be hard, efforts to quit smoking and what the participants thought were key elements in a smoking cessation program for college students. The limitations of the study were small sample size, recruitment of volunteers and the use of participants from one campus. Another limitation may have been the group interviews, where the participants may have felt like they needed to give answers that were socially acceptable rather than share all their true thoughts and feelings. This study at UNCW used a survey which eliminated the limitation associated with group interviews. The authors found that smoking cessation programs for college age students needed to include discussion of the following: immediate physiological effects of smoking; addictive nature of nicotine; and benefits of using nicotine replacement therapy. The participants also emphasized the need for emotional and cognitive strategies for dealing with cravings and environmental cues to smoke. This study is similar to the study at UNCW in that both find the same results regarding smoking cessation programs.

Steinberg et al. (2004) used data from the 1999 New Jersey Youth Tobacco Survey (NJYTS) to determine the smoking frequency and attitudes toward smoking cessation in high school students in New Jersey. There were 7,151 students in 9th to 12th grade from 80 high schools that participated. The authors assessed factors associated with smoking cessation including past quit attempts, desire to quit, self efficacy, use of medications for cessation and future smoking intention. The limitations of the study were the survey answers were based on self-report and the survey did not allow for the students to provide contradictory responses regarding their smoking behavior. Half of the current smokers indicated a desire to quit smoking. Low self-efficacy in quitting was expressed by 27.9% of the current smokers. Less than half of the current smokers and one-fifth of the current smokers were asked whether they smoke by their doctor and dentist, respectively. Only a few students (7.6%) reported using medication assistance and half of the current smokers saw themselves smoking in the future. The authors concluded that the data collected supports the use of smoking cessation programs in adolescents that have been effective in adults which means using counseling, behavioral interventions and medication assistance.

Smoking Differences by Gender

Studies of gender differences in smoking behaviors and cessation patterns have also been conducted by numerous researchers. For example, Ellis et al. (2008) examined the differences by gender in smoking cessation after providing nicotine replacement therapy. The authors assessed data collected from an annual

phone interview called the Community Health Survey (CHS) conducted in New York City. The study used data from the interviews from 2002 to 2005. The criteria for the survey included adults 18 years and older, resided in New York City, consented to having their information shared, agreed to follow up interviews, admitted to wanting to quit smoking in the next seven days, and smoked at least ten cigarettes a day. About 40,000 courses of nicotine replacement therapy were given to the participants in the study. Counseling calls were made to each participant three weeks after receiving the nicotine replacement therapy. These calls included questions about the effectiveness of the patch and the side effects associated with the patch. The limitations of the study were as follows: the phone interviews were cross-sectional so the results did not interpret the causality; the answers were self-reported and may have been subject to bias; it is possible that the change seen in the smoking rates may have been due to a cohort effect and not individual change in behavior; there were a low number of completed counseling calls; finally, the conclusions drawn about the replacement therapy were limited to the post-enrollment three week evaluation. The authors found that from 2002 to 2005 the largest decline in smoking was in the young adult (18-24 years old) age group. The smoking rate dropped from 23.8% to 18.8% and nearly all the smokers who quit were women. The authors found that the participants in the young adult age group used the nicotine replacement therapy more than the other age groups. The authors also concluded that women were more responsive to tobacco control programs but men required a more intensive strategy.

Grogan et al. (2009) assessed whether instrumental beliefs and normative beliefs predicted smoking initiation in 11-15 year olds who did not smoke. Instrumental beliefs were defined as beliefs about the outcome of a particular behavior. Normative beliefs were defined as beliefs about pressure to perform a certain behavior from peers. The adolescents in the study were evaluated at ages 11, 13, and 15 to see if their instrumental and normative beliefs influenced their smoking behaviors. The adolescents were chosen from twenty schools in northern England. Each participant answered a questionnaire every two years starting at age eleven. There were 1,456 data sets analyzed for the eleven year old questionnaire, 1,071 data sets were analyzed for the thirteen year old questionnaire and 590 data sets were analyzed for the fifteen year old questionnaire. One limitation of the study was more smokers than non-smokers dropped out of the study due to the fact they were not at school on the day of the questionnaires. This may have limited the ability to detect differences in the smoking and non-smoking adolescent populations. This study done at UNCW did not have anyone drop outs because it was not based on attendance at school. The authors found that in boys, negative instrumental beliefs (health risks) in non-smokers at age eleven predicted smoking at age fifteen. In girls, normative

beliefs in non-smokers at age eleven predicted smoking at age fifteen. The authors also revealed that smokers were more likely than non-smokers to favor positive instrumental beliefs (benefits of smoking), less likely to agree with the health risks of smoking, more likely to be influenced by peer pressure to smoke and less likely to report having control over their smoking habits. The authors concluded that this data is important in deciding which interventions to use based on gender.

McGrady & Pederson (2002) compared the success in smoking cessation by gender, ethnicity and age using data from two national surveys, the Current Population Survey (CPS) and National Health Interview Survey (NHIS). The questions the authors focused on were whether the participants had smoked one hundred cigarettes in their life, whether they were current smokers, the age the participants started smoking and the age at which the participants successfully quit smoking. A person successful at quitting was defined as abstinence from smoking for at least one year. The authors found that success in smoking cessation was independent of ethnicity and sex. This differs from what Ellis et. al (2008) which found that women were more successful in quitting.

