

ABSTRACT

YOUNG WOMEN'S KNOWLEDGE AND BELIEFS ABOUT CORONARY HEART DISEASE

By Kimberly R. Brown

Coronary heart disease (CHD) is the number one killer of women in the United States today, affecting nearly one out of every two women at some point in their lives. Studies show that women lack a general knowledge of heart disease and underestimate their personal risks for the development of this disease. Primary prevention strategies via healthy lifestyle modifications are the most effective way to prevent heart disease; however, these strategies are not being discussed with women in the primary care setting. As is consistent with the Health Belief Model, which guided this study, this lack of knowledge about heart disease can indicate that women are unaware of their risks and will thus perceive it as less of a threat than it truly is. This, in turn, will reduce their likelihood of partaking in healthy lifestyle modifications to reduce their risks. Given this, it is especially important for providers to discuss these strategies with younger women to prevent the future development of heart disease risk factors. Unfortunately, studies specifically targeting young women's knowledge and perceptions of heart disease are lacking.

This study assessed young women's (age 18 to 25 years) knowledge and perceptions about heart disease using a convenience sample of women from a small, Midwest university via the distribution and collection of surveys during an "Active Lifestyles" course offered at the college. This research found that over 77% of those surveyed had never discussed CHD with their primary care provider. Further, these women did not perceive themselves to be at a great risk for CHD and did not see the disease as a threat. In addition, the average score on the CHD knowledge test was only 68.5%, indicating an overall lack of knowledge. These results highlight the extreme need for primary care providers to provide continued CHD education to young women at each and every available opportunity in an effort to reduce their future risk of this deadly disease.

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CORONARY HEART DISEASE

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Chapter I

Introduction

Background, Current Literature Analysis, and Significance for Advanced Practice Nursing

Coronary heart disease (CHD) is the number one killer of women in the United States today. Beginning at age 40, the lifetime risk of cardiovascular disease (CVD) for all women is more than one in two (American Heart Association, 2010). Further, based on recent mortality data, CVD caused approximately one female death every minute, equating to 432,709 lives, in 2006. This totals more female lives lost due to CVD than cancer, chronic lower respiratory diseases, Alzheimer's disease, and accidents combined (American Heart Association, 2010).

The total estimated cost of CVD in 2010 was expected to reach \$503.2 billion (American Heart Association, 2010). With the current aging population, this number can only be expected to rise exponentially. Given these dismal statistics, it is obvious that CHD is a major health problem facing the United States today, and drastic measures must be taken to reduce the morbidity and mortality of this national health epidemic.

Interestingly, with the proper healthy lifestyle, coronary heart disease is largely preventable (Collins, Dantico, Shearer, & Mossman, 2004, Stampfer, Hu, Manson, Rimm, & Willett, 2000). Modifiable risk factors for CHD include smoking, diabetes, hypertension, elevated lipid levels, obesity, and sedentary lifestyle. Non-modifiable risk factors include age, gender, family history, and race (Birchfield, 2003). Women also have risk factors that are specific to them, including use of oral contraceptives, menopause, and hormone replacement therapy (Anderson & Kessenich, 2001). For

optimal risk reduction, the following are recommended for women: (a) complete cessation of smoking and avoidance of passive smoke, (b) 30 or more minutes of moderate physical activity on most or all days of the week, (c) a diet low in fat and cholesterol, (d) a body mass index (BMI) between 18.5 and 24.9, (e) a waist circumference less than 35 inches, (f) a blood pressure of less than 140/90, (g) an LDL below 100mg/dl, (h) use of hormone replacement therapy only if benefits outweigh the risks, (i) a pre-prandial blood glucose between 80 and 120 and a HbA1c of less than 7%, and (j) using the lowest effective dose of oral contraceptive (Anderson & Kessenich, 2001). As Stempfler et al. (2000) discovered with the Nurses' Health Study cohort of 84,129 women, women who (a) did not smoke tobacco; (b) had a BMI of less than 25; (c) consumed at least half an alcoholic beverage per day; (d) engaged in at least moderate physical activity for at least 30 minutes per day; (e) consumed a diet high in fiber, omega 3 fatty acids and folate, and low in saturated and trans fat, with a low glycemic load, had a significantly low relative risk of coronary events. Unfortunately, women who met each and every one of these criteria accounted for less than 3% of his studied population. Additionally, although CHD manifests in the later decades of life, the pathogenesis of this disease begins early, which highlights the critical need for proper education and primary prevention strategies to be introduced at a young age (Collins et al., 2004). It is especially important to emphasize heart healthy behaviors in young adults given that high risk behaviors, such as excessive alcohol intake, smoking, and unhealthy diet, are widespread in the college environment (Collins et al., 2004).

There are three areas of great concern in relation to women and heart disease. These include (a) knowledge level, (b) perceived risk, and (c) lack of communication with

healthcare providers. Each of these areas will be discussed further in the following paragraphs.

The issue of greatest concern in regards to women and heart disease is an overall lack of knowledge. Many studies have highlighted the extensive lack of knowledge of CHD that women, in general, display (Christian, Rosamond, White, & Mosca, 2007; Jensen & Moser, 2008; Marcuccio, Loving, Bennett, & Hayes, 2002; Mosca, Ferris, Fabunmi, & Robertson, 2003; Mosca et al., 2006; Thanavaro, Moore, Anthony, Narsavage, & Delicath, 2006; Thanavaro, Thanavaro, & Delicath, 2010; Vale, 2000). This lack of knowledge of CHD may result in a lack of motivation for altering known risk factors (Thanavaro et al., 2006).

Specifically, many women incorrectly believe that cancer, breast cancer in particular, is their greatest health risk (Christian et al., 2007; Collins et al., 2004; Hart, 2005; Mosca et al., 2003; Mosca et al., 2006; Munoz et al., 2010; Wendt, 2005). Further, many women are unable to properly identify major risk factors for heart disease (Jensen & Moser, 2008; Mosca et al., 2003; Mosca et al., 2006; Oliver-McNeil & Artinian, 2002; Thanavaro et al., 2006). Not surprisingly, this lack of knowledge is inflated to an even greater extent in the minority population (Christian et al., 2007; Collins et al., 2004; Mosca et al., 2003; Mosca et al., 2006). There is limited research specifically documenting young women's knowledge of coronary heart disease. Only one study, Munoz et al. (2010), was found to have studied young female's knowledge of CHD, and a significant knowledge deficit was found. In addition, Vale (2000) studied young adults age 18 to 21 years, and Collins (2004) studied a population of college students collectively, and both studies found a considerable lack of knowledge in the young adult population in relation to CHD, as well. Thus, in an effort to contribute to this area of

research, the author of this study surveyed a specific population consisting solely of young women via a convenience sample of young college women.

It is important to note, however, that women's knowledge of CHD has increased somewhat over the last decade. In 2006, 55% of women surveyed correctly identified CHD as the leading cause of death, compared to only 30% in 1997 (Mosca et al., 2006). Further, Christian et al. (2007) found that 21% of women cited heart disease as the greatest health problem facing women, which was up significantly from 13% in 2003 and 7% in 1997. These improvements give credit to the extensive public awareness campaigns that have been implemented in the United States, such as the American Heart Association's Red Dress campaign.

A second area of great concern in regards to women and heart disease is that of women's lack of perceived personal risk. Studies consistently show that women frequently either underestimate their risk of getting coronary heart disease or are unaware of their personal risk factors for the disease (Christian, Mochari, & Mosca, 2005; Green, Grant, Hill, Brizzolara, & Belmont, 2003; Marcuccio et al., 2002; Oliver-McNeil & Artinian, 2002; Wendt, 2005). Specifically, Oliver-McNeil & Artinian (2002) found that many women were unable to correctly list the risk factors that were documented in their own personal medical records. Further, participants in their study who had a family history of CHD identified other causes for their disease, and all of the women who either smoked or had a history of smoking did not perceive smoking as a cardiovascular risk factor. Christian et al. (2005) found similar results. Again, data are limited on young women in particular. Wendt (2005) studied college women and Green et al. (2003) studied both male and female college students. Green et al. (2003) found that college students, in general, underestimate their personal risk of having a heart

attack, and 68% perceived their risk to be lower or much lower than that of their peers. A second important finding of this research was that college students did not typically acknowledge commonly accepted risk factors, given that a significant number did not identify diabetes, family history, and high cholesterol as cardiac risk factors. Wendt (2005) found similar results in her study of female undergraduates, in that participants were unrealistically optimistic regarding their personal risk of CHD. Further, Kasper, Garber, and Walsdorf (2007), who studied college females, found similar results in that those surveyed did not perceive themselves to be at great risk for CHD.

Given these worrisome conclusions, it is imperative that educational efforts are implemented to increase all women's knowledge of coronary heart disease. If women are not aware of the dangers of this deadly disease and lack the knowledge of their personal risk factors, they will not perceive themselves to be at risk and will be unlikely to modify unhealthy lifestyles. Given that the college years are a time of great adaptation, it is an ideal time to educate these young individuals on health promotion behaviors and the long-term effects that risk-reducing, healthy lifestyle modifications can have on their lives (Brown et al., 2005).

The third issue in regards to women and heart disease is the lack of communication between women and their primary care providers. Studies show that neither physicians nor women are initiating conversations about coronary heart disease, including discussions on modification of risk factors or prevention strategies (Christian et al., 2007; Collins et al., 2004; Marcuccio et al., 2002; Mosca et al., 2003; Mosca et al., 2006; Munoz et al., 2010). One study shows that although 86% of women reported seeing their physician regularly, and 82% felt comfortable discussing heart disease with their physician, almost 60% reported they had never received information on risk factor

modification (Marcuccio et al., 2002). Other studies found similar results in that only 38% of women reported having actually discussed heart disease with their physician (Mosca et al., 2003), and the main reason they did not discuss it was because their healthcare professional did not bring it up (Mosca et al., 2006). Further, Marcuccio et al. (2003) found that more than 25% of women were dissatisfied with their interactions with their physicians, mainly due to physician insensitivity, rudeness, condescension, abruptness, inattentiveness, and ignorance about recognizing heart disease in women. Again, research in this area is limited in the younger female population. However, Collins et al. (2004), while studying heart disease awareness in all college students, found that only 12% of respondents reported that their primary caregiver had ever discussed heart disease or its risk factors with them. Similarly, Munoz et al. (2010) found that only 25% of female college students had these discussions with their primary care givers.

