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Risk Perceptions of Cardiovascular Disease in College Students

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Risk Perceptions of Cardiovascular Disease in College Students

By

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Abstract

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College students oftentimes underestimate their risk perception of cardiovascular disease (CVD). This study examined undergraduate students' perception of efficacy and perception of threat of cardiovascular disease. A paper survey was distributed to three undergraduate student classes (n = 127; 66.9% female; 33.1% male; 83.5% White/Caucasian; M age = 20.00). This 17-item survey assessed demographics, perception of general health, perception of efficacy of cardiovascular disease, and perception of threat of cardiovascular disease. Analyses included Cronbach's alpha, descriptive, frequencies, and independent sample t-test.

College students have a higher perception of efficacy (M = 24.45 out of 30.00; SD = 4.35) and a lower perception of threat (M = 21.83 out of 30.00; SD = 2.99). This was consistent with previous literature that showed that young adults continue to rate their risk as lower than average. Males were shown to have a mean perception of efficacy of 25.21 (SD = 4.64) and a threat of 22.02 (SD = 2.82) Females were shown to have a mean perception of efficacy of 24.06 (SD = 4.17) and a threat of 21.74 (SD = 3.09). This resulted in no significant difference between males and females in risk perception of heart disease.

The majority of students rated their health as ‘very good’ (54.8%) while 30.2% rated their health as ‘fair,’ 14.3% of students rated their health as ‘excellent’ and 0.8% of students rated their health as ‘poor.’ This is consistent with the results that the students in this study had a higher rate of efficacy of cardiovascular disease.

Students did not perceive their threat of cardiovascular disease as highly as they perceived their efficacy of cardiovascular disease. Additional studies should be done on the risk perception of cardiovascular disease in college students and the risk perception behaviors of males and females. Education is important in preventing cardiovascular disease and learning the risk factors of cardiovascular disease.

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Chapter One: Statement of the Problem

Introduction

Cardiovascular Disease (CVD) is the number one leading cause of death for both men and women (Heron, 2013). In the past 30 years, data has indicated that CVD processes begin in early childhood and are influenced throughout a person's life through genetic factors, environmental factors, and modifiable risk factors (Hayman et al., 2007). CVD is an important health concern that can be prevented, "nearly 2400 Americans die of CVD each day-average of 1 death every 37 seconds" (American Heart Association, 2009, para. 4).

According to the American Heart Association (2009), the contributing modifiable risk factors of CVD are tobacco smoke, high blood cholesterol, high blood pressure, physical inactivity, obesity and overweight, and diabetes mellitus. While there is more awareness of the dangers of cigarette smoking and poor nutrition, the prevalence of heart disease risk factors has increased among young adults since 1988 (Lynch, Liu, Kiefe, & Greenland, 2006).

Statement of the Problem

Since cardiovascular disease (CVD) is a chronic disease, starting prevention early by developing healthy habits has been shown to lead to longevity. The presence of CVD risk factors is shown to increase mortality risk in young adults (Lynch et al., 2006). College is a time when students acquire a vast amount of knowledge to use in the future. This is the time to set a foundation for healthy lifestyle behaviors. "Cardiovascular disease risk factor awareness and knowledge are believed to be prerequisites for adopting

healthy lifestyle behaviors" (Homko et al., 2008, p. 332). There are several risk factors that play a part in CVD. These include high blood pressure, tobacco use, high blood cholesterol, diabetes, obesity, and physical inactivity. According to The American Heart Association (2012), cardiovascular health is defined by seven health metrics; four of these are behaviors including "not smoking, having sufficient physical activity, a healthy diet pattern and normal body weight" (Go et al., 2013, p. 12). The other three factors focus on health factors such as cholesterol, blood pressure and fasting blood glucose, in the absence of drug treatment (Go et al., 2013). Four of the seven health metrics focus on controllable risk behaviors of cardiovascular disease. To prevent CVD, they recommend that these risk behaviors are addressed.

Changing people's behavior has shown to become more challenging, it is important to take into account a person's personal models or beliefs of CVD (Byrne, Walsh, & Murphy, 2005). Cardiovascular disease is preventable and reversible through knowledge and the modification of risk factors, "to adopt a new behavior, people must have knowledge about the condition, perceive themselves as susceptible to the disease, and believe that they are capable of doing something to prevent or cure the disease" (Homko et al., 2008, p. 336). Knowledge alone is not enough to change behavior, but knowledge is believed to be a requirement for change (Homko et al., 2008). Once people are knowledgeable of the disease, they need to be able to perceive themselves as susceptible to the disease. "Individual susceptibility is enhanced by culture, economic factors, and the environment" (Luepker et al., 1994, p. 1383)

Significance of the Study

Research in areas that look at risk perception of cardiovascular disease is very limited. Studies involving college students or young adults and risk perceptions are very hard to find (Green, Grant, Hill, Brizzolara, & Belmont, 2003).

Health educators play an important role in educating populations on health behaviors, risks, and diseases. In order to influence behavior change, health educators should understand "health and social characteristics, beliefs, attitudes, values, skills, and past behaviors" (Glanz, Rimer, & Viswanath, 2008, p. 14).

The results of this research will provide information of the CVD risk perceptions of undergraduate college students. This information may help by identifying gaps in CVD prevention and can help reduce CVD morbidity and mortality by teaching young adults to practice life long heart healthy behaviors. Historically, the role of health educators is to establish and identify the most effective ways to achieve health behavior change (Glanz et al., 2008).

Research Questions

The rate of CVD is increasing in young adults and can be prevented. The best time to teach health education and create a healthy lifestyle would be during college (Lynch et al., 2006).

1. What is the reliability of this survey instrument when testing students' perceived efficacy and perceived threat of cardiovascular disease?
2. What are selected college students' perceived efficacy and perceived threat of cardiovascular disease?

3. What are the differences between males and females in regards to risk perception of cardiovascular disease?
4. What are selected college students' perception of their general health?

Limitations

1. There is not much existing research on undergraduate college students and their risk and perceptions of cardiovascular disease.
2. Excess information on cardiovascular disease risk factors.
3. Participants in my study may not be willing to complete my survey instrument.

Delimitations

Certain boundaries of this research include a limited time frame of three months to complete data collection and analysis. Another difficulty is the size of my study; I will only be surveying a small sample study. Will there be enough data to answer my research questions?

Definition of Terms

a. Atherosclerosis: disease of the heart where plaque builds up inside of the arteries. Atherosclerosis can lead to heart attack, stroke, or death (National Heart, Lung, and Blood Institute, 2011).
b. Danger control processes: Individuals are able to evaluate their susceptibility to a threat. They can recognize the severity of the threat and their perceived self-efficacy (Witte, 1992).

c. Fear appeals: “Persuasive messages designed to scare people by describing the terrible things that will happen to them if they do not do what the message recommends” (Witte, 1992 p. 330).

d. Optimistic bias: “the difference between a person’s expectation and the outcome that follows” (Sharot, 2011, p. 1).

e. Perceived response efficacy: The effectiveness of an individuals’ recommended response (Witte, 1992).

f. Perceived self-efficacy: Ability to perform a recommended response, (Witte, 1992).

g. Severity: How harmful a threat is, the seriousness of that threat and the danger of the threat (Witte, 1998).

h. Susceptibility: How likely is the threat going to happen to a person, (Witte, 1998).

i. Threat: a dangerous or harmful event in the environment that people may or may not be aware of (Witte, 1998).