Factors Associated with Initiation of Smoking

Determining the factors that lead people to smoking is important in helping prevent them from starting. Ridner (2005) studied the factors that are associated with the initiation of smoking in a college-age population. Ridner focused on the environmental, personal and behavioral factors of individuals to determine which factors more prominently lead to smoking. The study was a non-experimental, random design that used a questionnaire to gather data (N=788). There were four groups that were studied which were non-smokers, former cigarette smokers, nondaily cigarette smokers and daily cigarette smokers. The questionnaire contained questions on social influences (whether family and friends smoked), general wellbeing (which measured for depressive symptoms) and risk behaviors (use of drugs and alcohol). One limitation of the study was it was based on secondary data and the General Well Being Schedule (GWBS) (used to measure depressive symptoms) was not a valid instrument. Another limitation was the former smoking group was very different than the non-daily and daily smoking groups on a number of things. The last limitation was it was a cross-sectional design which made it impossible to determine if the results found will remain consistent over a longer period of time. The author found that participants whose family and friends smoked had a greater chance of smoking. The author also found that non-daily and daily smokers had a greater number of risk factors than former and non-smokers. Finally, non-daily and daily smokers

were reported more likely to have symptoms of depression than former and non-smokers.

Evidenced Based Smoking Cessation Programs

Several researchers have studied the most effective smoking cessation programs. Abdullah & Simon (2006) discussed findings from several experimental trials on smoking cessation programs for adults over the age of sixty-five. The authors looked at experiments that involved behavioral therapy (advice, counseling), nicotine replacement therapy and pharmacological drugs. The limitation to the study was the small number of experiment trials analyzed. The authors concluded that all three interventions examined had a high success rate in helping older adults quit smoking. The authors suggested that physicians should encourage and help every elderly person who smokes to quit smoking. This study done at UNCW found similar results in the college age population.

Bauld et al. (2009) examined twenty studies whose authors determined the effects of National Health Service (NHS) on smoking cessation. NHS was a service that included regular meetings (either one-on-one or group) with a trained adviser and used smoking cessation medications such as nicotine replacement therapy, buproprion or varenciline. The articles chosen for review were written in English and were conducted between the years of 1990-2007. The authors of the articles chosen had to examine smoking interventions provided within the NHS in the UK and the interventions had to be moderately intensive. The first limitation to the systematic review was the majority of the experiments analyzed were observational studies and only four of the experiments were randomized control trials. The second limitation was the lack of evidence on many of the main issues under consideration. The NHS had only existed ten years when the systematic review was conducted so there were more questions to be answered such as the impact of setting, location or quality of behavioral support on cessation outcomes. The authors of the systematic review concluded that intensive NHS treatments were successful in helping smokers quit. The authors found group therapy more effective than one-to-one therapy. The authors also concluded that buddy support was more effective if the person was participating in one-to-one therapy than if they were participating in group therapy.

Sussman et al. (2006) analyzed forty-eight teen smoking cessation studies. The criteria for choosing each study were they had to be in English, they had to have information regarding a teen smoking cessation effort, they had to use quit-rates and they had to include age ranges 12-19 years old. Of the forty-eight studies, there were different smoking cessation programs and methods used in each one. The most common theories used in these cessation programs were social influence, cognitive-behavioral approach, motivation and medical. These

methods resemble the methods needed by college age students in this UNCW study. One of the limitations of the meta-analysis was there were only four different modalities that the authors did their research in. These included teenagers in the classroom, teenagers in school clinics, teenagers in medical clinics and teenagers system wide. The authors of the meta-analysis concluded smoking cessation programs for teenagers increased smoking quit rate by 46%. The programs that used motivation, cognitive-behavioral techniques and social influence had higher quit rates. The authors of the meta-analysis also concluded that there was a higher chance of quitting if the program was done in the classroom or in the school clinic. Furthermore, there was a higher chance of quitting if the cessation program lasted at least five sessions.

Methods

Study Design

The study design is simple descriptive. This type of design gathers data in one of three ways: interview, survey or observation (Marion, 2004). This study used a survey to collect data and there was no manipulation and no causality. The design of this study provides a description about UNCW students' smoking and cessation behaviors.

Sample and Setting

The sample was randomly selected from the undergraduate students at the University of North Carolina Wilmington (UNCW). UNCW had 11,903 undergraduate students, 1,185 graduate students, and 57 doctorate students as of September 2011. The students were 59% female, 83% White, and 84.7% North Carolina residents; 86% were enrolled full-time and 14% were part-time; 4.5% were African American, 5.1% were Hispanic, and the remaining were American Indian, Asian, Pacific Islander, two or more races, or unknown (University of North Carolina Wilmington, 2011).

UNCW offers baccalaureate degrees in 52 majors, master's degrees in 35 majors, doctoral degrees in marine biology and educational leadership and administration. The university is divided into five academic divisions, including: the Cameron School of Business, College of Arts and Sciences, College of Health and Human Services, Watson School of Education, and the Graduate School. The university has received many distinguished rankings from the *U.S. News & World Report*, *Forbes Magazine*, *Fiske Guide to Colleges*, *Kiplinger's*, *Princeton Review*, *G.I. Jobs*, and the Fulbright Scholars Program (University of North Carolina Wilmington, n.d.).

Measures

The survey consisted of forty-one questions: eight were demographic questions; twenty-four questions addressed mental health issues and quality of life; and nine questions addressed smoking and smoking cessation behaviors. The results of this study were based on the demographic and smoking related questions. The entire survey is included in the Appendix. The smoking related questions were selected from LIFELINE International (Best of Health Online, 2003b) and Department of Mental Retardation (2007). LIFELINE International developed the website Best of Health Online. The website was developed in a strategic alliance with distinguished professionals and several exceptional companies. This website won the 1999 World Wide Web Health Award. The website received a gold award for health promotion/disease and injury prevention information. It was also judged to be the most innovative site and best interactive site (Best of Health Online, 2003a). The Department of Mental Retardation is linked to the Department of Developmental Services in the state of Connecticut.