The significance of this problem, especially as it relates to advanced practice nursing, is quite evident. The consistently documented overall lack of knowledge that women have regarding coronary heart disease and their personal risk factors is alarming and disheartening. Further, the reported difficulties women have been experiencing in regards to communicating with their physicians about this disease are shocking. Healthcare providers have a responsibility to each and every patient to provide education and guidance on disease prevention and healthy lifestyle modifications, especially as they relate to coronary heart disease, which affects so many women in the United States. Providers must identify opportunities to discuss heart disease with both older and younger women, as primary prevention strategies implemented early in life are essential to reducing the morbidity and mortality of this deadly disease.

Problem Statement and Study Purpose

Coronary heart disease remains the number one killer of women in the United States today. Women continue to demonstrate a considerable lack of knowledge of heart disease and their personal risk factors, in addition to consistently underestimating their risks for the development of CHD. The education of all women is essential; however, it is especially important to educate younger women on primary prevention strategies, prior to the development of risk factors. Once women have been educated, they will be better able to adequately estimate their personal risks of heart disease, along with making the necessary adjustments to their lifestyles.

Much research exists on women's lack of knowledge and underestimation of personal risk, but little research has been conducted specifically on young women to assess their knowledge of this disease and perceived personal risk of developing CHD. This information will be important to guide healthcare providers on the education and implementation of primary prevention strategies for this population, which will hopefully assist in reducing the future morbidity and mortality of this deadly disease. Thus, the purpose of this study was to assess young women's knowledge of coronary heart disease and determine their beliefs regarding their perceived personal risk for developing CHD.

Research Questions

This study was designed to answer the following questions: (a) Are young women knowledgeable about coronary heart disease? (b) Do they perceive a personal risk of this deadly disease? (c) Do they consider this disease a threat? And finally, (d)

Are young women discussing CHD with their primary care providers and receiving the information they need to make healthy lifestyle modifications in order to prevent the development of risk factors for this deadly disease? To answer these questions, the following research questions will be explored:

1. What is the knowledge level of young women in regards to coronary heart disease?
2. Have young women discussed coronary heart disease with their primary care physicians?
3. What are the beliefs of young women in relation to their perceived personal risk for developing coronary heart disease, and do they see CHD as a threat to their health?

Conceptual Definitions

Knowledge: The condition of knowing with familiarity gained through experience or association; acquaintance with or understanding of a science, art or technique (Merriam-Webster, 2010).

Perceived risk: An individual's subjective risk perception or belief of developing a condition or disease (Schroetter & Peck, 2008).

Perceived threat: The level of danger associated with the disease (Schroetter & Peck, 2008).

Belief: The feeling of certainty that something exists or is true (Jensen & Moser, 2008).

Coronary heart disease (CHD): The buildup of lipids in the coronary arteries impeding blood flow to the heart which can eventually result in destruction of heart tissue due to lack of oxygen supply (McCance & Heuther, 2006).

Primary prevention: To remove or reduce disease risk factors (McPhee & Papadakis, 2010).

Healthy lifestyle modifications: Modifications made to a current lifestyle to improve personal health and reduce the development of disease risk factors, such as quitting smoking; eating a low fat, low salt diet; exercising daily; and limiting alcohol intake (Anderson & Kessenich, 2001; Stempfler et al., 2000).

Operational Definitions

Young women: Convenience sample of college women, age 18 to 25 years, enrolled in a “Healthy Lifestyles” course at a small Midwest university.

Knowledge: Measured based on the Coronary Heart Disease Knowledge Test for Women, developed by Thanavaro et al. (2010), specifically to determine women’s knowledge of the disease. It consists of 25 multiple choice questions, each worth one point. Scores range from 0 to 25. (See Appendix A)

Perceived risk: Measured based on the responses to four questions designed to determine women’s perception of their personal risk of developing heart disease: (a) How concerned are you about getting heart disease? (b) How likely are you to get heart disease? (c) Compared to my peers, my chances of getting heart disease are? (d) How personally responsible do you think a woman is for getting heart disease? A Likert scale was used, with scores ranging from 1 (Not at all likely) to 5 (extremely likely). (See Appendix B)

Perceived threat: Measured based on the responses to two questions designed to determine women's perceived threat of heart disease: (a) More women die from breast cancer than heart disease (breast cancer was used as the comparison, given that research shows most women perceive breast cancer as a greater health risk than heart disease (Ali, 2002), and (b) How serious is heart disease? A Likert scale was used, scores ranging from 1 (strongly disagree/not at all serious) to 5 (strongly agree/extremely serious) (See Appendix C).

Assumptions

There are a few assumptions underlying this study:

1. Respondents will answer all survey questions truthfully.
2. Respondents will not discuss correct answers on the CHD knowledge tool with other participants while completing the survey.
3. Most respondents will have seen a primary care provider for yearly exams on a regular basis.
4. The population sampled was a convenience sample of college women. It can be assumed that a higher education level will correlate with a higher level of awareness and knowledge about health issues, thus, low levels of knowledge in this population would likely indicate even lower levels of knowledge in those without a college education (Collins et al., 2004).

Summary

Coronary heart disease is the number one killer of women in the United States today, affecting more than 1 out of every 2 women. Research shows that women have

an overall lack of knowledge about heart disease, typically underestimate their risk for the development of this disease, and are unaware of their risk factors. Prevention strategies must be implemented early in life prior to the development of risk factors; however, these interventions are not being discussed with women by their primary healthcare providers. Further, studies specifically sampling young women and heart disease are limited. This study surveyed young women in a convenience sample, age 18 to 25 years, to determine their coronary heart disease knowledge level, their perceived personal risk for development of coronary heart disease, their perceived threat of coronary heart disease, and the previous communication that has transpired between them and their healthcare provider in regards to their heart disease risk factors and prevention strategies.

Chapter II

Theoretical Framework and Literature Review

Theoretical Framework

The theoretical framework that guided this study was the Health Belief Model developed by Rosenstock in 1974 (Schroetter & Peck, 2008). This theory is based on an individual's personal perception of the susceptibility, severity, benefits, barriers, and threats of a disease. If one perceives a disease to be serious, and if they believe they are susceptible to it, then they will perceive the disease as a threat, and will have a greater likelihood of taking preventative action. The main concepts of the Health Belief model are defined as follows (Schroetter & Peck, 2008):

Perceived susceptibility: An individual's perceived risk of developing a disease.

Perceived severity: An individual's beliefs about the seriousness of developing a disease.

Perceived benefits: Beliefs about how well an action will reduce the risk of a disease.

Perceived barriers: An individual's perceived limitations that oppose a beneficial action, such as cost, time, inconvenience, and adverse reactions.

Perceived threat: How dangerous an individual believes the development of a disease is, influenced by socioeconomics, risk factors, perceived susceptibility and seriousness, and cues to action.

Cues to action: What stimulates an individual to participate in a preventative health action, such as age, sex, personality, and knowledge of disease.

Modifying factors: What shapes an individual's perceptions about the benefits of a preventative health action.

Schroetter and Peck's (2008) adapted Rosenstock 1974 Health Belief model for women and heart disease, which fit very well with this study, was utilized. The main concepts of Rosenstock's model are maintained; however, it was tailored specifically toward women, their perceptions and beliefs regarding heart disease, and what influences their likelihood of taking preventative action. A woman's perceived susceptibility and seriousness of heart disease is directly related to her perceived threat of the disease, which in turn, is directly related to the likelihood of her taking preventative action against the disease. A woman's perceived threat of heart disease is also influenced by a host of other variables, including her knowledge, risk factors, demographic and socioeconomic status, and her personal cues to action (See Appendix D). For this study, by determining a young woman's knowledge, perceived risk of developing heart disease, and perceived threat of heart disease, we can estimate the likelihood of her partaking in preventative health behaviors against heart disease.

Case study application of Schroetter and Peck's adapted Health Belief

Model for women and heart disease. Sally is a 20-year-old White female. She has a high school diploma, works nights as a gas station clerk, is unmarried, and has two children. She is overweight, smokes one pack of cigarettes per day, is on birth control pills, eats fast food for nearly every meal, and never engages in moderate physical activity. When asked if she knows her risk factors for heart disease, she replies, "What's heart disease?" Her perceived susceptibility and seriousness of heart disease is very low. She has numerous modifiable risk factors (smoking, overweight, sedentary lifestyle, poor diet, birth control pills) and many demographic, socioeconomic, and structural

variables (low income, low education level, low heart disease knowledge level), all of which are contributing to her very low perceived threat of heart disease. This, in turn, drastically reduces her likelihood of partaking in preventative health behaviors, which would decrease her chances of getting heart disease. If Sally were properly educated on the dangers of and risk factors for heart disease, and if she understood and acknowledged her own personal risk factors and susceptibility, she may, in turn, perceive heart disease to be a great threat to her future health, and she would undoubtedly begin to partake in healthy lifestyle modifications. Personal knowledge of the dangers of and risk factors for heart disease is the catalyst of this entire scenario and is absolutely necessary before any individual engages in preventative health actions. The attainment of such knowledge is dependent on individual education, which is a primary responsibility of all healthcare practitioners.

Review of Literature

Women's knowledge of coronary heart disease. The literature is quite extensive as it relates to women's knowledge of coronary heart disease, and sadly, the results are disheartening. Unfortunately, studies show women have a considerable lack of knowledge in relation to coronary heart disease (Christian et al., 2007; Collins et al., 2004; Jensen & Moser, 2008; Marcuccio et al., 2002; Mosca et al., 2003; Mosca et al., 2006; Munoz et al., 2010; Oliver-McNeil & Artinian, 2002; Thanavaro et al., 2006; Thanavaro et al., 2010; Vale, 2000).