Assumptions

1. It is assumed that the respondents will be truthful.
2. It is assumed that the measurement instrument will adequately provide students’ risk perception.

Chapter Two: Review of the Literature

Introduction

The purpose of this study was to determine college students' risk perception of cardiovascular disease (CVD). This research focused on students' perceived threat and perceived efficacy that drives their risk perception of CVD.

The review of the literature has been divided into five parts. The first part addresses the Health Belief Model and driven from that model is the Extended Parallel Process Model (EPPM). The second part reviews perceived efficacy and perceived threat related to CVD. The third part focuses on gender differences between males and females and their risk perceptions of cardiovascular disease. The fourth part reviews literature about college students' views on their general health.

Health Belief Model

The Health Belief Model was created in a time when public health needed an explanation as to why people failed to prevent diseases that they were able to detect and reverse (Glanz et al., 2008). The Health Belief Model explains why people do not take action for their health. There are several different concepts that were developed. For example:

> If individuals regarded themselves as susceptible to a condition, believe that condition would have potentially serious consequences, believe that a course of action available to them would be beneficial in reducing either their susceptibility to or severity of the condition, and believe the anticipated benefits of taking action

> outweigh the barriers to (or costs of) action, they are likely to take action that they believe will reduce their risks (Glanz et al., 2008, p. 47).

According to Glanz et al., (2008) there are six structures of the Health Belief Model; perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy. Perceived susceptibility is a person's belief about having cardiovascular disease, students need to think that they will develop CVD if they don't engage in preventative behaviors. Perceived severity addresses how serious a disease is, students would look at what the consequences and severity of CVD are. Perceived benefits: how will this behavior change help someone. Perceived barriers address the negative actions of a health action, this may be a cost or location barrier. Participants often outweigh the barriers and the benefits. Cues of action address the call to change the behavior (Glanz et al., 2008). Lastly, self-efficacy was added; "Bandura distinguished self-efficacy expectations from outcome expectations, defined as a person's estimate that a given behavior will lead to certain outcomes" (Glanz et al., 2008, p. 49). Factors that can alter the Health Belief Model include knowledge and socio-demographic factors (Glanz et al., 2008).

Extended Parallel Process Model

The Extended Parallel Process Model (EPPM) is a model created by Witte (1992). This model shown in Figure 1 was created because there was inconsistent literature on fear appeal theories. The EPPM helps to explain why fear appeals fail, by re-

incorporating fear as a central variable, and exploring the relationship of threat and efficacy (Witte, 1992).

The Extended Parallel Process Model differentiates between danger control and fear control, by depicting the components of threat (severity and susceptibility), and the components of efficacy (response efficacy and self-efficacy) (Witte, 1992). If a person has high perception of threat, then they experience fear. According to the theory, people begin the second stage at this point which has them look at their response efficacy. When they perceive their threat as low, they will not feel the need to use efficacy in response to the fear (Witte, 1992). “When both perceived threat and perceived efficacy are high, danger control; processes are initiated” (Witte, 1992, para. 34). According to the EPPM, when people can perceive the threat and have the appropriate response efficacy, they are able to control their danger to the threat which causes them to take action. Individuals also can have high perceived threat and low efficacy, which means they are responding to the fear. This leads individuals to cope with the fear by engaging in such things as denial but they are still experiencing that motivation that drives behavior (Witte, 1992).

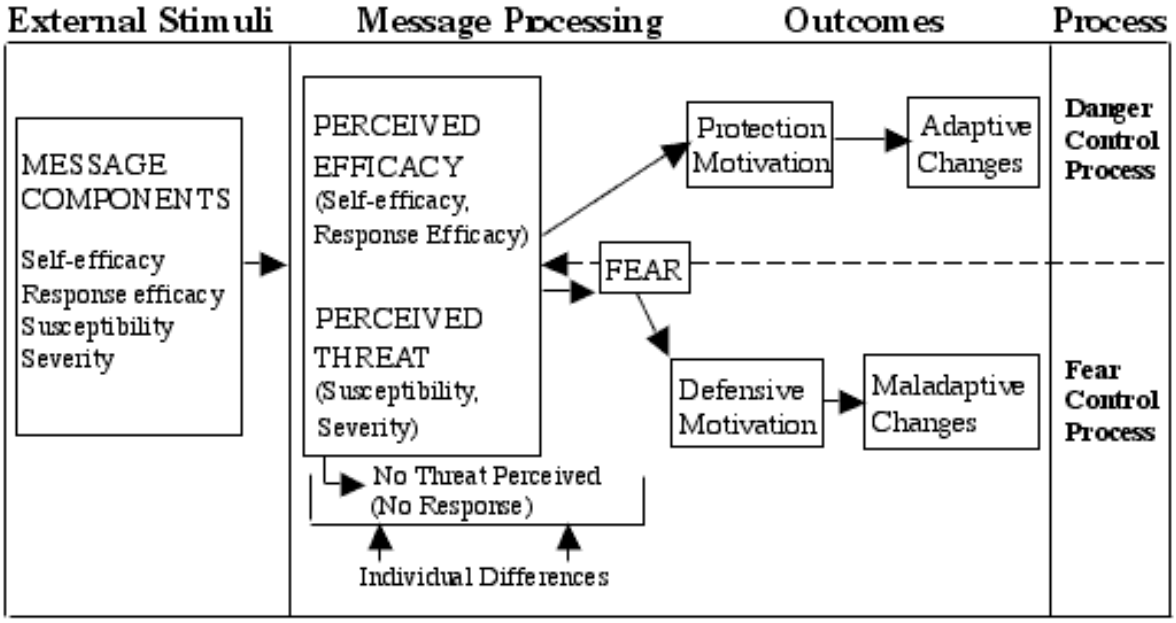

Figure 1. The Extended Parallel Process Model developed by Witte to describe perception of efficacy and perception of threat (Witte, 1992).

Reliability of Survey Instrument

Risk perception of cardiovascular disease can be measured by looking at an individuals perceived threat and their perceived efficacy (Witte, McKeon, Cameron, & Berkowitz, 1995). This scale is driven by the theory of the Extended Parallel Process Model (EPPM) developed by Witte and shown in Figure 1. "According to the EPPM, when people are faced with a health threat they either control the danger (or health threat) or control their fear about the danger" (Witte et al., 1995, p. 1). Variables of the Extended Parallel Process Model are perceived threat and perceived efficacy. High perceived threat and perceived efficacy creates the opportunity for people to control the danger by doing the recommended healthy behaviors. When perceived threat is high but perceived efficacy is low, people are motivated to control their fears by becoming defensive against the recommended response (Witte et al., 1995). "Much research has shown that

perceptions of threat powerfully motivate action. Perceptions of efficacy direct that action into danger control responses (high efficacy perceptions) or fear control responses (low efficacy perceptions)" (Witte et al., p. 1).