Data Collection Procedures

The Institutional Review Board (IRB) at UNCW approved the survey that was utilized in the study. The IRB's mission was "to protect the rights and welfare of human participants in research reviewed under the auspices of our IRBs" (IRB services, 2012). The study was anonymous. The UNCW Office of Institutional Research and Assessment randomly selected emails of 1,200 undergraduate students for participation in the study. The survey was an online survey created by using SurveyMonkey®. SurveyMonkey® was an online service that provided the tools to create surveys, collect data, and analyze data. An email distribution list was set up by Integrated Technology at UNCW. The first email was sent out on November 18, 2011. The email contained an introduction to the study and a link to the survey. The participants clicked the link to the opening page of the survey which contained information about the survey and consent to participate. If they chose not to consent the survey closed and if they agreed to consent it continued on to the first question. The response to the first email was 116 participants total that completed the survey. A second reminder email was sent on December 9, 2011, which increased the number of students to 159 who completed all the survey questions.

Data Analysis

Frequency distributions and descriptive statistics were used to analyze the data. Frequency distributions were used to analyze demographic information

such as gender, race, age, marital status and academic classification. Descriptive statistics were used to analyze smoking behaviors among college students; the percentage of students who smoke that indicated an interest in smoking cessation; the factors that influenced the decision to engage in smoking cessation programs; and the topics that were preferred in smoking cessation programs.

Results

Demographics

Table 1 provides a detailed description of the undergraduate student sample. Of the 1200 students randomly chosen to participate in the study, 159 completed all questions for a response rate of 13.3%. The mean age of the participants was 20.9 years. Among the participants, 73% were female, 91.2% were White, and 68.6% of the participants had never been married. The academic classification was well-distributed with 33.3% of the participants as seniors followed closely by juniors, sophomores, and then freshman.

Table 1

Demographic and Social Characteristics of Students (N=159)

Variable		*N*	%
Age	**Mean age= 20.9**		
17-19		55	34.6%
20-22		81	50.9%
23 and older		23	14.5%
Gender			
Female		116	73%
Male		42	26.4%
Prefer not to answer		1	0.6%
Race			
White		145	91.2%
African American		9	5.7%
Native Hawaiian		1	0.6%
Hispanic or Latino		4	2.5%
Marital Status			
Married		12	7.6%
Divorced		2	1.3%
Separated		1	0.6%
Never Married		109	68.6%
Member of an unmarried couple		35	22.0%
Academic Classification			
Freshman		31	19.5%
Sophomore		31	19.5%
Junior		44	27.7%
Senior		53	33.3%

Smoking Behaviors

Of the 159 participants, 17% (*n*=27) stated they were current cigarette smokers. When asked how much the participant smoked per day (*n*=33) the following answers were given: 48.5% smoked 0-1/2 pack per day, 21.2% smoked ½-1 pack per day, 6.1% smoked 1-1 ½ packs per day, 3.0% smoked 3+ packs per day, and 21.2% smoked less than 10 cigarettes a week (Table 2).

Table 2

Number of packs of cigarettes smoked per day (n=33)

Number of packs	%
0-1/2	48.5%
½-1	21.2%
1-1 ½	6.1%
3+	3.0%
Less than 10 cigarettes a week	21.2%

Factors in Smoking Cessation

Out of 24 participants, the majority (54.2%) stated they have tried and succeeded but started smoking again. The next most popular choice was that some of the participants stated they never wanted to quit. The distribution for this question can be found in Figure 1. When asked how many times the participant tried to quit in the past the most frequent answer was twice and the average answer was 2.44 (Table 3). Another question was whether the participant thought he/she would quit smoking (*n*=28). The majority (46.4%) stated they would quit. When asked why the participant wanted to quit, 27 participants answered and chose all the answers that applied to them. The most popular answer was to quit for health followed by to quit for money (Figure 2).

The participants were also asked what worked in the past for them and 30 participants chose all the answers that applied to them. A change in habits worked for 30.4% of the participants. Self-motivation and exercise were the next most popular answers. The patch, group counseling and acupuncture did not

work for any of the participants (Figure 3). The participants were also asked what he/she was willing to change to be tobacco-free. Nineteen participants chose all the answers that applied to them and the majority (32.8%) stated they would change their personal habits (Figure 4).