Thanavaro et al. (2006) studied 120 women ages 35 to 60 years, without prior history of coronary heart disease, at three Midwestern internal medicine practices to evaluate CHD knowledge and determine predictors of poor CHD knowledge. A modified

CHD knowledge tool (20 multiple choice questions) was used to measure women's knowledge level, as the original 40 question tool, developed by Smith, Hicks and Heyward (1991), was designed to assess general CHD knowledge of self-care and risk factors in men (in Thanavaro et al., 2006). Potential scores ranged from 0 to 20, with a higher score correlating with a higher knowledge level. Demographics of the sample included an average age of 49.3 years \pm 6.7 years, an average BMI of 29.6 \pm 8.5 kg/m², with 63% of the participants either overweight or obese. The women were predominantly White, married, and had a high school or higher education level. The scores on the CHD knowledge tests ranged from 5 (25%) to 18 (90%) correct answers, and the mean score was 11.84 correct \pm 3.03 (60%). This indicated that women, overall, had a low CHD knowledge level. Thanavaro et al. (2006) also determined that an increased CHD knowledge level was significantly related to having access to a nurse practitioner, a higher education level, and a higher income, while a lower CHD knowledge level was associated with the non-White population. There were a few limitations of this study, most importantly, that a number of women reported difficulty understanding some of the medical terminology on the CHD knowledge test, thus making some of the questions difficult to answer. Further, there were a number of questions on the test which had a rather large percentage of both correct and incorrect responses, which as the researchers reported, made the results somewhat difficult to interpret.

Christian et al. (2007) found similar results in her study of 1,005 women surveyed using a standardized interviewer-assisted questionnaire on awareness, knowledge, and perceptions of CHD through a telephone survey. The average age of the study participants was 50 years and 71% were White. They found that, overall, women were

more aware of heart disease as the leading cause of death in 2006 compared to 1997 (57% vs. 30%), and the racial gap in knowledge level had not narrowed in any way. White women were significantly more likely to identify heart disease as the leading cause of death compared to Black and Hispanic women (68% vs. 31% and 29%, respectively). Further, there were many other areas where CHD knowledge was still severely lacking. For example, the majority of women identified breast cancer as the greatest health problem facing women (27%), and younger women (age 25 to 34 years) were more likely to believe this. Additionally, 14% of women believed that there was nothing that they could do to prevent heart disease, and Hispanic women and younger and older women (25 to 34 years and greater than 65 years) were more apt than White women to believe this to be true. Christian et al. also found that women's knowledge of atypical heart attack symptoms was very poor and in no way improved since 1997.

In regards to discussions with healthcare providers, Christian et al. (2007) found that although nearly 95% of her study population reported feeling comfortable talking with their doctor about preventive and treatment options regarding their health, Hispanic women were less likely to feel comfortable than White and Black women (89% vs. 96% and 97%). Further, less than half of respondents (46%) stated that their doctor had discussed heart disease with them when discussing their health, and again, an ethnic gap is quite evident in that only 36% of Hispanic women had discussed heart disease with their doctors, compared to 47% of White women and 53% of Black women. Additionally, women ages 45 to 64 years and greater than 65 years were more likely to have discussed heart disease with their doctor (55% and 61%) than younger women ages 25 to 34 and 35 to 44 years (27% and 32%). One major limitation to Christian's study included potentially poor generalizability, as only English-speaking households

with phones were included in their results. Further, response and selection bias may have been present in their data collection measures, in addition to the fact that some of their results may have been due to chance given their lack of adjustment for the confounding of ethnic variables or multiple statistical testing.

Mosca et al. (2003) and Mosca et al. (2006) also found a significant lack of knowledge of heart disease among women. Mosca et al. (2003) followed up 1997 and 2000 studies to determine if any improvements had been made in the preceding years in regards to women's knowledge levels. A total of 1,024 women age 25 years and over were sampled via a randomized telephone database and questioned to evaluate their awareness, perceptions, and knowledge of coronary vascular disease. It was determined that while awareness of CHD has increased somewhat, there is still an overall lack of knowledge, especially among minorities. The authors found that awareness of heart disease as the number one killer of women rose to 46% in 2003, up from 30% in 1997. Similar to Christian et al. (2007), the majority of respondents (51%) spontaneously identified cancer (35% stated breast cancer) as their greatest health concern. However, the number of women who perceive heart disease as their leading health problem has nearly doubled – from 7% in 1997 and 8% in 2000, to 13% in 2003. The researchers also found that when participants were asked to identify the major risk factors for heart disease, only 36% stated smoking, only 31% stated high cholesterol, only 29% stated family history, only 26% stated poor diet, and only 19% stated high blood pressure. Further, although being overweight and lack of exercise were stated most often as risk factors, only 40% correctly identified them. Several limitations were reported in this study. First, only English-speaking households with a telephone were

included, and second, individual change in knowledge could not be assessed because the study included three sequential surveys of different cohorts.

Mosca et al. (2006) followed up their 2003 survey to determine if any further significant improvements had been made. They surveyed 1,485 women age 25 years and older, in a randomized phone survey (with a supplemented minority population) in a standardized interviewer-assisted questionnaire to determine women's knowledge of various aspects of heart disease. The average age of participants was 51.3 years, most were married or cohabitating, and most had at least a high school education. Similar to Christian et al. (2007) and Mosca et al. (2003), it was determined that while awareness of CHD has increased somewhat, there is still an overall lack of knowledge, especially among minorities. They found that 55% of women correctly identified heart disease as the leading cause of death in 2006, compared to 30% in 1997. Again, awareness was significantly greater among Whites than other ethnic minorities. Further, in regards to communication with their primary care provider, nearly 54% of women who reported seeing a healthcare provider on a regular basis reported having discussed heart disease with their provider in the past 6 months, and the major reason it was not discussed was because the physician did not bring it up (38%). Interestingly, this study also found that women who were more informed about heart disease (having heard, read, or seen information about heart disease in the past 12 months or those who were knowledgeable about heart disease being the number one killer of women) were more likely to have increased their physical activity and lost weight. One major limitation of this study was that the data were based on self-reports, and thus, may not be extremely accurate. Second, although numerous analyses were conducted, the authors did not adjust for multiple statistical testing in their results, thus some of their findings may be due to

chance. Further, the study results may not be generalizable to all women, as most of the women in this study were educated and had health insurance.

Previous research specifically studying young (age 18 to 25 years) women's knowledge of CHD is limited. However, two studies were identified that studied both the young male and female populations collectively (Collins et al., 2004; Vale, 2000). One study was also found that specifically targeted young women's knowledge (Munoz et al., 2010).

Collins et al. (2004) surveyed 1,420 college students from 10 undergraduate courses at Arizona State University using a standardized questionnaire consisting of 35 closed-ended questions. The ages of the participants was not reported.

Demographically, the respondents were 43% male and 57% female, 75% were White, 12% were Hispanic, 7% were Black, 4% were Asian or Pacific Islander, and 2% were Native American or Alaskan. Cancer was identified as the greatest health risk by the majority of respondents (47% of Whites, 35% of Hispanics, and 42% of Blacks), and a total of 67% believed that cancer was the number one cause of death for women. Additionally, heart disease was identified as the most common cause of death for women by only 25% of respondents, and 66% believed that cancer caused more deaths among women than heart disease. Further, most respondents, including those in the higher risk minority groups, were unable to correctly identify which ethnic groups were at the greatest risk. Finally, 88% of students reported that no physician had ever discussed heart disease or its risk factors with them. Only one limitation is acknowledged in this study, and that is the fact that the results may not be generalizable given that there was a rather small number of ethnic minorities in the study group.

Vale (2000) also surveyed a young population of 50 men and 13 women in a convenience sample of young adults age 18 to 21 years from two music organizations via a survey questionnaire consisting of four open-ended questions. The survey tool was developed by the researcher, included heart disease risk factors identified by the literature, and was reviewed by six cardiac care experts, who approved it for content and validity. The respondents were able to identify the following risk factors for heart disease: high blood pressure (17%), sedentary lifestyle (27%), positive family history (37%), high cholesterol (49%), and smoking (63%). In regards to prevention of heart disease, only the following preventive measures were identified by respondents: low-cholesterol diet (6%), smoking cessation (38%), and regular exercise (76%). The one reported limitation of this study was the small sample size, consisting of only 63 participants.

Munoz et al. (2010) surveyed 320 women from a private university to evaluate awareness and knowledge of heart disease among college females. The mean age of those surveyed was 23 years and ranged from 18 to 34 years. The majority (70%) were non-White and either a junior, senior, or graduate student. Participants were able to correctly identify the following causes of CHD: family history (87%), being overweight (84%), high cholesterol (78%), high blood pressure (78%), and not exercising (68%). However, only 55% of those surveyed were correctly able to identify heart disease/heart attack as the leading cause of death of women. Further, almost 20% listed breast cancer as the leading cause of death, and 32% incorrectly believed that it was the greatest health problem facing women today. Further, the atypical women's heart attack symptoms of fatigue and nausea were identified by only 43% and 23% of women, respectively. The major limitation of this study is the fact that over 60% of their studied

population were in students in a healthcare-related field, i.e. either nursing or pharmacy students. Given that most of their sample was farther along in their educational career (junior or higher), it can be assumed that they probably have received some sort of education related to heart disease, and thus, the results could be slightly skewed.

Women's perceived risk of coronary heart disease. Studies consistently show that women frequently either underestimate their risk of getting coronary heart disease, or are unaware of their personal risk factors for the disease (Christian et al., 2005; Green et al., 2003; Marcuccio et al., 2002; Oliver-McNeil & Artinian, 2002; Wendt, 2005). In their study to determine women's perceptions of personal cardiovascular risks, Oliver-McNeil and Artinian (2002) surveyed 33 White women, age 36 to 85 years, at a large 925-bed teaching hospital in Michigan, who had been admitted to the hospital and diagnosed with heart disease. Data were collected via a mailed questionnaire after the women were discharged from the hospital. Knowledge of risk factors was assessed by asking the participants to answer 20 multiple-choice items selected from a coronary heart disease knowledge test. Results showed that most women were unable to correctly identify their personal risk factors. Further, the mean score on the heart disease knowledge test was 64%, with scores ranging from 15% to 95%. The majority of those questioned did not know that high-density lipoprotein is a blood fat that lowers heart disease risk or that exercise improves overall heart function. Participants also had difficulty understanding the relationship between stress and heart disease.

Maruccio et al. (2003) found similar results in their study of women's attitudes and experiences with heart disease when they surveyed 204 women who were associated with WomenHeart, a national coalition of women with heart disease, in a 22-item telephone questionnaire. The ages of the participants ranged from the 20s to the

80s (52% were between 40 and 59 years), and the majority lived in the Northeast (32%) and Southeast (25%). No other demographic information was collected. Most of the women were able to classify their diagnosis as some type of heart disease; however, a total of 22 were unsure of their actual cardiac diagnosis. Of the 204 women, only 113 (55%) knew that they were at risk of heart disease prior to their diagnosis. Many of the women surveyed stated that heart disease occurred among the men in their families, but they did not realize they could inherit the risk, as well. Shockingly, only 35% of women who reported symptoms of heart disease, and only 68% of their physicians, correctly identified the symptoms as being potentially related to the heart. Further, the researchers found that after their heart disease diagnosis, more than 85% of women had not made any significant healthy lifestyle modifications to reduce their future risk. The women stated their major reasons for not doing so were because they did not receive the appropriate counseling and education to know how to do so.