The authors of the Risk Behavior Diagnosis Scale (RBDS) also published a study on the development and validation of the RBDS instrument. The authors used this scale to promote condom use on college campuses to decrease the spread of genital warts (Witte, Cameron, McKeon, & Berkowitz, 1996). The instrument finds the discriminating value which is the mathematical formula between people engaging in fear control processes and danger control processes.

(Z for perceived efficacy)
- (Z for perceived threat)
= discriminating value

To use this formula, the scale items are measuring efficacy and threat which become summarized to give a perceived efficacy score and a perceived threat score. According to the formula, the threat sum is subtracted from the efficacy sum to equal a discriminating value (Witte et al., 1996).

While developing the scale, the researchers examined other literature that assessed health risk messages related to perceived threat and perceived efficacy (Witte et al., 1996). The researchers wanted to show three types of validity with this scale.

1. They want to show that the scale is content valid by defining constructs and demonstrating items that represent constructs (Witte et al., 1996).

2. They want to show that the scale is construct valid by showing that the items on the scale are measuring the psychological constructs that they were originally intented to measure (Witte et al., 1996).
3. Lastly, the researchers, "tested the scale for predictive or criterion-related validity by assessing the degree to which the scale items (entered into the discriminating value formula) predicted danger control and fear control responses" (Witte et al., 1996, p. 323).

The authors of this literature found that the Risk Behavior Diagnosis Scale holds content, construct, and predictive validity. They tested this scale to promote behaviors to stop the spread of sexually transmitted diseases (Witte et al., 1996). The authors found that the scale represents the questions that they originally asked of the scale. This scale was created primarily to be used in health clinics that specialized in reproductive health. This scale is used to create appropriate and motivating health messages to fit a specific person and population that took the survey (Witte et al., 1996).

Perceived Efficacy and Perceived Threat of CVD

Green and associates (2003) investigated heart disease risk perception in college men and women. The authors surveyed 470 undergraduate students who answered questions measuring their perceived risks for heart disease and found "68% of the respondents rated their risks as lower or much lower than those of their peers, indicating a clear optimistic bias" (Green et al., 2003, p. 207).

These researchers have found that appropriate lifestyle choices can substantially reduce the risk of coronary heart disease through diet and physical activity (Green et al.,

2003). There is not much research done in the risk perception of heart disease. However this article showed; “risk perception may be related to individuals’ perceptions of their overall general health, the number of risk factors they actually have, and whether or not they perceive themselves susceptible to diseases other than heart disease” (Green et al., 2003, p. 207).

Green and colleagues (2003) surveyed both men and women from two different universities in different majors. The sample was 45.7% male with an average age of 22.2 years (Green et al., 2003). The demographics of the study sample was 86.1% White (Caucasian), 6.4% Hispanic, and 5.5% African American, 2.1% in other categories (Green et al., 2003). Participants answered questions regarding general perceptions of heart disease risks, their exercise habits, their family medical history, and rated their perceptions of the strength of causality between the most recently postulated coronary heart disease risk markers and a heart attack (Green et al., 2003).

The main focus of the research was to quantify college-age students’ perceptions of their own cardiovascular disease risk. Twenty-five percent of participants rated their risk as average compared to students their own age and sex, while 68% rated their risks as either lower or much lower than that of their peers. Other results of the study showed that participants who stated they exercised at least 3 times per week rated their risk of having a heart attack significantly lower than did those who exercised 1 or 2 times per week, or those who exercised less than once per week (Green et al., 2003).

“One of the most important findings from our analysis of the data was that college-aged men and women underestimate their risk for heart attack, and that 68% of

the respondents viewed their risk of heart attack as lower or much lower than that of their peers" (Green et al., 2003, p. 210). The researchers concluded that since younger people underestimate their risks of coronary heart disease, they suggest that it would be important to persuade them to alter their risky health behaviors. The goal is to improve perception to achieve desired results (Green et al., 2003).

Avis, Smith, and McKinlay conducted similar research that investigated what influences perceptions and if they can be changed. "A person's beliefs about his or her perceived susceptibility to a condition or disease figure prominently in models of health behavior such as the Health Belief Model…" (Avis et al., 1989, p. 1608). This study stressed the importance of understanding what determines a person's perception of risk and how to make these perceptions real. Avis and colleagues had a study sample that did not have a history of coronary heart disease, diabetes, or hypertension. Similar to Green and colleagues' (2003), this research had participants compare their own risk of heart attack within the next 10 years to someone of their own age and gender (Avis et al., 1989). Fifty-six percent of the respondents rated their risk as lower than average, 29% rated it about average, and 13% rated their risk as higher than average (Avis et al., 1989). This supports further research that people are more likely to use optimistic bias. The researchers also found that their sample study is not fully aware of risk factors of cardiovascular disease. The results suggested that people do not think about cardiovascular risk indicators in estimating their own overall risk (Avis et al., 1989). Respondents were asked to estimate their risk as above average, average, or below average risk of CVD. A total of 42% underestimated their risk, 18% overestimated their

risk, and 40% were accurate (Avis et al., 1989). Majority of respondents did not change their risk perception. Those who changed the most received the feedback that they were above average risk (Avis et al., 1989). The researchers found that people who perceive their overall health as worse were more likely to rate their risk as higher (Avis et al., 1989). Along with other studies done, this study saw an abundance of optimistic bias in respondents.

Gender and Cardiovascular Disease

Males and females have been shown to have different ideas of risk perception of cardiovascular disease. According to a study done by Homko and colleagues (2008), adults were asked to assess their knowledge and risk perception of CVD. The study was done with 465 adults between the ages of 18-85 years of age. The instrument measured knowledge and risk perception of CVD. Fourty four percent of the participants were female and 56% were male. The study revealed that women perceived their risk significantly higher than men (0.61 vs 0.15; $P < .01$). The study also showed that women were more knowledgable about CVD than men (Homko et al., 2008, p. 334). Awareness of heart disease is increasing in women, in 1997, 30% of women identified heart disease as the leading cause of death in women. In the current survey, 47% of women identified heart disease as the leading cause of death in women (Homko et al., 2008).

Knowledge of Cardiovascular Disease

In just 2005, nearly 2400 Americans died of Cardiovascular Disease (CVD) each day- an average of one death every 37 seconds. Coronary heart disease caused about 1 in 5 deaths in the United States that year (Lloyd-Jones et al., 2009). According to Luepker

and colleagues (1994) “coronary heart disease and stroke remain the leading causes of death and disability in industrialized countries” (Luepker et al., 1994, p. 1383).