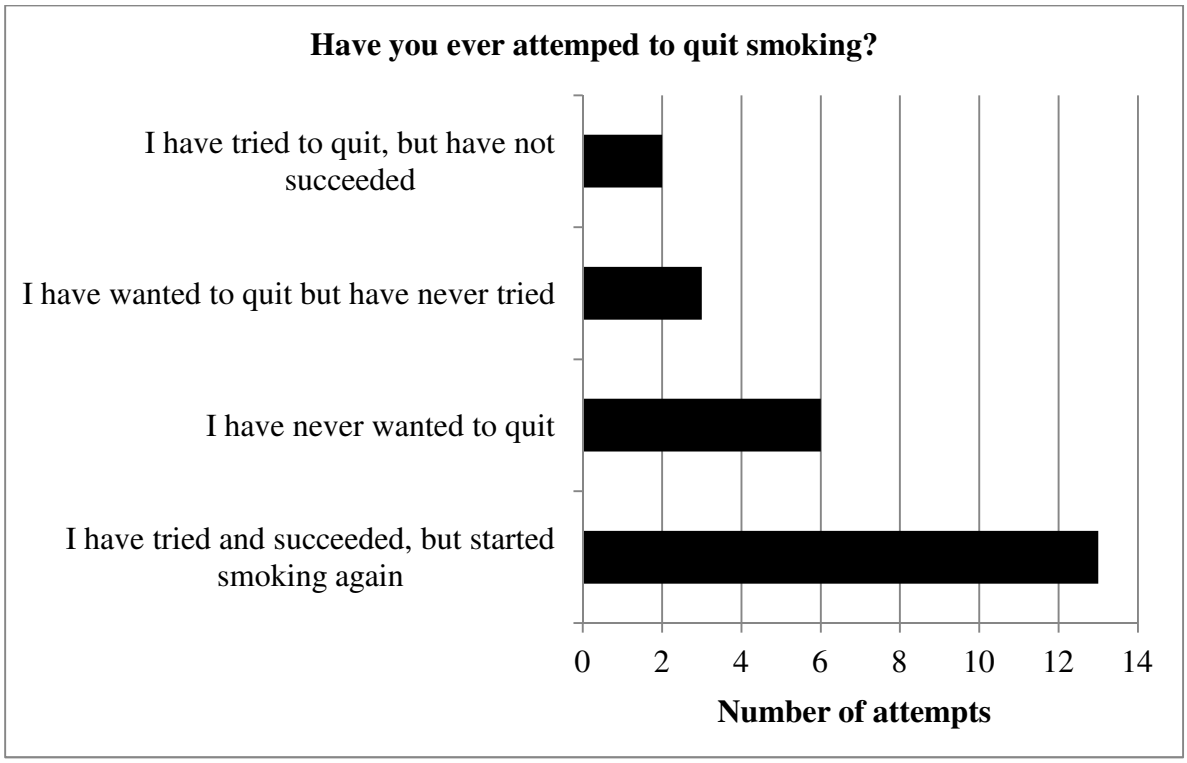

Figure 1. Attempts to Quit Smoking (*n*=24)

Table 3

How many times have you tried to quit in the past? (If don't smoke put N/A)

Total participants (*n*=31)	*n*	%
Quit Attempts		
0	7	22.6%
1	5	16.1%
2	8	25.8%
3	3	9.7%
4	2	6.5%
6	2	6.5%
>6	4	12.9%

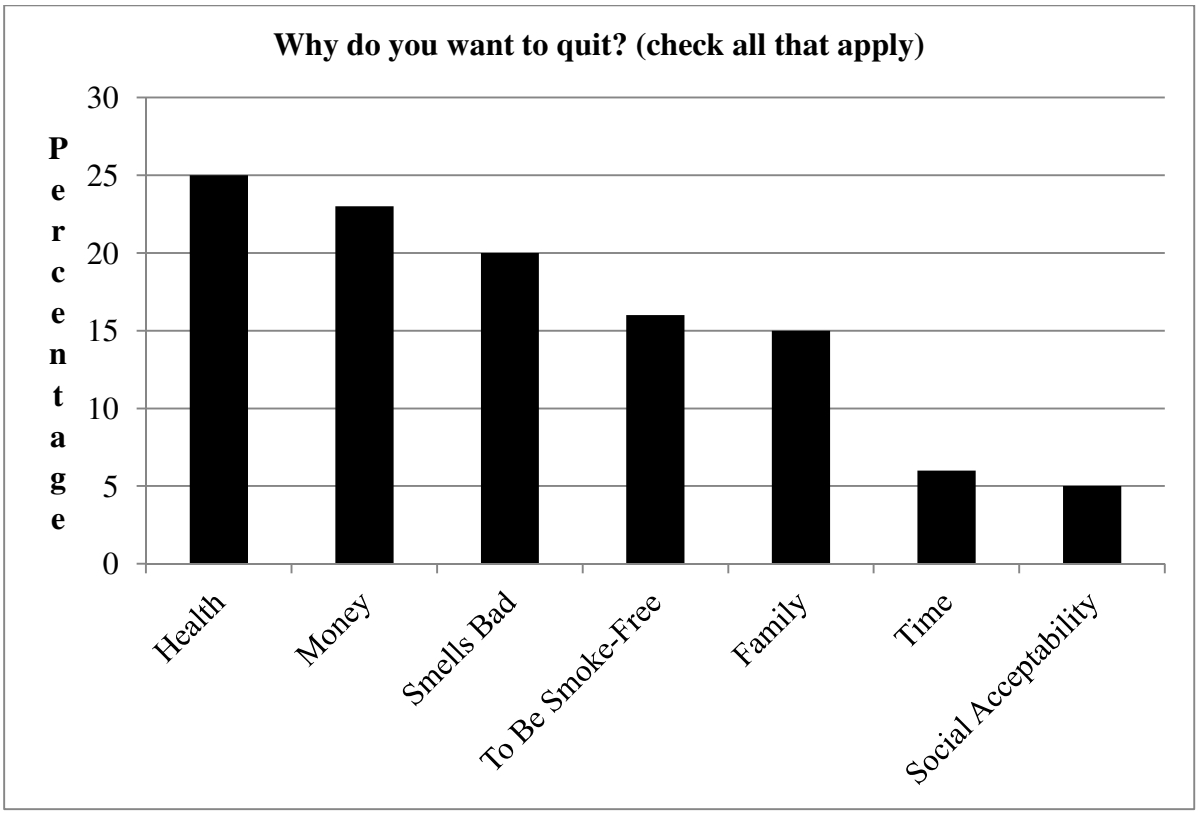

Figure 2. Factors Influencing Smoking Cessation (*n*=27)