Again, studies specifically targeting young women's perceptions of heart disease risk are limited. Only one study was found in which young women were surveyed (Wendt, 2005) and one other study (Green et al., 2003) was found which surveyed young men and women. Green et al. (2003) surveyed 341 undergraduates who were enrolled in a physical activity class at a large state university and a business class at a midsize university to determine heart disease risk perception among college men and women. The participants were 46% male with an average age of 22 years. A total of 86% of the sample was White, 6% Hispanic, and 6% Black. Participants were asked five general questions regarding their perceptions of heart disease and 40 questions which rated their perceptions of causality between heart disease risk markers and heart attack. A total of 68% of respondents rated their risk of heart disease as either lower or much

lower than their peers. The researchers also determined that common risk factors for heart disease are taken for granted by many college students. Specifically, they did not recognize the risks that menopause, diabetes, family history, and dyslipidemia have on an individual's risk for heart disease.

Wendt (2005) studied female undergraduate's perception of future risk of breast cancer and heart disease in 133 females from a small, northeastern liberal arts women's college. A combination of short answer and Likert scale questions were used to assess young women's perceptions of heart disease and breast cancer. The average age of the participants was 21 years, with a range of 17 to 46 years. Of the participants, 49% were White, 19% were Hispanic, 14% were Black, 5% were Asian, and 12% were other. Wendt found that overall, participants rated their risk of heart disease as below average. In addition, they believed that more than one out of two women would get breast cancer.

Summary

Many previous studies have consistently documented the considerable lack of knowledge that women, in general, display in regards to coronary heart disease and personal risk factors for the disease. Further, studies also show that women continue to demonstrate a significant lack of perceived risk for heart disease. Given that heart disease affects approximately one out of every two women, this lack of knowledge and perceived risk is extremely discouraging.

Considerable gaps exist in the current literature in regards to young women's knowledge and perceived risk of heart disease. Few studies specifically target the younger population age 18 to 25 years, and even fewer studies specifically assess young women's knowledge and perceived risk. This is concerning given that primary

prevention interventions begun at a young age are an excellent way to prevent the development of risk factors for this disease. Further, in accordance with the Health Belief Model, if women are not knowledgeable about heart disease, and are not aware of their personal risk factors for the disease, they will not perceive heart disease as a serious illness or a great threat to their health, and will thus, not engage in healthy lifestyle modifications to reduce their risks. If women do not partake in primary prevention strategies, such as healthy lifestyle modifications, there is very little hope of reducing the morbidity and mortality associated with this deadly disease.

Chapter III

Methodology and Data Analysis

Study Design

This quantitative study measured young women's knowledge of coronary heart disease and their perceived risks for getting the disease. A quantitative design was appropriate for this study, as given the proper tools, knowledge and perceived risks are quantifiable and measureable. Further, given that this study was not experimental, there was no independent variable. However, the target population was young women age 18 to 25, and their knowledge level and perceived risks were measured. The study also assessed whether or not coronary heart disease has been discussed with these young women by their primary care providers.

Extraneous variables in this study could include the women's previous personal experience with coronary heart disease and their ability to guess at multiple choice questionnaires. However, given the young age of the participants, it was assumed that a specific personal history of coronary heart disease was negligible. Yet, it is possible that a participant may have experience with heart disease secondary to a friend or family member having experienced the disease. Nevertheless, it can be understood that given the high prevalence of heart disease in this country, at some point, most women will know someone who has suffered from this disease, and thus, the participant's knowledge levels should be positively impacted. Further, any ability the students may have had to correctly guess at multiple choice questions was probably consistent throughout the sample population, and thus was uniform. Finally, a third extraneous variable that may exist in this study is that of the women potentially sharing their

answers with each other, as all of the women surveyed are from the same class. This was accounted for by having the participants complete the questionnaires while in class, without talking. Once completed, the surveys were collected.

Population, Sample, and Setting

The population for this research study is young women age 18 to 25 years; however, a convenience sample of young college women age 18 to 25 years was assessed. Women from a small, Midwest university were approached at the beginning of an interim term (early January, 2011) from an “Active Lifestyles” class and asked to participate by filling out the provided questionnaires. The instructors for the course were contacted ahead of time for permission to utilize the first 15 minutes of their class time during the first class of the interim. It was important that this study was conducted prior to any course instruction, as given the type of coursework involved, women’s knowledge of heart disease risk factors and prevention strategies may be higher after the coursework had begun. Consenting students individually filled out the surveys during the first 15 minutes of class. Upon completion, the surveys were collected by the researcher. All women were English speaking, and women who did not meet the age criteria were excluded. No identifying information was collected.

Data Collection Instruments

Demographic questionnaire. A demographic questionnaire was developed to determine the sample population’s demographic variables. Race, age, and education level were assessed. Further, questions regarding women’s interactions with their primary care providers were also asked in this section to assess how many of the

women have had conversations with their healthcare providers regarding coronary heart disease. (See Appendix E)

Coronary heart disease knowledge tool. The original 40 multiple choice question Coronary Heart Disease Knowledge tool was developed by Smith, Hicks and Heyward in 1991 to assess general knowledge of self-care and risk factors in men. Thanavaro et al. (2006) modified this tool to a 20 multiple choice questionnaire to specifically assess women's knowledge levels. In 2010, Thanarvo et al. modified it again to make the questions friendlier and more easily understood by laypeople. It now includes 25 multiple choice questions specifically geared to evaluate women's knowledge of coronary heart disease. This 2010 modification was approved by Thanavaro to be utilized as the knowledge tool in this study (See Appendix F). The questions on the knowledge tool were directly related to heart disease signs and symptoms, risk factors, and prevention strategies. According to Thanavaro et al. (2010), the Coronary Heart Disease Knowledge tool has acceptable internal consistency with a Cronbach's alpha coefficient reported of 0.74. An expert panel of board-certified cardiologists and doctorate-prepared nurse educators validated the content validity and face validity of the tool, and it was found to be valid and useful for measuring women's knowledge of coronary heart disease (Thanavaro et al., 2010). This tool was very appropriate for use in this study, as it was specifically designed to measure the major dependent variable of this study – women's knowledge of coronary heart disease. (See Appendix A)

Perceived risks and perceived threat of coronary heart disease. Young women's perceived risks and perceived threat of heart disease were assessed using a series of Likert scales, ranging in value from 1 to 5. These scales were taken from the

Likert scale questions used in a similar study measuring college women's knowledge and beliefs of osteoporosis and other diseases, including heart disease, which was conducted by Kasper, et al. (2007). Each endpoint had an opposite statement, and respondents were instructed to circle the number that best correlated with how they felt about the specific statement. To assess perceived risk, questions were asked, such as: How concerned are you about getting heart disease? How likely are you to get heart disease? Compared to my peers, my chances of getting heart disease are? Response options varied depending on the question and included choices, such as: Not very concerned (score of 1) to extremely concerned (score of 5), not at all likely (score of 1) to extremely likely (score of 5), and much lower (score of 1) to much higher (score of 5). Women's perceived threat of coronary heart disease was assessed in much the same way. Questions were asked, such as: How serious is heart disease? Potential responses included: Not at all serious (score of 1) to extremely serious (score of 5). The use of these scales to measure perceived risk and perceived threat of heart disease was very appropriate for this study, as similar types of questions and Likert scales were used in a number of the previous research studies conducted on this topic to assess similar variables (Christian et al., 2007; Green et al., 2003; Kasper et al., 2007; Wendt, 2005). This gave an excellent comparison for the results of this current study (see Appendix B and Appendix C).

Data Collection Procedures

Approval for this study was granted by the Internal Review Board from the university at which the surveys were distributed. The data for this study was collected from young women enrolled in an "Active Lifestyles" course at a small Midwest

university. The instructors for the course were contacted ahead of time to ensure the use of class time would be allowed for the completion of the surveys. The survey packets were handed out to willing participants on the first day of the interim term (early January, 2011), and students were given the first 15 minutes of class time to complete them. The completion of the surveys was implied informed consent and the women were told they could refuse to participate at any time. Upon completion, the surveys were collected. Discussion during the survey completion was not allowed.

Data Analysis Procedures

The goals of this study were descriptive in nature. Most women answered every question on the survey; however, a few of the surveys had incomplete data. All available and answered data on each survey, including the incomplete surveys, was included when and where it was appropriate; thus, the data analysis did exclude cases pair-wise. The data from the collected surveys was entered into SPSS spreadsheets for further analysis. Statistics, including means, standard deviations, and percentages, were utilized to analyze the demographic data of the participants, including age, primary race, and years of completed college education. The number of women who had discussed coronary heart disease with their primary healthcare provider was assessed by totaling the yes and no responses to the question, "Has your primary care provider ever discussed heart disease with you?" and a percentage was then calculated. Scores for perceived risk and threat of heart disease were also totaled and averaged with standard deviations determined. Women's overall heart disease knowledge levels were assessed by calculating their scores on the CHD knowledge tool. The average total score with standard deviation was reported, in addition to the percent of women

answering each specific question correctly or incorrectly. Collectively, research was evaluated to determine (a) if primary care providers are discussing coronary heart disease with young women, (b) what young women's overall heart disease knowledge levels are, and (c) if young women perceived themselves to be at risk for heart disease and if they consider heart disease to be a threat.

Limitations of the Study

The major limitation of this study, which must be taken into account, was the fact that the sample population may not be representative of the general population of young women age 18 to 25 years. This is due to the fact that the entire sample population was attending college, which is not consistent with the general population. Further, the demographic characteristics of this sample were 98% White and not of significant racial or ethnic background, which would also not be representative of the general population.