Lynch and colleagues (2006) studied cardiovascular disease risk factor knowledge specifically in young adults. “A total of 4,193 healthy persons {55% female, 48% black; mean age= 30 years} …were queried about risk factor knowledge in 1990-1991 and reexamined in 2000-2001” (Lynch et al., 2006, p. 1). Six risk factors were considered in this research including, hypertension, hyperlipidemia, smoking, overweight status, sedentary lifestyle, and unhealthy nutrtion choices. Sixty-five percent of the participants were not able to recognize any of the risk factors and 35% recognized overweight as one of the risk factors of CVD (Lynch et al., 2006). According to Lynch and colleagues (2006), the prevalence of obesity among adults 20-39 years increased significantly from 1988-2000. Ratio for men increased from 14.9% to 23.7% and women from 20.6% to 28.4% (Lynch et al., 2006). The researchers of this study recruited participants from four major US cities, Birmingham, Alabama; Chicago, Illinois; Minneapolis, Minnesota; and Oakland, California. “The findings indicated that knowledge of established modifiable CVD risk factors was very low. On average, participants mentioned approximately two of six risk factors, regardless of race, sex, or level of education” (Lynch et al., 2006, p. 19).

Risk Behaviors

Tobacco use. “Adults aged 18 to 24 years, represent the youngest legal targets for tobacco industry marketing” (Rigotti, Eun Lee, & Wechsler, 2000, p. 699). In this research, 23,751 students were selected to participate. A total of 14,138 students returned questionnaires (60%). The questionnaire focused on students’ use of tobacco, alcohol and

other substances (Rigotti et al., 2000). More than 60% of college students sampled a tobacco product, half have used within the last year and a third have used within the last month (Rigotti et al., 2000). The median age of first cigarette use for both sexes was 14 years old. Although 26.8% of cigar smokers had their first cigar at 19 years or older, suggesting that the majority were in college when they first tried cigars (Rigotti et al., 2000). "Total tobacco use is significantly linked with sex, ethnicity, marital status, other substance use, high-risk behaviors, and certain college lifestyles" (Rigotti et al., 2000, p. 702).

This study shows that tobacco use is more prevalent in college students than it was previously known. It does not just focus on cigarettes; there are other forms of tobacco that students are using. "Tobacco use also appears to be part of a college lifestyle that values social life over educational achievement, athletic participation, or religion" (Rigotti et al., 2000, p. 703).

Nutrition. Nutrition is a significant contributing factor in the cause of cardiovascular disease. Ludwig et al. (1999) focused on Coronary Artery Risk Development in Young Adults (CARDIA), which found healthy nutrition is important to CVD prevention. Poor nutrition can lead to obesity. The rates of obesity and type 2 diabetes have increased dramatically in the past decade (Ludwig et al., 1999). The researchers found that dietary fiber was associated with insulin levels, weight gain, and other risk factors for CVD, coming to the conclusion that fiber may play a greater role in determining CVD risk than total fat or saturated fat intake (Ludwig et al., 1999).

Obesity and elevated blood pressure in childhood and increased body mass index and dyslipidemia as young adults is a significant risk predictor for atherosclerotic cardiovascular disease (Kavey et al., 2003). According to this research, there is now substantial evidence showing that people acquire the risk factors of dietary habits, physical activity behaviors, and tobacco use in childhood (Kavey et al., 2003).

General Health Perception

College students seem to face greater academic and social pressure when entering the college setting. "This time of questioning values, beliefs, and goals may lead to changes in health promotion and health risk behaviors as students' experiment with their new freedom and environment" (Rozmus, Evans, Wysochansky, & Mixon, 2005, p. 25). College students are influenced by social, academic, financial, and personal stresses. Students are more likely to go to the doctor once they are ill instead of adopting healthy behaviors to stay healthy (Rozmus et al., 2005).

In the study done by Rozmus and colleagues (2005), they looked to determine the risk behaviors of college students and how they assess their own health. They had students complete several health behavior surveys. They completed 251 questionnaires with 69% of the respondents being women. The results showed that college students engage in risky behaviors that have serious health concerns (Rozmus et al., 2005). From the study, about one fifth of the participants had a BMI over 26, which is a number that is considered overweight. Students reported that they "believe they are in control of their health and that their personal behavior is responsible for their health" (Rozmus et al., 2005, p. 30). The study found that because of the lifestyle of college students, there is a

need to educate the students on life long implications of risky health behaviors. “The high BMI of such young adults may be an indicator of the need for education on physical activity and nutrition as well as the relationship between obesity and chronic disease” (Rozmus et al., 2005, p. 31).

Summary

In summary, chapter two reviewed the literature on the reliability of the survey instrument, college students’ risk perception of cardiovascular disease, specifically focusing on perceived threat and perceived efficacy. In addition the literature showed the difference between males and females’ risk perception of CVD and also looked at college students’ perception of their general health. The research of this study is discussed in chapter three.

Chapter Three: Research Methodology

Introduction

The objective of this research was to determine selected undergraduate students' risk perception of cardiovascular disease (CVD) and how perceived threat and perceived efficacy drives their behavior and risk perception. In order to find this, the researcher investigated students' perceived general health and demographics. The researcher also surveyed students to assess their perceptions of response efficacy and self-efficacy towards practicing a healthy behavior that prevents cardiovascular disease such as physical activity. Lastly, the survey assessed students' perceived susceptibility to and severity of cardiovascular disease.

Research Design

The study was conducted using a survey research design with the cooperation of a convenience sample of 127 undergraduate students in spring 2014. The survey questions were based upon literature reviewed. The demographic questions were taken from the ACHA-National College Health Assessment II (ACHA, 2012). The second part of the survey was taken with permission from Witte and colleagues who developed the Risk Behavior Diagnosis Scale. Witte, used the Extended Parallel Process Model (EPPM) to develop this scale (Witte et al., 1995).

Sample Selection

The survey was distributed to two Drug Education classes and one Consumer Health class. After the researcher received permission from the IRB (Appendix B) the researcher personally distributed the survey in each class and collected the survey from

the participants. The participants took the survey during their normally scheduled class time. The researcher had permission from all three professors to distribute the survey during class time.

Instrumentation

The demographic questions and the generalized health question that addressed the respondent's health perceptions were taken from the ACHA-NCHA Spring 2012 survey. "The ACHA-NCHA II supports the health of the campus community by fulfilling the academic mission, supporting short and long-term healthy behaviors, and gaining a current profile of health trends within the campus community" (ACHA, 2012, p. 1). The second part of the survey that contains the likert scale was taken with permission from Witte (1995) from Michigan State University who created the Risk Behavior Diagnosis Scale.

ACHA-NCHA II Instrumentation. The ACHA- National College Health Assessment II is a national research survey organized by the American College Health Association to assist college health educators and administrators in collecting data about students' habits, behaviors, and perceptions on health topics (American College Health Association, 2012).

Questions from the ACHA-NCHA II survey were developed through a pilot testing process. A team of college health professionals developed the pilot test. To test reliability and validity, they compared survey items to the National College Health Risk Behavior Survey (American College Health Association, 2012).

The Risk Behavior Diagnosis Scale (RBDS). This scale was originally created to determine which kind of HIV/AIDS prevention message would work for a selected target audience. It is a 12-question scale item that can be altered to ask questions for a different health topic (Witte et al., 1995). The RBDS asks students questions that determine their perceived threat and perceived efficacy. The RBDS is based off of the theory of the Extended Parallel Process Model (EPPM), which was developed by Witte (Witte et al., 1995). According to the EPPM, people become afraid of a serious threat which leads them to take action against that threat, they are either motivated to control their fear about the threat or they are motivated to control the danger (ways to get rid of the threat) (Witte et al., 1996). High perceived efficacy (able to perform a recommended response) and high perceived threat (people believe they are susceptible to that threat) creates danger control responses, which motivates an individual to change their behavior or attitude (Witte et al., 1996). Low efficacy response happens when people try to control their fear by avoiding the health threat. This is known as fear control process, which is addressed in the survey instrument. "Much research has shown that perceptions of threat powerfully motivate action, perceptions of efficacy direct that action into danger control responses (high efficacy perceptions) or fear control responses (low efficacy perceptions)" (Witte et al., 1995, p. 1).