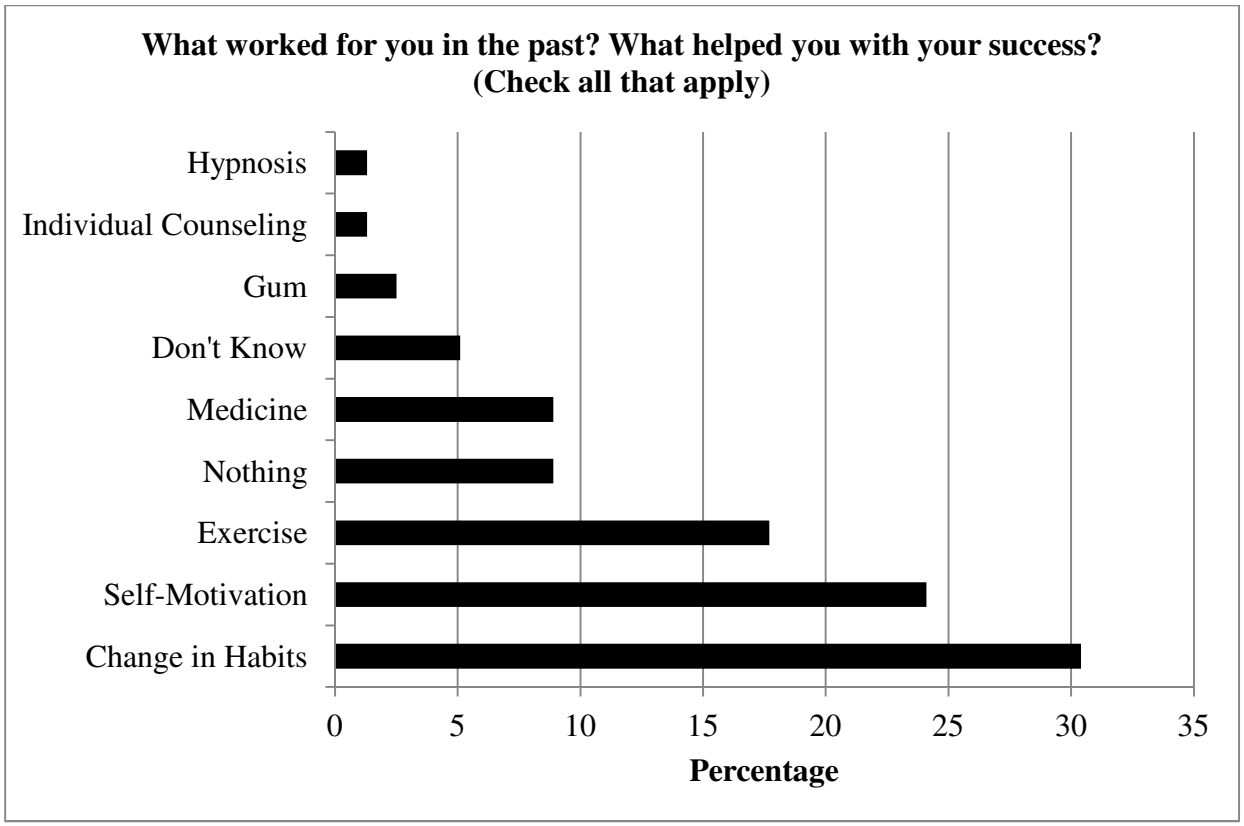

Figure 3. Interventions That Aid in Smoking Cessation (*n*=30)

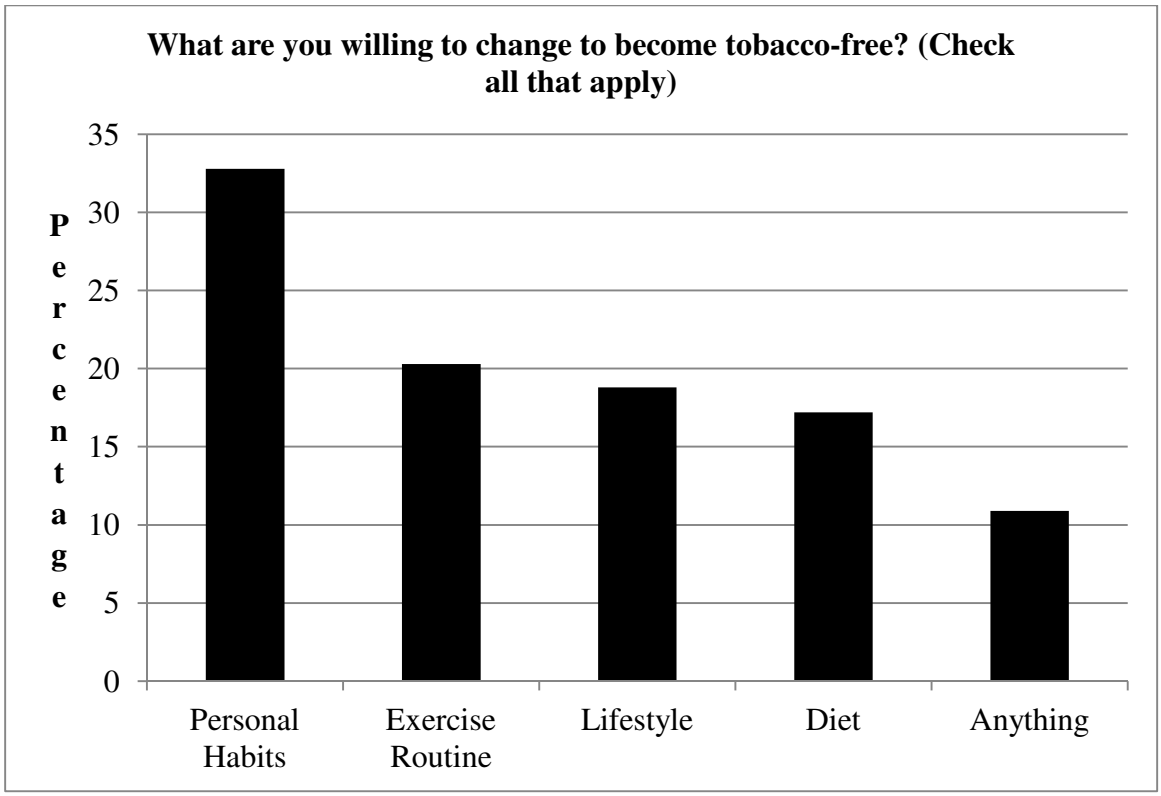

Figure 4. Factors in Becoming Tobacco-Free (*n*=19)

Preferred Smoking Cessation Topics

The participants were asked what smoking cessation topics they would want to have in a comprehensive, self-help stop smoking program. The participants decided that every topic was very important or important to include except for knowing how to get along with nonsmokers. Below is the number that the participants rated each topic, ranging from 0-5 (Figure 5 and 6).