Summary

This study was quantitative and descriptive in nature and was designed to assess young (age 18 to 25 years) women's knowledge of coronary heart disease, in addition to their perceived risks and threat of heart disease, and the primary care interactions in regards to discussions about heart disease. A convenience sample of college women enrolled in an "Active Lifestyles" course at a small, Midwest University made up the sample population, and survey materials were distributed and collected during the first 15 minutes of the first class of an interim semester. Demographic data was collected, including age, race, and education level. A coronary heart disease knowledge tool was used to assess women's overall knowledge levels, and Likert scales

were utilized to assess women's perceived risk and threat. A major limitation of this study was that the sample population may not be representative of the general population of young women.

Chapter IV

Findings and Discussion

Introduction

Coronary heart disease is the leading cause of death of women in the United States today. The lack of knowledge related to heart disease that women typically display has been well documented. Further, women typically are unable to identify their personal risk factors, in addition to underestimating their risks for the development of this disease. Little research has been conducted specifically on young women to assess their knowledge of heart disease and perceived personal risk of developing it. This information is critical to guide healthcare providers on the education and implementation of primary prevention strategies for this young population, given that early primary prevention is the best way to reduce future risk for the development of heart disease. Thus, the purpose of this study was to determine if primary care providers are discussing heart disease with young women, to assess young women's knowledge of coronary heart disease, and to determine their perceived personal risk for developing it.

Demographic Data

Surveys were collected from 129 young women at a small Midwest university during an "Active Lifestyles" course. A total of 98.4% of the women were between the ages of 18 and 21 years old, and 93% listed White as their primary race. Further, 88% of the women had one or less years of completed college education, as shown in Table 1.

Table 1

Demographics of Sample

	Frequency	Valid Percent
Age (n=129)		
18 – 19	91	70.5
20 – 21	36	27.9
22 – 23	1	0.8
24 - 25	1	0.8
Race (n=129)		
White	120	93.0
Black	4	3.1
Asian/Pacific Islander	5	3.9
Years of completed college education_(n=128)		
0	51	39.8
1	61	47.7
2	12	9.4
3	4	3.1

Findings

Discussions with primary care providers. Of the 129 collected surveys, a total of 124 answered the question, “Has your provider ever discussed heart disease with you?” Not surprisingly, as shown in Table 2, only 22% of respondents indicated that

their primary care providers had ever discussed heart disease with them. Unfortunately, this is consistent with previous research conducted in this area. Munoz et al.'s (2010), survey of 320 college women found that only 25% had discussed heart disease with their providers, and Collins et al. (2004) surveyed 1,420 college students (57% female) and found that only 12% had discussed heart disease with their providers. There is, however, a slight rise in this percentage when the question is asked of older women. Christian et al. (2007) found that 46% of the 1,005 surveyed women (average age 50 years) had discussed heart disease with their primary care providers, and Mosca et al. (2006) found that 54% of the 1,008 women surveyed (average age 51 years) had discussed heart disease with their provider.

Table 2

Discussions with Primary Care Providers

	Frequency	Valid Percent
Do you see a healthcare provider for yearly exams? (n=129)		
Yes	99	76.7
No	30	23.3
Type of provider typically seen: (n=98)		
Doctor	87	88.8
Nurse Practitioner	11	11.2
Has your provider ever discussed heart disease with you? (n=124)		
Yes	28	22.6
No	96	77.4

Perceived risk and threat. Generally speaking, the women surveyed in this study were not concerned about getting heart disease, nor did they believe that they were likely to get it. When asked to complete a Likert scale for “How concerned are you about getting heart disease?” 82% of the young women scored between neutral (3) and not at all concerned (1) about getting heart disease (average 2.52, standard deviation 0.97). Similarly, when asked how likely they believed they were to get heart disease, 85% scored between neutral (3) and not at all likely (1) (average 2.52, standard deviation 0.94). Interestingly, those surveyed did, however, seem to believe that women are somewhat personally responsible for getting heart disease (average 3.22, standard deviation 0.81), and they consider it an extremely serious disease (average 4.47, standard deviation 0.64) as shown in Table 3.

Table 3

Women's Perceived Risk and Threat

	Perceived Risk						Perceived Threat			
	Q1		Q2		Q3		Q4		Q5	
	N	%	N	%	N	%	N	%	N	%
1	19	14.7	16	12.4	4	3.1	3	2.3	0	0.0
2	48	37.2	47	36.4	15	11.6	24	18.6	2	1.6
3	39	30.2	47	36.4	63	48.8	48	37.2	4	3.1
4	22	17.1	16	12.4	43	33.3	44	34.1	54	41.9
5	1	0.8	3	2.3	4	3.1	10	7.8	69	53.5

Note: 1=not at all, much lower, strongly agree; 5=extremely, much higher, strongly disagree.
 Q1 = How concerned are you about heart disease?
 Q2 = How likely are you to get heart disease?
 Q3 = How personally responsible do you think a woman is for getting heart disease?
 Q4 = More women die from breast cancer than heart disease.
 Q5 = How serious is heart disease?

These results are very similar to the responses that Kasper (2007) found when surveying 302 college women (84% of respondents between age 18 and 21 years) on knowledge and perceptions of osteoporosis and heart disease. The same Likert scale questions were asked, and the results revealed that the women were not overly concerned about getting heart disease (average 2.96, standard deviation 1.19) and that they did not believe they were likely to get it (average 2.57, standard deviation 1.13). Again, similar to the results of this current study, Kasper (2007) also found that the women believed heart disease to be an extremely serious disease (average 4.75, standard deviation 0.60) as shown in Table 4.

Table 4

Perceived Risk and Threat Comparison of Studies

	Kasper (2007) n = 302			Brown (2011) n = 129		
	Percent	Mean	SD	Percent	Mean	SD
White	66	-	-	93	-	-
Age 18 to 21 yrs	84	-	-	98	-	-
How concerned are you about HD?	-	2.96	1.19	-	2.52	0.97
How likely are you to get HD?	-	2.57	1.13	-	2.56	0.94
How serious is HD?	-	4.75	0.60	-	4.47	0.64
How personally responsible is a woman for getting HD?	-	2.98	1.07	-	3.22	0.81

Women's knowledge of coronary heart disease. The average score on the Coronary Heart Disease Knowledge Test in this study was only 68%, indicating that overall, these young women had a general lack of knowledge of coronary heart disease.

This was similar to the results obtained by Thanavaro (2010), which studied 49 women (average age 52 years) whom collectively scored 72% on the same heart disease knowledge tool. These studies were both conducted in the past year, indicating that currently, women of all ages are lacking in overall heart disease knowledge.

Of particular interest were a few areas with very low scores on the heart disease knowledge tool. First, few respondents correctly answered the questions relating to race and heart disease. Specifically, only 22% of those surveyed correctly answered that Black women were more likely than White women to die from a heart attack or stroke, and only 36% of women knew that Black women are more likely to have heart disease than White women. As shown in Table 5, this was quite different than the respondents in the original study, which correctly answered 57% and 58%, respectively.

A second area of interest in which respondents were lacking knowledge was that of the effect of alcohol on heart disease. Only 31% of the current study participants correctly answered that moderate alcohol consumption (one to two drinks per day) may help prevent heart disease. Further, only 22% of respondents in the original study answered this question correctly. Additionally, 32% of the current study participants believed moderate alcohol consumption would cause heart disease.

One last area in which respondents seemed to lack a considerable amount of knowledge was that of how hormone replacement therapy related to heart disease. Only 11% of respondents correctly answered that there was no evidence that hormone therapy prevents heart disease, while 47% of the older women in the original study answered correctly. These results are, however, to be expected given the age discrepancies between the groups.

Encouragingly, as shown in Table 5, there were a few areas on the knowledge tool in which, collectively, the surveyed young women answered correctly. Specifically, they were able to identify that a high fat diet may cause clogged arteries (94% answered correctly), that a family history of heart disease may increase their risk of heart disease (94% answered correctly), and that routine exercise may prevent heart disease (95% answered correctly). This indicates that young women are actually able to recognize certain risk factors for heart disease, even if they do not see themselves as personally being at risk.

A second area of encouraging results was that of the respondent's knowledge of the atypical symptoms of heart attack that women often display. When asked to identify symptoms of heart pain or heart attack, 74% of young women correctly included back pain and dizziness – both of which are common presenting symptoms seen especially in women with heart attack. Similar results were found in the Thanavaro (2010) study, in which 79% of women answered correctly.

Perhaps, the most promising finding in this study was the fact that over 75% of young women correctly identified heart disease as the leading cause of death of women today. This was comparable to the results of the Thanavaro (2010) study, in which 65% of women correctly identified heart disease as the leading cause of death. These results are considerably higher than previous studies' findings. Mosca et al. (2003), when surveying 1,041 women (68% White, 45% between 25 and 41 years of age) found that only 46% of women believed heart disease to be women's number one cause of death. In the 2006 follow-up study of 1,008 women (56% White, average age 51 years), this number rose to 55% (Mosca et al., 2006). Further, Munoz et al. (2010), when surveying

320 college females (30% White, average age 23 years) found that only 50% believed heart disease to be the number one cause of death of women.

Related to this increased awareness of heart disease as the number one killer of women, is the fact that until now, many women incorrectly believed that cancer was their number one health risk. Collins et al. (2004) surveyed 1,420 college students (75% White, 45% female) and found that 67% believed cancer was the leading cause of death of women. Similarly, Mosca et al. (2003) found that 51% of those surveyed believed cancer was the greatest health concern facing women, and specifically, 35% believed breast cancer, in particular, was their greatest health concern. To highlight the progress that has been made, Christian et al. (2007) surveyed 1,005 women (71% White, average age 50 years) and Munoz et al. (2010) surveyed 320 college females (30% White, average age 23 years) and found that only 27% and 33%, respectively, believed that breast cancer was their greatest health concern. The results of this current study showed even more promising results, in that only 17% of women believed breast cancer to be the number one killer of women. Even though, generally speaking, these numbers are still relatively high (nearly one-fifth to one-third of women still believe cancer is the leading cause of death of women today), there has still been some improvement.