This model determines participants' health score, either it will be a positive health score, which indicates danger control process or a negative health score, which indicates fear control process (Witte et al., 1995). According to Witte and colleagues (1995), the negative scores show that the participant is controlling his or her fear and not danger. The

participant needs health risk messages that increase their perceptions of efficacy. The participants are already aware of the danger, but they do not fear it so they are not willing to make the change to the recommended health behavior. If participants scored a positive score that will determine that participants have high perceptions of efficacy and they need threat to motivate their action. Health risk messages should feature the seriousness of the threat and the participant's susceptibility of the threat (Witte et al., 1995). There is also a chance that participants will have low threat perceptions that are not engaging in either danger control process or fear control process, they are not aware of the health threat or do not see it being a risk to them. The recommended response would be to increase material on seriousness and susceptibility of threat and what recommended responses could be used (Witte et al., 1995).

Data Collection

Permission was obtained in advance from the instructors of three entry-level health courses to visit for the survey collection. The researcher informed the class that the data would remain confidential and that participation was optional. The researcher read the consent form to the students and stated that by them completing the survey they agreed to consent and that they were above the age of 18 years old. The researcher also gave students a copy of the consent form to keep for their resources.

Data Analysis

The research questions are described in Table 1. In order to determine the reliability of the survey instrument when testing students' perceived efficacy and

perceived threat of cardiovascular disease the researcher used Cronbach's alpha analysis. Questions 6-17 pertain to this research question.

The second research question asks what is college students' perceived efficacy and perceived threat of cardiovascular disease. Questions 6-17 will pertain to this research question and will be analyzed using descriptive statistics.

The third research question determines the difference between males and females' risk perception of cardiovascular disease. This is answered by question 2 and questions 6-17 on the survey instrument. The researcher used an independent t-test to compare the gender results.

The fourth research question looks at selected college students' perception of their general health and is answered by question five in the survey instrument. A frequency test will be used to compare the different groups. Questions 1, 3, and 4 are demographic questions that will be analyzed using a frequency test. The results of the analysis are discussed in chapter four.

Table 1

Table of Specifications

Research Question (RQ)	**Survey items used to assess RQ'S**	**Level of Data (Nominal, Ordinal, Interval/Ratio)***	**Analysis needed to assess RQ**
What is the reliability of this survey instrument when testing student's perceived response efficacy and perceived threat of cardiovascular disease?	Questions 6-17	Ordinal	Cronbach's alpha
What are selected college student's perceived response efficacy and perceived threat of cardiovascular disease?	Questions 6-17	Ordinal	Descriptive statistics
What are the differences between males and females in regards to risk perception of cardiovascular disease?	Questions 2	Nominal	Independent t-test
What are selected college student's perception of their general health?	Question 1, 3-5	Ordinal	Frequency statistics

* Indicates level of data for survey items, not RQ's

Chapter Four: Results and Discussion

Introduction

The purpose of this research was to identify perceptions held by college students pertaining to perceived efficacy and perceived threat of cardiovascular disease. The study was done in attempt to answer the following research questions.

1. What is the reliability of this survey instrument when testing students' perceived efficacy and perceived threat of cardiovascular disease?
2. What are selected college students' perceived efficacy and perceived threat of cardiovascular disease?
3. What are the differences between males and females in regards to risk perception of cardiovascular disease?
4. What are selected college students' perception of their general health?

Data for this study was collected in person using a 17-item survey that was developed to assess individual perceptions of cardiovascular disease (CVD). This chapter discusses results obtained from the quantitative analysis of the data. The findings are organized in correspondence to each research question.

Analysis and Interpretation of the Data

The results of the study include data from students enrolled in two drug education classes and one consumer health class. These classes were chosen in part because of the large class size. There was less opportunity for duplicate students taking the survey while visiting these classes. A total of 130 surveys were administered through the process. Six surveys were eliminated because they were incomplete surveys.

Demographic results

Table 2 represents the demographic results of the research study. Participants were undergraduate students both traditional and untraditional students. Table 2 shows 127 undergraduate participants were analyzed for this survey, and of the sample, 66.9% were female (n = 85) and 33.1% were male (n = 42). The mean age of participants was 20 years old (SD = 2.32), with a range of 18-38 years of age. All the students surveyed stated that they were undergraduates, with 33.9% (n = 43) of the participants as college freshman. 37.8% were sophomores (n = 48), 22.8% of participants were juniors (n = 29), and 5.5% were seniors (n = 7). The ethnicity distribution of this sample consisted of 83.5% Caucasian (n =106), 7.1% Black or African American (n = 9), 1.6% Hispanic or Latino/a (n = 2), 5.5% Asian or Pacific Islander (n = 7), .8% Biracial or Multi-racial (n = 1), and 1.6% reported themselves as Other (n = 2).

Table 2

Demographic Characteristics of Students

Characteristics	n	%	M (SD)
Gender	127		
Female	85	66.9%	
Male	42	33.1%	
Age	127		20.00 (2.32)
18	26	20.5%	
19	33	26%	
20	32	25.2%	
21	23	18.1%	
22	4	3.1%	
23	3	2.4%	
24	1	0.8%	
25	2	1.6%	
26	1	0.8%	
27	1	0.8%	
38	1	0.8%	
Year in School	127		
Freshman	43	33.9%	
Sophomore	48	37.8%	
Junior	29	22.8%	
Senior	7	5.5%	

Ethnicity	127	
White/Caucasian	106	83.5%
Black or African American	9	7.1%
Hispanic or Latino/a	2	1.6%
Asian or Pacific Islander	7	5.5%
American Indian or Alaskan	0	0.0%
Biracial or Multi-racial	1	0.8%
Other	2	1.6%

Findings Related to Research Questions

The following section describes the results of the study related to the research questions.

Research Question 1: What is the reliability of this survey instrument when testing students' perceived efficacy and perceived threat of cardiovascular disease? Participants were asked to answer a likert scale that was discussed in the previous chapter. The answers range from strongly disagree (1) to strongly agree (5). The first six questions of the scale measured participants' perceived efficacy of exercising to prevent heart disease. The last six questions measured the participants' susceptibility and severity of heart disease.

When measuring the reliability of the instrument, the researcher analyzed the data by using Cronbach's Alpha. Table 3 represents the Cronbach's Alpha score of both sections of the likert scale in the survey. The first six items had a resulting score of .84,

which is considered to be within the acceptable range of reliability (Tavakol & Dennick, 2011).

The second half of the likert scale measured perceived threat, which looks at severity and susceptibility. As shown in Table 3, the second six items had a resulting score of 0.59, which is not acceptable range of reliability.