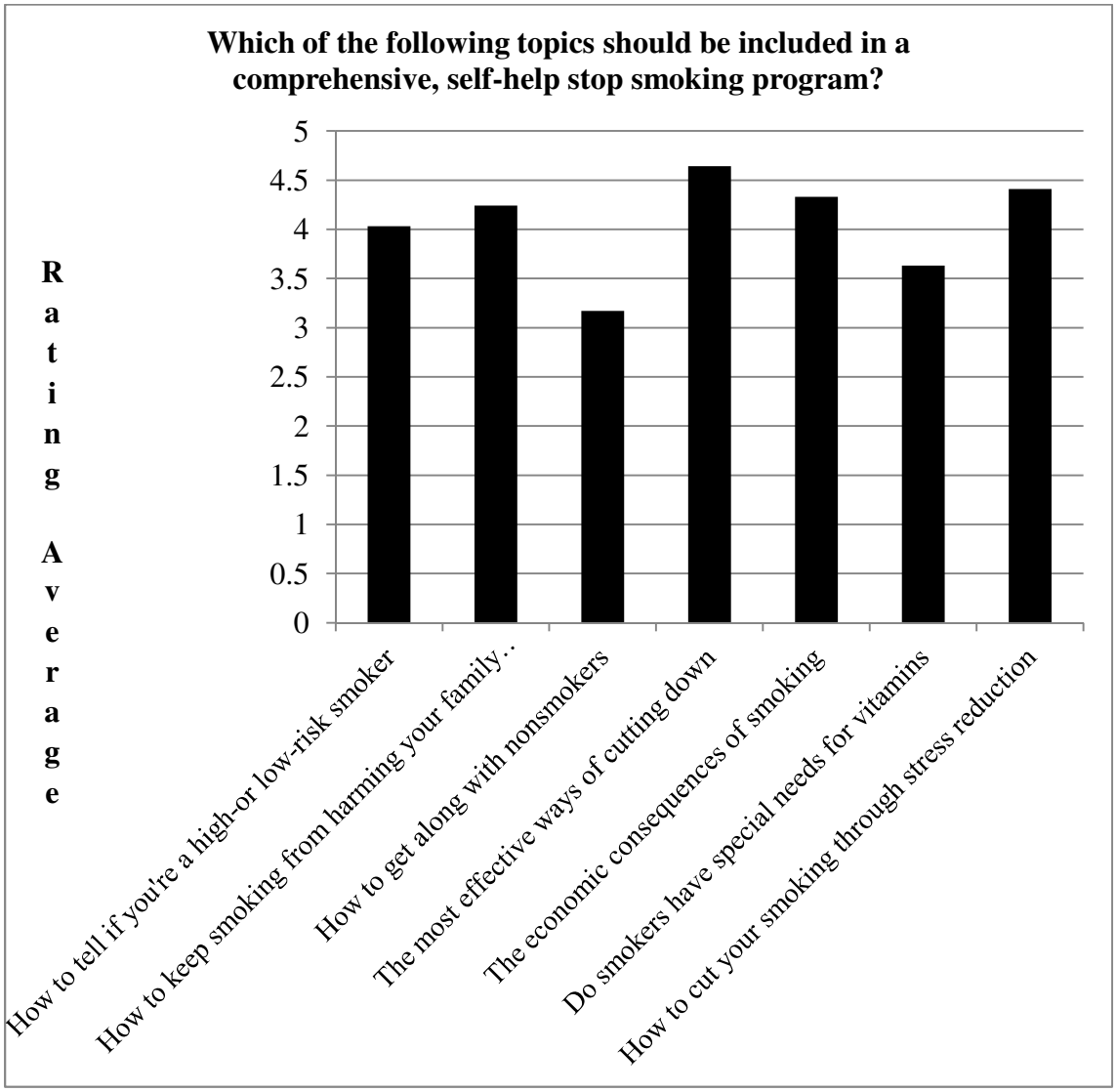

Figure 5. Smoking Cessation Topics (*N*=159)