Table 5

Survey Results of CHD Knowledge Tool for Women

Question	Response Choices	Brown (2011) Percent	Thanavaro (2010) Percent
1. Heart disease related to heart artery blockages develops _____ and can easily go undetected.	a. fast overnight b. fast over weeks c. slowly over months d. slowly over many years	3.9 11.7 19.5 64.8	71.4
2. Obesity _____	a. may cause heart disease b. may prevent heart disease c. has no effect on heart disease d. may make the heart become stronger	97.7 0.0 0.0 2.3	98.0
3. Which statement is true regarding symptoms of heart pain or heart attack?	a. chest pain b. chest tightness c. unusual fatigues d. all of the above	0.8 0.0 0.8 98.4	91.8
4. Which statement best describes menopause and heart disease related to clogged heart artery?	a. Women are less likely to get heart disease after menopause than before b. Women are more likely to get heart disease after menopause than before c. Menopause does not increase or decrease the risk of heart disease in women d. There is evidence that women are less likely to get heart disease after menopause	6.3 50.4 26.0 17.3	49.0

Table 5 (cont)

5. Which statement is true regarding heart attack and stroke in women?	a. African American women are more likely than white women to die from a heart attack or stroke	21.9	57.1
	b. African American women are less likely than white women to die from a heart attack or stroke.	19.5	
	c. African American and white women have the same chance of dying from a heart attack or stroke.	46.9	
	d. African women are more likely to have heart attack than stroke and white women are more likely to suffer from stroke than heart attack.	11.7	
6. High _____ may cause heart artery blockage?	a. cholesterol	99.2	100.0
	b. zinc	0.0	
	c. iron	0.0	
	d. calcium	0.8	
7. Symptoms of heart pain or heart attack may include _____.	a. neck, shoulder or arm pain.	18.0	
	b. back pain.	0.8	
	c. dizziness	6.3	
	d. all of the above.	75.0	79.6
8. Which statement is true regarding heart disease from clogged heart artery in women and men?	a. Women and men become seriously ill or die equally once they are diagnosed or identified as having heart disease.	20.5	
	b. Once women are diagnosed or identified as having heart disease, they are less likely than men to become seriously ill or die.	22.8	
	c. Once women are diagnosed or identified as having heart disease, they are more likely than men to become seriously ill or die.	28.3	24.5
	d. Clogged heart artery is more common in women and more serious in men.	28.3	

Table 5 (cont)

9. What is the effect of stress on heart disease?	a.	Stress has no effect on heart disease.	0.8	98.0
	b.	Stress may prevent heart disease.	0.0	
	c.	Stress may cause heart disease.	85.3	
	d.	It has no proof that stress has no effect on heart disease.	13.3	
10. Which statement is true regarding prevention of heart disease and clogged heart artery in women?	a.	Vitamin supplement prevents heart disease.	32.8	46.9
	b.	Reducing dietary salt may cause high blood pressure and heart disease.	12.5	
	c.	There is no evidence that hormone therapy or replacement prevents heart disease.	11.7	
	d.	All of the above.	43.0	
11. What is the relationship between high blood pressure and heart disease?	a.	High blood pressure will make the heart stronger and able to endure more stress.	1.6	98.0
	b.	High blood pressure may prevent heart disease.	3.1	
	c.	High blood pressure has no effect on heart disease.	2.3	
	d.	High blood pressure may cause heart disease.	93.0	
12. Which statement best describes the relationship between heart disease and stroke?	a.	It is true that some forms of heart disease may result in stroke.	75.8	89.8
	b.	It is false that some forms of heart disease may result in stroke.	3.9	
	c.	It is not certain whether heart disease may result in stroke.	18.0	
	d.	Heart disease never causes stroke.	2.3	

Table 5 (cont)

13. What is the effect of dietary fat on heart disease?	a.	A high fat diet may prevent heart disease.	3.9	
	b.	A high fat diet may cause clogged heart artery.	93.8	95.9
	c.	A high fat diet does not affect heart disease.	0.8	
	d.	A low fat diet may cause clogged heart artery.	1.6	
14. Which statement is true about the effect of alcohol on heart disease?	a.	Moderate alcohol use (1-2 drinks per day) may cause heart disease.	31.8	
	b.	Moderate alcohol use (1-2 drinks per day) may prevent heart disease.	31.0	22.4
	c.	The effect of alcohol in preventing heart disease increases as the amount of alcohol use increases.	11.6	
	d.	There is no evidence that moderate alcohol use (1-2 drinks per day) may prevent heart disease.	25.6	
15. Smoking may cause _____.	a.	high blood pressure.	35.4	
	b.	heart valve leakages.	8.7	
	c.	heart artery blockages.	26.8	44.9
	d.	inflammation of heart muscle.	29.1	
16. What is the relationship between female hormone and heart disease in women?	a.	High level of some female hormone may cause heart disease in women.	41.3	
	b.	Low level of some female hormone may increase heart artery blockages in women.	20.6	20.4
	c.	Low level of some female hormone may prevent heart disease in women.	12.7	
	d.	Level of some female hormone has no effect on heart disease in women.	25.4	

Table 5 (cont.)

17. Which statement is true regarding the effect of race on heart disease in women?	a.	The chance of getting heart disease is equal in African American and white women.	43.8	
	b.	African American women are less likely to have heart disease than white women.	18.0	
	c.	African American women are more likely to have heart disease than white women.	35.9	59.2
	d.	Both white and African American women rarely have heart disease.	2.3	
18. How does dietary cholesterol affect heart disease?	a.	Reducing dietary cholesterol does not affect heart disease.	1.6	
	b.	Reducing dietary cholesterol may make the heart become smaller.	4.8	
	c.	Reducing dietary cholesterol may prevent clogged heart artery.	91.1	95.9
	d.	Reducing dietary cholesterol may cause heart disease.	2.4	
19. Which statement is true regarding exercise and heart disease?	a.	Excessive exercise may weaken heart muscle.	1.6	
	b.	Routine exercise may prevent heart disease.	95.2	95.9
	c.	A sedentary lifestyle may prevent heart disease.	1.6	
	d.	The benefit of exercise on the prevention of heart disease is not conclusive so it is not important for me to start a routine exercise program.	1.6	
20. Symptoms of heart pain or heart attack may include _____.	a.	shortness of breath.	3.9	
	b.	sweating.	1.6	
	c.	nausea.	0.0	
	d.	all of the above.	94.5	85.7

Table 5 (cont.)

21. Which statement is true about the effect of red meat on heart disease?	a. Reducing dietary red meat may prevent heart artery blockages.	67.2	87.8
	b. Reducing dietary red meat may cause heart artery blockages.	14.4	
	c. Reducing dietary red meat does not affect heart disease.	10.4	
	d. Reducing dietary red meat may weaken your heart.	8.0	
22. Which statement best describes the effect of family history on heart disease?	a. A family history of heart disease from clogged heart artery does not affect your risk of getting heart disease.	2.4	87.8
	b. A family history of heart disease from clogged heart artery may increase your risk of getting heart disease.	94.4	
	c. A family history of heart disease from clogged heart artery may decrease your risk of getting heart disease.	1.6	
	d. There is no evidence that a family history of heart disease from clogged heart artery may increase your risk of getting heart disease.	1.6	
23. What is the relationship between diabetes and heart disease?	a. Heart disease is not related to diabetes.	7.1	79.6
	b. Diabetes may increase the chance of having a heart attack.	88.9	
	c. Diabetes may prevent heart disease.	1.6	
	d. Diabetes makes the heart heal faster after a heart attack.	2.4	
24. A risk factor of heart disease related to clog heart artery that cannot be changed is ____.	a. smoking.	4.0	69.4
	b. heredity.	88.9	
	c. obesity.	4.8	
	d. high blood pressure.	2.4	

Table 5 (cont.)

25. What is the leading	a. Heart disease and stroke.	75.2	65.3
cause of health care	b. Breast cancer.	17.6	
problems and death in	c. Diabetes.	0.0	
women?	d. Obesity.	7.2	

Note: Correct answers are listed in bold.

Summary

This study surveyed 129 women from a small, Midwest university. A total of 93% were White, over 98% were between the ages of 18 and 21 years, and 87% had less than one year of completed college education. The results of this research showed that overall, primary care providers are not adequately discussing heart disease with their young women patients, as over 77% reported that these discussions had not taken place. Further, young women do not consider themselves to be at great risk for the future development of heart disease, as is evident by the fact that, when asked to rate how likely they were to get heart disease, 85% of the young women scored between neutral (3) and not at all likely (1) (mean 2.52, standard deviation 0.94). Finally, the surveyed young women demonstrated an overall lack of knowledge of coronary heart disease, given that the average score on the CHD knowledge tool was only 68%.

Chapter V

Research Summary, Discussion, and Recommendations

Introduction

It is well documented that women of all ages are lacking an overall knowledge of coronary heart disease. What is more concerning, however, is the fact that because of this lack of knowledge, women underestimate their personal risk factors and do not perceive heart disease as a threat to their health – the combination of which could be very deadly, given that nearly one in two women will die from this disease. Further, research also shows that on the whole, primary care providers are not discussing heart disease with women, especially young women. This is extremely disheartening, since the most effective deterrent for heart disease is primary prevention, which includes the incorporation of healthy lifestyle modifications prior to the development of heart disease risk factors.

There were three questions that the author of this research study sought to answer. The first question was if primary care providers were discussing CHD with young women, and it was concluded that they were not. The second question was if young women perceived themselves to be at risk for heart disease, and if they considered the disease a threat to their health; and again, the survey results indicated that they did not believe they were personally at risk for heart disease nor did they perceive the disease a threat to their health. Finally, the third question was to determine what the knowledge level was of young women in regards to CHD; and the results indicated an overall lack of knowledge, as the average score on the CHD knowledge tool was only 68%.

As is evident by these results, the importance of primary care providers educating young women on heart disease cannot be overstated. Young women must become knowledgeable about heart disease and taught interventions which will prevent the development of risk factors for it. If young women are more educated, they will be better able to identify their personal risk factors and see heart disease as more of a serious threat to their health. This will, in turn, encourage them to live healthier lifestyles, such that they can reduce their chances of developing this disease in the future. Overall, some progress has been made in heart disease awareness and knowledge among women; however, as is evident by this study, there is still much work to be done.

Summary of Study and Study Findings

The researcher of this study surveyed 129 college women to determine if their healthcare providers had discussed heart disease with them, to find out if young women perceived heart disease as a threat to their health, and to determine what their overall coronary heart disease knowledge level was. Demographically, 93% of the participants were White and 98% were between the ages of 18 and 21 years. It was found that overall, young women lack a general knowledge of heart disease, as was evident by the average score on the Coronary Heart Disease Knowledge Tool of only 68%. Further, it was found that young women do not believe they are at great risk for developing heart disease, and they do not perceive heart disease to be a great threat to their personal health. Further, sadly, only 23% of the young women had discussed heart disease with their primary care providers.