Table 3

Cronbach's Alpha: Testing Reliability

Questions	Cronbach's Alpha
Efficacy: Questions 6-11	0.84
Severity & Susceptibility (threat): Questions 12-17	0.59

Research Question 2: What are selected college students' perceived efficacy and perceived threat of cardiovascular disease? Findings regarding college students' perceived efficacy and perceived threat of cardiovascular disease are represented in Table 4. Participants were asked to answer questions on a likert scale that ranged from 'Strongly Disagree' to 'Strongly Agree.' Two halves separated perceived efficacy and perceived threat. Questions 6-11 addressed perceived efficacy and questions 12-17 measured perceived threat.

Descriptive statistics were calculated to find students' perceived efficacy and perceived threat. The minimum score possible was 6.00 and the maximum score possible

was 30.00. College students (*n* = 125) on average, perceived their efficacy of cardiovascular disease with a mean score of 24.45 (SD = 4.35). Students on average have a lower perception of their threat of cardiovascular disease at a mean of 21.83 (SD = 2.99). When subtracting threat from efficacy (efficacy- threat = scalescore) we have a positive number of 2.61 (SD = 4.75).

Table 4

Students' Perceived Efficacy and Perceived Threat

Perceptions	n	Minimum	Maximum	M (SD)
Efficacy	125	9.00	30.00	24.45 (4.35)
Threat	127	12.00	30.00	21.83 (2.99)
Scale Score	125	-10.00	15.00	2.61 (4.75)

Research Question 3: What are the differences between males and females in regard to risk perception of cardiovascular disease? Independent sample t-tests were used to compare means of males and females' perceptions regarding risk of cardiovascular disease. The means, standard deviations, and t-values from these analyses are discussed in Table 5.

There were no significant differences between males [t (123) = -1.41, p = 0.16] and females [t (125) = -0.49, p = 0.62] when looking at both perceived efficacy and

perceived threat of cardiovascular disease. Males' perceived efficacy of heart disease had a mean score of 25.21 (SD = 4.64). Males' also had a mean perceived threat of 22.02 (SD = 2.82). Females' perceived efficacy was a mean score of 24.06 (SD = 4.17) and a mean score for perceived threat was 21.74 (SD = 3.09).

Table 5

Independent-sample t-tests Comparing Risk Perception of Cardiovascular Disease by Gender

Perceived Risk	Female	Male	t
Efficacy	24.06 (4.17)	25.21 (4.64)	-1.41
Threat	21.74 (3.09)	22.02 (2.82)	-0.49
Scalescore (eff-threat)	2.31 (4.69)	3.19 (4.86)	-0.98

Research Question 4: What are selected college students' perception of their general health? Findings regarding college students' perception of their general health are represented in Table 6. Participants were asked to select an answer that best describes their general health: 1.) Excellent; 2.) Very Good; 3.) Fair; 4.) Poor; and 5.) Don't know.

Frequency statistics were calculated for the following question demonstrating the participants (n = 126) 14.3% perceived their health as excellent (n = 18). While 54.8% (n

= 69) of students described their health as very good, 30.2% (*n* = 38) students described their health as fair, and 0.8% (*n* = 1) student described their health as poor.

Table 6

General Health of the Students

Perception	n	%
Excellent	18	14.3%
Very Good	69	54.8%
Fair	38	30.2%
Poor	1	0.8%
Unknown	0	0.0%

Summary

The focus of this study was to identify the perceptions of risk held by college students pertaining to cardiovascular disease. This research looked at the reliability of the survey instrument when measuring risk of cardiovascular disease. The study also looked at what students' perceived efficacy and perceived threat of cardiovascular disease. In addition, this study examined the differences between males and females in regards to risk perception of cardiovascular disease. Lastly, this research looked at college students' perception of their health in general.

When finding the reliability of the survey instrument, the instrument was divided into two halves. The first half measured perceived efficacy with a Cronbach's alpha of 0.837 signifying acceptable reliability. The second half of the instrument measured perceived threat of participants, the Cronbach's alpha measured at 0.594, which is under the measure of acceptable reliability.

Participants had a higher perception of efficacy in regards of cardiovascular disease with a mean score at 24.45 (SD = 4.35). The perceived threat of cardiovascular disease measure slightly lower in students at 21.83 (SD = 2.99). In regards to the difference between females and males' risk perception of cardiovascular disease, there was no significant difference. Females had a 24.06 mean rate of efficacy (SD = 4.17) compared to males at 25.21 (SD = 4.64) perception of efficacy. When looking at perception of threat of cardiovascular disease, females had a mean perception of threat at 21.74 (SD =3.09) compared to males 22.02 (SD =2.82).

The majority of participants described their general health as very good (54.8%) compared to excellent (14.3%), fair (30.2%) and poor (0.8%). All of the participants were aware of their general health and did not choose to select that they do not know what their general health is. The summary, conclusions, and future recommendations are provided in chapter five.

Chapter Five: Summary, Conclusions, and Future Recommendations

Summary

Cardiovascular disease (CVD) is the number one leading cause of death for both men and women (Heron, 2013). While there is more awareness of the dangers of cigarette smoking and poor nutrition, the prevalence of heart disease risk factors has continued to increase among young adults since 1988 (Lynch et al., 2006).

College is a time when students acquire a vast amount of knowledge to use in the future. This is a time to set a foundation for healthy lifestyle behaviors. "Cardiovascular disease risk factor awareness and knowledge are believed to be prerequisites for adopting healthy lifestyle behaviors" (Homko et al., 2008, p. 332). Cardiovascular disease is preventable and reversible through knowledge and the modification of risk factors. "To adopt a new behavior, people must have knowledge about the condition, perceive themselves as susceptible to the disease, and believe that they are capable of doing something to prevent or cure the disease" (Homko et al., 2008, p. 336).

In this study, consisting of both males and females, primarily of Caucasian students, participants were asked to answer questions to rate their perception of risk of cardiovascular disease. The instrument focused on measuring students' perceived efficacy and perceived threat (susceptibility and severity). Students were also asked to describe their general health perception to help compare their perception of their overall health to their perception of having CVD. The study also looked at females and males separately to describe their perception of risk of having CVD.

This survey instrument was developed by Witte and was used specifically to look at perceived efficacy and perceived threat of chosen health topics. The instrument finds the discriminating value, which is the mathematical formula between people engaging in fear control processes and danger control processes (Witte et al., 1996).

The reliability was tested using Cronbach's Alpha. The reliability was focused on two parts of the survey instrument. The first part that measured perceived response efficacy and self-efficacy of CVD resulted in a Cronbach's alpha of 0.84, which shows that it has acceptable reliability seeing as how it is over a 0.70 (Tavakol et al., 2011). The second half measured perceived threat while looking at perceived susceptibility and perceived severity. The Cronbach's alpha for those questions measured to 0.59, which is below acceptable range of reliability. By looking through Witte's research, the Cronbach's alpha was low for perceived threat because perceived susceptibility and severity are very independent variables, it may have dropped the score by having them together. "The confirmatory factor analysis revealed that the overall threat scale was unidimensional, indicating that all of the items measured the same construct" (Witte et al., 1996, p. 328). The scale has proven to have an adequate assessment of perceived threat through the validation of Witte's work.