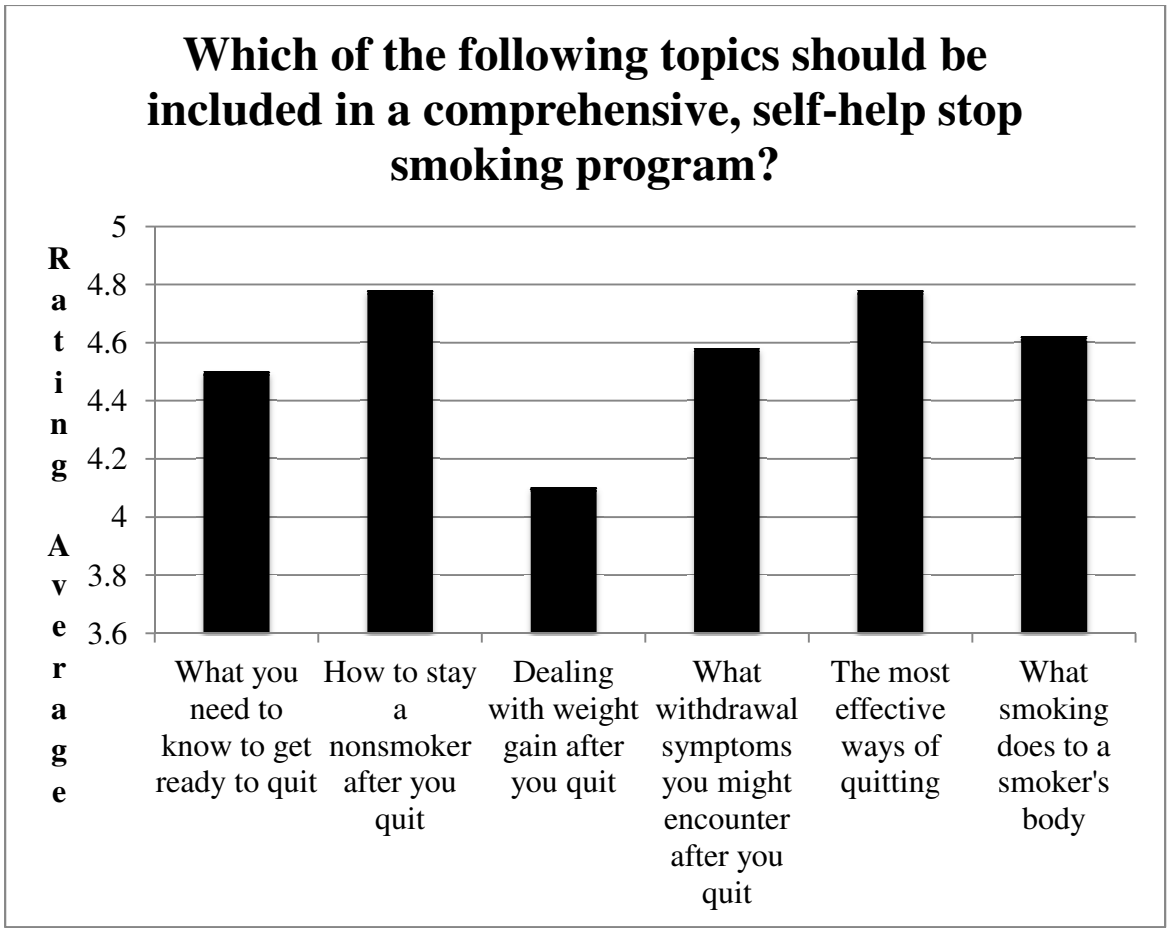

Figure 6. Smoking Cessation Topics Continued (*N*=159)

Discussion

Interpretation of Results

The majority of study participants were 20-22 years, female, White, and had never been married; 17% of all the participants smoked cigarettes; and most smoked 0-1/2 a pack per day. These results support the articles by Solberg et al. (2007) and Green et al. (2007) in which the majority of college-aged students do not smoke.

The majority of the participants who did smoke had succeeded in smoking cessation but then started smoking again and most of the participants had tried to quit smoking multiple times. Also, the top two reasons for wanting to quit were health and money. These questions addressed topics that had not been discussed in previous research but are important in understanding the desire and motivation for this age group to quit smoking. The majority of the participants in this study indicated that they believe they will quit smoking. This finding was different from Steinberg et al. (2004) who indicated that half of their high school population believed they would still be smoking in the future.

The sample revealed that change in habits; self-motivation, and exercise were the methods selected most frequently to be effective in smoking cessation. The participants also indicated that they would change their personal habits and exercise routine in order to become tobacco free. These findings are useful in developing a smoking cessation program and need to be further explored to identify specific interventions that are effective in smoking cessation. Furthermore, the participants indicated that most of the answer choices concerning what to include in a smoking cessation program were important or very important. This indicates that a comprehensive approach that includes physical, psychosocial and medicinal elements is needed in a smoking cessation program for the college age population. Staten & Ridner (2006) also found that college age students (18-24 years old) need a comprehensive smoking cessation program. Sussman et al. (2006) found that including social influence, cognitive-behavioral approach, motivation and medical in their smoking cessation programs proved to be effective in teenagers. This comprehensive approach in Sussman et al. (2006) is similar to the results found in this study other than the age difference. Also, social influence is not needed as much in the college age population as it was in the teenage population in the Sussman et al. (2006) article. Bauld et al. (2009) found that group therapy and medication were effective in smoking cessation programs. This approach was not as comprehensive as the approach that seems to be needed by the participants in this study.

Limitations

There were several limitations to this study. One limitation was the data was self-reported. This allowed the participants to possibly answer untruthfully and therefore skew the data collected. Another limitation was the length of the survey which may have contributed to the low response number (159 participants out of 1,200). Most college students are busy with school and other activities and do not have time to take a twenty-minute survey. A third limitation was the homogeneous sample. UNCW does not have much diversity and therefore the study did not fully represent minority smoking and cessation behaviors.

Recommendation for Future Study

If this study was to be repeated it would be beneficial to survey only participants who are smokers. It would also help to have a more diverse sample for more comparisons. Having a shorter survey that only asked smoking related questions would have made the study better. Also, sending a third reminder email may have resulted in a higher response number.

Recommendation for Practice

After reviewing the results from the survey, it is recommended that healthcare providers determine their client's motivations and readiness to quit smoking. For the college students at UNCW a change in habits, using self-motivation or starting an exercise routine were found to be the most effective ways of quitting. Also, it was found that a comprehensive approach that includes physical, psychosocial and medicinal elements is needed in a smoking cessation program for the college age population.

Education

It is important to educate patients who are smokers about the harmful effects and give them resources to quit smoking. There is a need to educate young people who are at risk in an effort to keep them from starting. Also, it would be beneficial to educate nursing students and students from other healthcare professions on the ways to help patients make the choice to quit smoking.

Conclusion

Smoking is one of the leading causes of morbidity and mortality in the U.S. (CDC, 2011a). This fact makes it important to find ways to help smokers quit and to stay a nonsmoker. For the college age population, it was discovered the majority wanted to quit smoking and most had already tried several times. Health and money were the most popular reasons to want to quit smoking. Change in habits, self-motivation and exercise were the top three answers for the most effective way to quit smoking. The most effective smoking cessation program for this population was one that incorporated physical, psychosocial and medicinal components. Healthcare providers can use this information to better choose a cessation program for their college-age patients and also have insight on the motivations for this population wanting to quit. It is important to: educate patients about the harmful effects of smoking; educate younger populations that are at risk for smoking; and educate students from healthcare professions on how to best help their patients make the choice to quit smoking.

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Appendix

Survey Questions

Question 1

Do you agree to participate in this study? Yes or No

Question 2

What is your age?