Discussion and Implications for Practice and Further Research

Study limitations. The major limitation of this study was the fact that each of the study participants was attending college, and this is not consistent with the general population of young women. However, as previously stated, since this data show that young college women have low knowledge levels, low perceived risk, and low perceived threat, it can be assumed that these variables in the general population would be even lower, given their lack of higher education as a group compared to the sample population. A second limitation of this study is the potential for selection bias due to the participants having the option to opt in or out of the study by either completing or not completing the survey. Finally, one last limitation was the fact that the participants were very homogenous and not ethnically diverse, which greatly limits the generalizability of the results.

Discussions with primary care providers. Current research shows that many primary care providers are not discussing heart disease with women. Older women have a greater chance of having this discussion, as Mosca et al. (2006) reported, nearly 54% of those surveyed (average age 51 years) had discussed heart disease with their providers. This number is significantly lower in the population of younger women, especially. Collins et al. (2004) reported that only 14% of those surveyed (1,420 college students) had discussed heart disease with their providers and only 23% of participants in this current study had. It is encouraging to see that as women age and their risks for heart disease rise, there is a greater chance that primary care providers will discuss heart disease with them; however, only 54% is not enough. Heart disease kills nearly 50% of all women, and therefore should be discussed with every woman at each and

every opportunity – especially in the primary care setting. It is the responsibility of the provider to not only initiate these discussions, but to ensure their effectiveness, as well.

Perceived risk of heart disease. The young women surveyed in this study were not overly concerned about getting heart disease, nor did they perceive themselves to be at great risk for developing it. Surprisingly, however, they do consider heart disease to be an extremely serious disease - they just do not believe the disease will affect them. This is very typical of many young people's beliefs and thought processes. They possess an "it won't happen to me because I am invincible" attitude. This only highlights the extreme importance of educating these young women that one in every two women will die from this disease, and thus, yes, it can indeed happen to them, and it *will* happen to them if they do not start partaking in the proper healthy lifestyles to prevent it. Again, this is where primary care providers play a key and extremely important role.

Young women's lack of perceived personal risk for heart disease may also tie in to their lack of knowledge about the disease, as well. As is consistent with the adapted Health Belief Model, which guided this study (Schroetter & Peck, 2008), young women's perceived threat of heart disease is directly related to their perceived susceptibility of heart disease, the perceived seriousness of the disease, and their personal knowledge of the disease. If young women are not knowledgeable about heart disease or their risks for developing it, they will not perceive the disease as a threat, and thus, will not partake in healthy lifestyle modifications to prevent the development of it. This study also revealed that young women do seem to understand that there is some personal responsibility for preventing heart disease. This provides a great opportunity for primary care providers to begin teaching prevention strategies to this vulnerable population.

It is also important to highlight the high percentage of respondents in this survey who scored neutral on the Likert scales when asked about their perceived personal risks and concern for developing heart disease. This could be explained in one of two ways. First, the respondents truly believed that they were neutral in their personal risks for developing heart disease, or second, they had a considerable lack of knowledge about heart disease and honestly did not know their personal risk for heart disease or if they should be concerned about it. Either way, however, it only highlights the importance of further educating these young women. If they don't believe they are at any more risk than anyone else and/or are neutral in their concern for developing heart disease, there is an obvious and clear lack of knowledge nonetheless.

Coronary heart disease knowledge. The young women in this study, as previously discussed, had an overall low knowledge level of coronary heart disease and scored an average of only 68% on the knowledge tool. These results were comparable to the results Thanavaro (2010) found when surveying a population of older women, who, on average, scored 72%. These findings are rather interesting, given the large age discrepancy between the two studies. It would be assumed that the older population of women, whose providers, as mentioned above, is more likely to discuss heart disease with them, would have a higher knowledge level and would, therefore, have a significantly higher average score on the knowledge tool than the younger women. Since this was obviously not the case, it leaves one to wonder the effectiveness of primary care provider's heart disease discussions in this older population.

A further point that must be acknowledged when discussing the consistency in low scores on the heart disease knowledge tool between these two age groups is that this current study's population was 97% White, while the original Thanavaro et al. (2010)

study was only 49% White. Knowing that, as previously mentioned, the minority population is typically less knowledgeable about heart disease, these (predominantly White) young women's low scores on the knowledge tool are even more worrisome.

Recommendations for Practice

Specifically, the most beneficial thing that primary care providers can do for any woman patient is to initiate discussions about coronary heart disease at every available opportunity. Knowing that most women are not knowledgeable about this disease and are typically completely unaware of their risk factors should be a prime motivator for providers to initiate these discussions. Discussions should take place at a minimum of yearly, during a woman's yearly well woman exam; however, given the extensively documented lack of knowledge that most women display, in addition to the severity of this disease, *any* office visit would be an appropriate time to incorporate heart disease education. Once women understand the extreme danger of heart disease, and they realize that one out of every two women will die from it, they may be more apt to perceive it as a threat to their own personal health.

Therefore, primary care providers must also educate each and every woman on her own personal risk factors for heart disease and give specific recommendations for lifestyle modifications to reduce future risks. Educational tips, such as quitting smoking; consuming a healthy, low fat diet with small amounts of alcohol; and exercising at least 30 minutes per day on most days of the week are key interventions that every woman should become knowledgeable about and, therefore, should be discussed as often as possible in the primary care setting. These interventions are especially important for younger women to hear and understand, as the sooner they become more

knowledgeable, the sooner they may implement these healthy lifestyle modifications, and the greater their chance of deterring the development of heart disease risk factors.

Recommendations for Further Study

As previously discussed, it is known that older women have a greater chance of having heart disease discussions with their primary care providers. However, these older women scored very similarly to younger women on the Coronary Heart Disease Knowledge tool, leaving many questions regarding the effectiveness of these heart disease discussions. Future studies could further explore these discussions that are taking place in the primary care setting between women and their providers and determine exactly how effective they are. Specifically, what are providers telling women, are personal risk factors being discussed, are healthy lifestyle modifications being recommended, and are women more knowledgeable after these discussions than they were before the discussions took place?

Summary

In conclusion, while some studies show that heart disease awareness among women is improving, there clearly remains a consistent lack of overall knowledge in both the older and younger female populations. The young women surveyed in this study, much like their previously studied older counterparts, are lacking in general knowledge about coronary heart disease. They are also, as a whole, unrealistically optimistic regarding their future risks of developing heart disease and do not see this disease as a great risk to their personal health.

It is largely the responsibility of primary care providers to educate women on the risks and dangers of this deadly disease at every available opportunity. It is especially important to start this education early on in the younger population of women, such that primary prevention strategies can be implemented to help avoid the development of this disease. As explained by the Health Belief Model for Women and Heart Disease, once young women become more knowledgeable, they will be better able to understand their risks and will begin to see heart disease as more of a personal threat. This, in turn, will greatly increase their chances of partaking in healthy lifestyle modifications, which will reduce their personal risk factors and assist in preventing the development of this deadly disease.

APPENDIX A
CORONARY HEART DISEASE KNOWLEDGE TEST FOR WOMEN

Coronary Heart Disease Knowledge Test for Women

Directions: Circle one best answer.

1. Heart disease related to heart artery blockages develops _____ and can easily go undetected.
 - a. fast overnight.
 - b. fast over weeks.
 - c. slowly over months.
 - d. slowly over many years.
2. Obesity _____
 - a. may cause heart disease.
 - b. may prevent heart disease.
 - c. has no effect on heart disease.
 - d. may make the heart become stronger.
3. Which statement is true regarding symptoms of a heart pain or heart attack?
 - a. Chest pain may be a symptom of heart pain or heart attack.
 - b. Chest tightness may be a symptom of heart pain or heart attack.
 - c. Unusual fatigue may be a symptom of a heart pain or heart attack.
 - d. All of the above.
4. Which statement best describes menopause and heart disease related to clogged heart artery?
 - a. Women are less likely to get heart disease after menopause than before.
 - b. Women are more likely to get heart disease after menopause than before.
 - c. Menopause does not increase or decrease the risk of heart disease in women.
 - d. There is evidence that women are less likely to get heart disease after menopause than before.
5. Which statement is true regarding heart attack and stroke in women?
 - a. African American women are more likely than white women to die from a heart attack or stroke.
 - b. African American women are less likely than white women to die from a heart attack or stroke.
 - c. African American and white women have the same chance of dying from a heart attack or stroke.
 - d. African women are more likely to have heart attack than stroke and white women are more likely to suffer from stroke than heart attack.
6. High _____ may cause heart artery blockages.
 - a. cholesterol
 - b. zinc
 - c. iron
 - d. calcium
7. Symptoms of heart pain or heart attack may include _____
 - a. neck, shoulder or arm pain.
 - b. back pain.
 - c. dizziness
 - d. all of the above.

8. Which statement is true regarding heart disease from clogged heart artery in women and men?
- a. Women and men become seriously ill or die equally once they are diagnosed or identified as having heart disease.
 - b. Once women are diagnosed or identified as having heart disease, they are less likely than men to become seriously ill or die.
 - c. Once women are diagnosed or identified as having heart disease, they are more likely than men to become seriously ill or die.**
 - d. Clogged heart artery is more common in women and more serious in men.
9. What is the effect of stress on heart disease?
- a. Stress has no effect on heart disease.
 - b. Stress may prevent heart disease.
 - c. Stress may cause heart disease.**
 - d. It has no proof that stress has no effect on heart disease.
10. Which statement is true regarding prevention of heart disease and clogged heart artery in women?
- a. Vitamin supplement prevents heart disease.
 - b. Reducing dietary salt may cause high blood pressure and heart disease.
 - c. There is no evidence that hormone therapy or replacement prevents heart disease.**
 - d. All of the above.
11. What is the relationship between high blood pressure and heart disease?
- a. High blood pressure will make the heart stronger and able to endure more stress.
 - b. High blood pressure may prevent heart disease.
 - c. High blood pressure has no effect on heart disease.
 - d. High blood pressure may cause heart disease.**
12. Which statement best describes the relationship between heart disease and stroke?
- a. It is true that some forms of heart disease may result in stroke.**
 - b. It is false that some forms of heart disease may result in stroke.
 - c. It is not certain whether heart disease may result in stroke.
 - d. Heart disease never causes stroke.
13. What is the effect of dietary fat on heart disease?
- a. A high fat diet may prevent heart disease.
 - b. A high fat diet may cause clogged heart artery.**
 - c. A high fat diet does not affect heart disease.
 - d. A low fat diet may cause clogged heart artery.
14. Which statement is true about the effect of alcohol on heart disease?
- a. Moderate alcohol use (1-2 drinks per day) may cause heart disease.
 - b. Moderate alcohol use (1-2 drinks per day) may prevent heart disease.**
 - c. The effect of alcohol in preventing heart disease increases as the amount of alcohol use increases.
 - d. There is no evidence that moderate alcohol use (1-2 drinks per day) may prevent heart disease.