It is important to understand what determines a person's perception of risk and how to make the perceptions real. "If people cannot perceive themselves as vulnerable to a disease, they are less likely to adopt recommended behaviors" (Avis et al., 1989, p. 1608). From the literature, it has shown that college students continuously rate their risk as lower than average compared to their peers which results in them using optimistic bias.

In this research, it has shown by looking at the averages of the participants in the study, the participants have high perceptions of efficacy, but are not necessarily aware of being susceptible to a certain threat or do they understand the seriousness of that threat affecting them. The results show that perceived threat is low among participants. By using the results the way that Witte did in the Risk Behavior Diagnosis Scale, the researcher determined the perceived efficacy of the participants (M = 24.45; SD = 4.35) and the perceived threat among participants (M = 21.83; SD = 2.99). Using Witte's formula the researcher found a discriminating value (Witte et al., 1996).

24.45 (Perceived efficacy)
- 21.83 (Perceived threat)
= 2.62 (Discriminating value)

This score elicits a positive score, which according to Witte's Risk Behavior Diagnosis Scale, the average perception of these participants have a higher rate of perceptions of efficacy but do not perceive the threat to be as severe.

According to previous literature, it has been shown that women perceive their risk significantly higher than men (0.61 vs 0.15; $P < 0.01$) (Homko, et al., 2008). In this research the participants were asked to select female or male when completing their survey. There was shown to be no significant difference between females and males when looking at both perceived efficacy and perceived threat of CVD. Males' perceived efficacy of heart disease was a mean of 25.21 (SD = 4.64) while females had a mean of 24.06 (SD = 4.17). Males' perception of threat was a mean of 22.02 (SD = 2.85) and females had a mean of 21.74 (SD = 3.09). The research collected seems to have a different conclusion than the previous literature. This may be a change in education or

maybe females are preoccupied with thinking of other risks to their health instead of risks of CVD.

Students were asked of their general perception of their health not focused on cardiovascular disease. College students seem to face greater academic and social pressure when entering the college setting. “This time of questioning values, beliefs, and goals may lead to changes in health promotion and health risk behaviors as students experiment with their new freedom and environment” (Rozmus et al., 2005, p. 25). In previous research, it has been reported that college students believe they are in control of their health and that their personal behavior is responsible for their health. (Rozmus et al., 2005). In this research, participants were asked to describe how they felt their general health was: excellent, very good, fair, poor, or unknown. The majority of participants rated their health as ‘very good’ (54.8%) whereas 30.2% rated their health as ‘fair,’ 14.3% of students rated their health as excellent and one student (0.8%) rated their health as ‘poor.’ These findings seem to be consistent with findings from Rozmus and colleagues (2005) who found that young adults believe they are in control of their health and still have a high need for education.

Conclusions

In this study, students did not perceive their threat of cardiovascular disease. They had lower rates of perception of severity and susceptibility than perceived efficacy. According to Witte (1995) the population that participated in this research are people in danger control, which means they have “sufficiently high perceptions of efficacy to counteract their threat perceptions” (Witte et al., 1995, p. 5). For participants in danger

control (positive score), they need to be made aware of their susceptibility and severity of CVD in order for them to recognize that CVD can affect them. This data was consistent with research done by Green and colleagues (2003), that found 68% of the respondents rated their risks as lower or much lower than those of their peers, indicating a clear optimistic bias.

It was discovered in this research that the majority of participants rated their health as 'very good' (54.8%) and 'fair' (30.2%). These findings are consistent with the fact that the participants in this study had a higher rate of perceived efficacy but had a lower rate of perceived threat. "Risk perception may be related to individuals' perceptions of their overall general health, the number of risk factors they actually have, and whether or not they perceive themselves as susceptible to diseases other than heart disease" (Green et al., 2003).

Overall the college students that participated in this research seemed to be consistent with other findings of perception of risk of cardiovascular disease. There is very little research done on perception of efficacy and threat perception of CVD. Given young adults rate their CVD risk as lower than average, it is important to teach young adults to change their risky health behavior.

When looking at gender, the findings were not as consistent with previous research. In a study done by Homko and colleagues (2008), it was found that women perceive their risk of heart disease as slightly higher than men's perception of heart disease. Women were also shown to be more knowledgeable of the risk factors of CVD than men (Homko et al., 2008). Results done in this research study showed that there was

no significant difference in perception of both efficacy and threat of cardiovascular. This may be because there was a larger sample size of women than men, but there has been limited research to show that men have a higher risk perception of CVD and risk factors.

When discovering the fact that the participants had an overall higher rate of perceived efficacy than perceived threat of cardiovascular disease, the researcher chose to look at the specific questions that were asked in the survey instrument. Questions that addressed perceived efficacy specifically asked participants what they do to prevent cardiovascular disease and if they know which certain behaviors prevent CVD. The survey instrument is displayed in appendix A for reference if needed. The questions that addressed perceived efficacy are mainly questions that the participants can control themselves such as "I am able to exercise 30 minutes a day to prevent getting heart disease" and "I can easily exercise for 30 minutes a day to prevent heart disease." These questions and behaviors are things that are easier to accomplish for students and they may already participate in these healthy behavior for other benefits as well. The questions on perceived threat focus on asking students how susceptible or serious do you believe CVD is to you. This may be consistent with previous research that found their participants are not fully aware of risk factors of CVD; they suggest that people do not think about CVD risk indicators in estimating their overall risk (Avis et al., 1989).

Future Recommendations

Future recommendations for health educators and future research are in the following section.

Recommendations for health educators. The perception of susceptibility and severity of cardiovascular disease (CVD) has proven to be low. There is a higher rate of perception of efficacy so there should be more focus on making students aware of being susceptible to CVD and the seriousness of the disease. Educating students on this topic as early as elementary and middle school can be very helpful in reducing the risky behaviors that cause CVD such as physical inactivity, tobacco use, and poor nutrition. These are behaviors that should be a lifelong skill for children to learn early on. It may be helpful as well to educate adults and parents of risk behaviors of CVD. Early education may be helpful in preventing CVD. Even if it is a disease that is not prevalent in younger adults, they still need to be aware and knowledgeable in prevention of the disease. They still need to learn how to establish a healthy lifestyle.

Health educators must reinforce the fact that tobacco use does not just cause cancer; it can cause many other diseases such as cardiovascular disease. They need to promote that healthy nutrition and physical activity can prevent CVD as well as prevent obesity and diabetes. Cardiovascular disease is the number one cause of death for both males and females. The rates of cardiovascular disease, obesity and diabetes continue to rise in young adults. There needs to be more focus on prevention in children and adolescents to help prevent more people from cardiovascular disease.

Recommendations for future research. Modifying the format of the survey instrument may be helpful in finding more results related to perceptions of cardiovascular disease (CVD). There could be more focus on other risk behaviors that cause CVD. There is very limited research of the risk perceptions of CVD in young adults. Any type of

research asking young adults how they perceive their risk of CVD and the risk factors would be beneficial for future research. There should be more research on the knowledge of risk behaviors that cause cardiovascular disease. Education is the key to prevention of cardiovascular disease and educating people leads to knowledge and prevention.