Question 3

What is your gender? Male, Female, Prefer not to answer

Question 4

Which race do you identify with most?

a) White
b) Black or African American
c) Asian
d) Native Hawaiian or Other Pacific Islander
e) American Indian or Alaska Native
f) Hispanic or Latino

Question 5

What is your marital status?

a) Married
b) Divorced
c) Widowed
d) Separated
e) Never married
f) Member of an unmarried couple

Question 6

What is your academic classification?

a) Freshman
b) Sophomore
c) Junior
d) Senior
e) Graduate

Question 7

Which college or school are you enrolled in?

a) College of Arts and Science
b) College of Health and Human Services
c) Cameron School of Business
d) Watson School of Education
e) Graduate School
f) Undecided

Question 8

What is your major?

Question 9

What is your current employment status? (Choose One)

a) Less than 10 hours per week
b) 10-19 hours per week
c) 20-29 hours per week
d) 30-39 hours per week
e) 40 or more hours per week
f) Not employed for wages

Question 10

How tall are you without shoes?

Question 11

About how much do you weigh?

Question 12

In reviewing your height and weight, do you consider yourself…

a) Underweight
b) Normal weight
c) Overweight
d) Obese

Question 13

In general, how would you rate your health? (Choose one)

a) Excellent
b) Very good
c) Good
d) Fair
e) Poor

Question 14

Now thinking about your physical health, which includes physical illness, and injury, for how many days during the past 30 days was your physical health NOT good?

Question 15

Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health NOT good?

Question 16

During the past 30 days, for about how many days did poor physical or mental health keep you from doing your usual activities, such as self-care, work or recreation?

Question 17

During the past 30 days, for about how many days have you felt you did not get enough rest or sleep?

Question 18

In general, how satisfied are you with your life? (Choose one)

a) Very satisfied
b) Satisfied
c) Neither satisfied nor dissatisfied
d) Dissatisfied
e) Very dissatisfied

Question 19

How often do you get the social and emotional support you need?

a) Always
b) Usually
c) Sometimes
d) Rarely
e) Never
f) Don't know/Not sure

Question 20

During the past 30 days, for about how many days have you felt sad, blue, or depressed? (If you don't know put N/A)

Question 21

During the past 30 days, for about how many days have you felt worried, tense, stressed, or anxious? (If you don't know put N/A)

Question 22

During the past 30 days, for about how many days have you felt very healthy and full of energy? (If you don't know put N/A)

Question 23

What is the usual means you travel to and from school? (Choose one)

a) Bicycle
b) Walk
c) Skateboard
d) Car
e) Bus

Question 24

During the past week, other than your regular job, did you participate in any mild physical activities or exercises such as calisthenics, golf, gardening, or walking for exercise for at least 10 minutes? (Choose one)

a) Yes
b) No
c) Don't know/Not sure

Question 25

How many days per week do you do these mild activities for at least 10 minutes at a time? (If you don't know put N/A)

Question 26

Now, thinking about the moderate activities you do in a usual week, do you do moderate activities for at least 10 minutes at a time, such as brisk walking, bicycling, vacuuming, gardening, or anything else that causes some increase in breathing or heart rate? (Choose one)

a) Yes
b) No
c) Don't know/Not sure

Question 27

How many days per week do you do these moderate activities for at least 10 minutes at a time? (If you don't know put N/A)

Question 28

Now, thinking about the vigorous activities you do in a usual week, do you do vigorous activities for at least 10 minutes at a time, such as running, aerobics, heavy yard work, or anything else that causes large increases in breathing or heart rate? (Choose one)

a) Yes
b) No
c) Don't know/Not sure

Question 29

How many days per week do you do these vigorous activities for at least 10 minutes at a time? (If you don't know put N/A)

Question 30

Do you smoke cigarettes? Yes or No

Question 31

How many packs per day do you currently smoke? (Choose one)

a) 0-1/2
b) ½-1
c) 1-1 ½
d) 2-3
e) 3+
f) Less than 10 cigarettes a week
g) N/A

Question 32

Have you ever attempted to quit smoking? (Choose one)

a) I have never wanted to quit.
b) I have wanted to quit but have never tried.
c) I have tried to quit, but have not succeeded.
d) I have tried and succeeded, but started smoking again.
e) N/A

Question 33

Do you think you will quit smoking? (Choose one)

a) I will quit.
b) No.
c) I'm a minimal smoker.
d) Not sure.
e) N/A

Question 34

Which of the following topics should be included in a comprehensive, self-help stop smoking program? For each topic state whether it is very unimportant, unimportant, neither unimportant nor important, important, very important or N/A.

1. How to tell whether you're a high or low-risk smoker.
2. How to keep smoking from harming your family and friends.
3. How to get along with nonsmokers.
4. The most effective ways of cutting down.
5. The economic consequences of smoking.
6. Do smokers have special needs for vitamins.
7. How to cut your smoking through stress reduction.
8. What you need to know to get ready to quit.
9. How to stay a nonsmoker after you quit.
10. Dealing with weight gain after you quit.
11. What withdrawal symptoms you might encounter after you quit.
12. The most effective ways of quitting.
13. What smoking does to a smoker's body.

Question 35

Why do you want to quit? (Choose one)

a) Health
b) Money
c) Family
d) Time
e) Smells bad
f) To be smoke-free
g) Social acceptability
h) N/A

Question 36

How many times have you tried to quit in the past? (If you don't smoke put N/A)

Question 37

What worked for you in the past? What helped you with your success? (Check all that apply)

a) Exercise
b) Self motivation
c) Change in habits
d) Patch

e) Gum
f) Nothing
g) Don't know
h) Hypnosis
i) Acupuncture
j) Individual counseling
k) Group counseling
l) Medicine
m) N/A

Question 38

What are you willing to change to become tobacco-free? (Check all that apply)

a) Anything
b) Personal habits
c) Lifestyle
d) Diet
e) Exercise routine
f) N/A

Question 39

What are your major stressors? (Check all that apply)

a) Work
b) Family
c) Money
d) School
e) Own health
f) Time
g) Relationship
h) Family's health
i) None

Question 40

Name two methods you use to cope with stress?

Question 41

What is one thing that UNCW can do to improve the health-related quality of life for students on campus?