Further research would be important to focus on the difference in risk perception of CVD between males and females. Literature shows that females have higher risk perception of CVD and health behaviors overall, but in this research there was no significant difference. It would be interesting to see why males or females have higher risk perception and what drives the differences. More research on what males and females do to prevent CVD would be informational as well. More in-depth research can be made by looking at income levels and different ethnicities to study what the behaviors and perceptions are of people in that population.

There is an assumption from results of this study that perceptions may have an impact on personal behavior. Further research on the effect of perceptions on personal behavior can be helpful. It would be interesting to see what type of perceptions drive specific behaviors that prevent cardiovascular disease. This topic is very limited in research; there is a significant opportunity for further research.

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Appendices

Appendix A

Print Copy of Student Survey

SURVEY CONSENT

You are invited to participate in a research study supervised by Dr. Marge Murray-Davis on college students' risk perception of cardiovascular disease. This survey should take about 5 to 10 minutes to complete. The goal of this survey is to understand how perceived threat affects risk perception of cardiovascular disease, you will be asked to answer questions about that topic. If you have any questions about the research, please contact Dr. Marge Murray-Davis at marge.murray-davis@mnsu.edu.

Participation is voluntary. You have the right to stop taking the survey at any time. Participation or nonparticipation will not impact your relationship with Minnesota State University, Mankato. If you have questions about the treatment of human participants and Minnesota State University, Mankato, contact the IRB Administrator, Dr. Barry Ries, at 507-389-2321 or barry.ries@mnsu.edu.

Responses will be anonymous. However, there is always the risk of compromising privacy, confidentiality, and/or anonymity when taking surveys in the classroom. None of your answers will be released and no names will be recorded. The risks of participating are no more than are experienced in daily life.

There are no direct benefits to you as a result of participation in this research.

Returning the completed survey will indicate your informed consent to participate and indicate your assurance that you are at least 18 years of age.

Please keep a copy of this page for your future reference.

MSU IRBNet ID# 571989

Date of MSU IRB approval: 2/19/14

Survey of risk perception of heart disease
Please take your time to answer the questions honestly and completely.

Part One: Demographics

1. What is your age? _____

2. What is your gender?

____ Female

____ Male

3. What is your year in school?

___ Freshman

___ Sophomore

___ Junior

___ Senior

4 What is your ethnicity?

___ White/Caucasian

___ Black or African American

___ Hispanic or Latino/a

___ Asian or Pacific Islander

___ American Indian or Alaskan

___ Biracial or Multi-racial

___ Other

5. How would you describe your general health?

___ Excellent

___ Very good

___ Fair

___ Poor

___ Don't know

Part Two: Risk behavior diagnosis scale of heart disease
Circle the answer that best represents your level of agreement of each statement.

	Strongly Disagree				**Strongly Agree**
6. Exercising for 30 minutes a day is effective in preventing heart disease.	1	2	3	4	5
7. Exercising for 30 minutes a day works in preventing heart disease.	1	2	3	4	5
8. If I exercise for 30 minutes a day, I am less likely to get heart disease.	1	2	3	4	5
9. I am able to exercise 30 minutes a day to prevent getting heart disease.	1	2	3	4	5
10. I have the time to exercise for 30 minutes a day to prevent heart disease.	1	2	3	4	5
11. I can easily exercise for 30 minutes a day to prevent heart disease.	1	2	3	4	5
12. I believe that heart disease is severe.	1	2	3	4	5
13. I believe that heart disease has serious negative consequences.	1	2	3	4	5
14. I believe that heart disease is extremely harmful.	1	2	3	4	5
15. It is likely that I will get heart disease.	1	2	3	4	5
16. I am at risk for getting heart disease.	1	2	3	4	5
17. It is possible that I will get heart disease.	1	2	3	4	5

Thank you for completing the survey!

Appendix B

Institutional Review Board Letter of Approval

February 19, 2014

Dear Marge Murray-Davis:

Re: IRB Proposal entitled "[571989-2] Risk perceptions of CVD"
Review Level: Level *[I]*

After a phone call with you, to confirmed that the researcher was the student co-Pi, your IRB Proposal has been approved as of February 19, 2014. On behalf of the Minnesota State University, Mankato IRB, I wish you success with your study. Remember that you must seek approval for any changes in your study, its design, funding source, consent process, or any part of the study that may affect participants in the study. Should any of the participants in your study suffer a research-related injury or other harmful outcome, you are required to report them to the IRB as soon as possible.

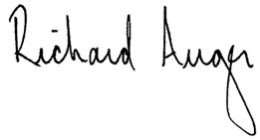
When you complete your data collection or should you discontinue your study, you must notify the IRB. Please include your log number with any correspondence with the IRB.

This approval is considered final when the full IRB approves the monthly decisions and active log. The IRB reserves the right to review each study as part of its continuing review process. Continuing reviews are usually scheduled. However, under some conditions the IRB may choose not to announce a continuing review. If you have any questions, feel free to contact me at irb@mnsu.edu or 507-389-5102.

Cordially,

Mary Hadley, Ph.D.
IRB Coordinator

Sarah Sifers, Ph.D.
IRB Co-Chair



Richard Auger, Ph.D.
IRB Co-Chair

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Minnesota State University, Mankato IRB's records.

Appendix C

Permission to use survey instrument

Permission was requested of Dr. Kim Witte from Michigan State University.

Friday, March 21, 2014 at 7:22:06 PM Central Daylight Time

Subject: Re: Permission to use the Risk Behavior Diagnosis Scale
Date: Monday, January 27, 2014 at 6:52:06 AM Central Standard Time
From: Kimm X Jayne
To: Kolas, Antonia Rose Nicole

Dear Antonia,

Yes, please feel free to use the RBDS for your thesis. Please be sure to modify the questions appropriately to reflect your topic and population (severity - what about the defined threat is serious or severe? susc - is the target population really at risk? likely to experience the threat? response efficacy - does the recommended response work? self-efficacy - is the population easily and readily able to do the recommended response?)

Good luck,

Kim Witte
(married name is Kimm X Jayne)

On 1/26/2014 3:46 PM, Kolas, Antonia Rose Nicole wrote:

> Hi Dr. Witte,
> My name is Antonia Kolas, I am a Graduate Student at Minnesota State University, Mankato. I am currently writing my thesis on the risk perceptions of college students in regards to Cardiovascular Disease. I am looking to explore how perceived susceptibility and perceived seriousness of students here leads to perceived threat. I want to know what drives the students. I am looking for permission to use your Risk Behavior Diagnosis Scale as part of my survey instrument for my Thesis. I would be very grateful. Please let me know if you have any questions.
>
> Thank you,
> Antonia Kolas
> Graduate Assistant
> Student Health Services/Health Education
> antonia.kolas@mnsu.edu
> 100 Carkoski Commons
> Minnesota State University Mankato
> Mankato, MN 56001
> 507-389-5689
>
> www.mnsu.edu/shs
> 'like' us on facebook:
> www.facebook.com/MSUStudentHealthServices

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