15. Smoking may cause _____

- a. high blood pressure.
- b. heart valve leakages.
- c. heart artery blockages.**
- d. inflammation of heart muscle.

16. What is the relationship between female hormone and heart disease in women?

- a. High level of some female hormone may cause heart disease in women.
- b. Low level of some female hormone may increase heart artery blockages in women.**
- c. Low level of some female hormone may prevent heart disease in women.
- d. Level of some female hormone has no effect on heart disease in women.

17. Which statement is true regarding the effect of race on heart disease in women?

- a. The chance of getting heart disease is equal in African American and white women.
- b. African American women are less likely to have heart disease than white women.
- c. African American women are more likely to have heart disease than white women.**
- d. Both white and African American women rarely have heart disease.

18. How does dietary cholesterol affect heart disease?

- a. Reducing dietary cholesterol does not affect heart disease.
- b. Reducing dietary cholesterol may make the heart become smaller.
- c. Reducing dietary cholesterol may prevent clogged heart artery.**
- d. Reducing dietary cholesterol may cause heart disease.

19. Which statement is true regarding exercise and heart disease?

- a. Excessive exercise may weaken heart muscle.
- b. Routine exercise may prevent heart disease.**
- c. A sedentary lifestyle may prevent heart disease.
- d. The benefit of exercise on the prevention of heart disease is not conclusive so it is not important for me to start a routine exercise program.

20. Symptoms of heart pain or heart attack may include _____

- a. shortness of breath.
- b. sweating.
- b. nausea.
- d. all of the above.**

21. Which statement is true about the effect of red meat on heart disease?

- a. Reducing dietary red meat may prevent heart artery blockages.**
- b. Reducing dietary red meat may cause heart artery blockages.
- c. Reducing dietary red meat does not affect heart disease.
- d. Reducing dietary red meat may weaken your heart.

22. Which statement best describes the effect of family history on heart disease?
- a. A family history of heart disease from clogged heart artery does not affect your risk of getting heart disease.
 - b. A family history of heart disease from clogged heart artery may increase your risk of getting heart disease.**
 - c. A family history of heart disease from clogged heart artery may decrease your risk of getting heart disease.
 - d. There is no evidence that a family history of heart disease from clogged heart artery may increase your risk of getting heart disease.
23. What is the relationship between diabetes and heart disease?
- a. Heart disease is not related to diabetes.
 - b. Diabetes may increase the chance of having a heart attack.**
 - c. Diabetes may prevent heart disease.
 - d. Diabetes makes the heart heal faster after a heart attack.
24. A risk factor of heart disease related to clog heart artery that cannot be changed is
-
- a. smoking.
 - b. heredity.**
 - c. obesity.
 - d. high blood pressure.
25. What is the leading cause of health care problems and death in women?
- a. Heart disease and stroke.**
 - b. Breast cancer.
 - c. Diabetes.
 - d. Obesity.

APPENDIX B
CHD PERCEIVED RISK

CHD Perceived Risk

How concerned are you about getting heart disease?

1	2	3	4	5
Not at all concerned			Extremely concerned	

How likely are you to get heart disease?

1	2	3	4	5
Not at all likely			Extremely likely	

Compared to my peers, my chances of getting heart disease are:

1	2	3	4	5
Much lower			Much higher	

How personally responsible do you think a women is for getting heart disease?

1	2	3	4	5
Not at all responsible			Extremely responsible	

APPENDIX C
CHD PERCEIVED THREAT

CHD Perceived Threat**More women die from breast cancer than heart disease.**

1

2

3

4

5

Strongly agree

Strongly disagree

How serious is heart disease?

1

2

3

4

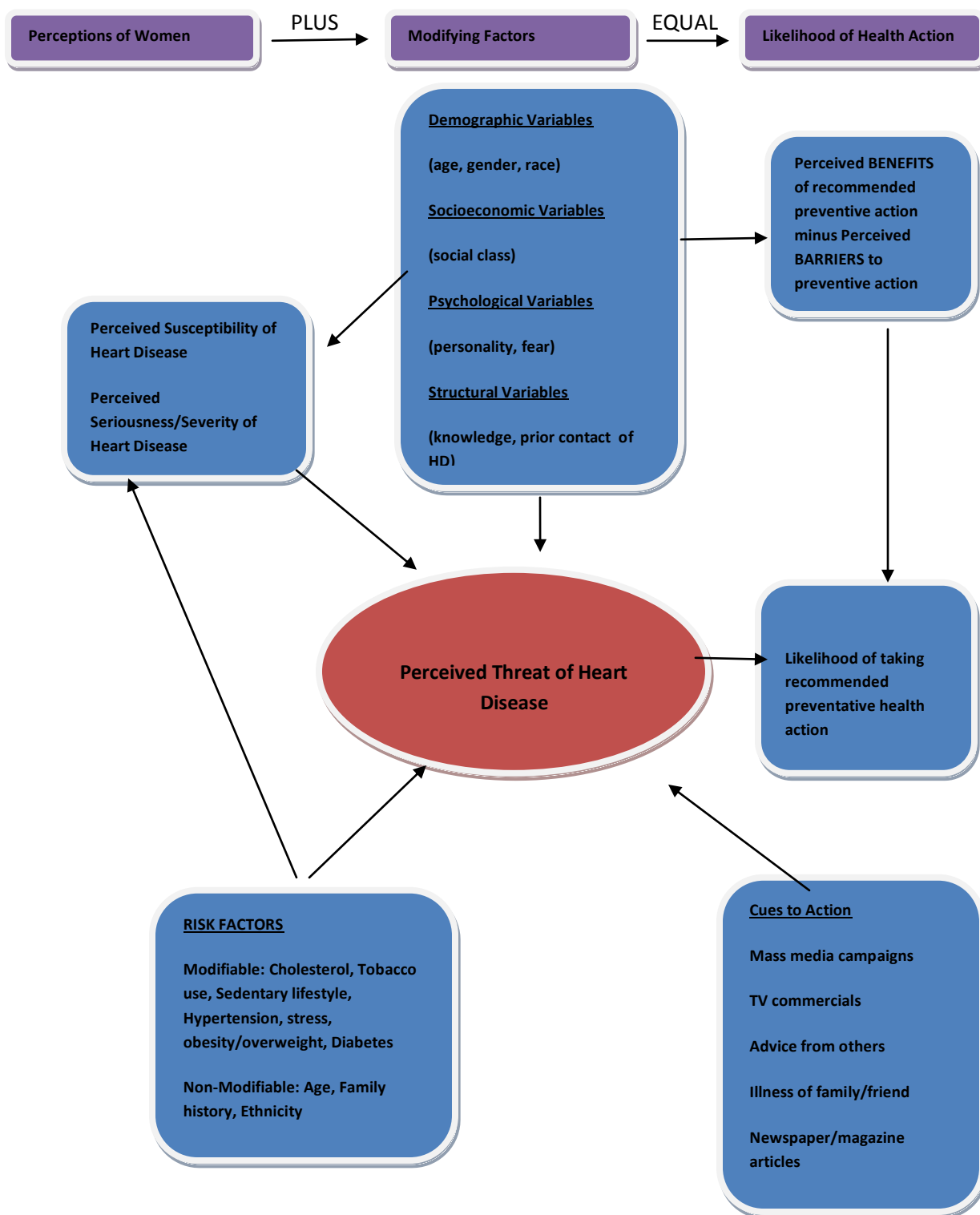
5

Not at all serious

Extremely serious

APPENDIX D
HEALTH BELIEF MODEL FOR WOMEN AND HEART DISEASE

Health Belief Model for Women and Heart Disease (Schroetter & Peck, 2008)



APPENDIX E
DEMOGRAPHIC QUESTIONNAIRE

Completion of this survey implies informed consent to participate in this research study.

Demographic Questionnaire

Age: ___18-19 ___20-21 ___22-23 ___24-25

Primary Race (choose one): ___Caucasian ___African American ___Hispanic
 ___Asian or Pacific Islander ___American Indian ___Other

Completed Years of college education: ___0 ___1 ___2 ___3 ___4 ___5+

Do you see a health care provider (Doctor, Nurse Practitioner, Midwife) for yearly female physical exams or regular yearly check-ups (including yearly exams at the student health center)? YES NO

Which type of provider do you typically see? Doctor Nurse Practitioner Midwife

Has your provider ever discussed *heart disease* with you? YES NO

Has your provider ever discussed strategies to help prevent the development of risk factors for heart disease with you? YES NO

APPENDIX F

PERMISSION TO USE THE CORONARY HEART DISEASE KNOWLEDGE TOOL FOR WOMEN

Subject	Coronary heart disease knowledge tool for women
From	Kimberly Brown <brownk87@uwosh.edu>
Date	Saturday, September 25, 2010 12:39 pm
To	jthanava@slu.edu

Dr. Thanavaro,

My name is Kimberly Brown, RN, BSN. I am a Master's student at the University of Wisconsin - Oshkosh, studying to become a Family Nurse Practitioner, and am working on my clinical research paper.

I am researching coronary heart disease knowledge and beliefs among young women aged 18-25 and would like permission to use your *Coronary heart disease knowledge tool for women*, which was presented in your 2010 journal article in the Journal of the American Academy of Nurse Practitioners 22 (2010) pp. 62-69.

If this is a possibility, could you please send/email me to entire knowledge tool, as only parts of it are represented in the journal article?

Please reply at your convenience,

Kimberly Brown, RN, BSN
 FNP Master's Student
 University of Wisconsin - Oshkosh
 920-232-9290 (home)
 920-420-8454 (cell)
brownk87@uwosh.edu (school email)
kdavis0409@yahoo.com (personal email)
kim.brown@aurora.org (work email)

Subject	Re: Coronary heart disease knowledge tool for women
From	Joanne Thanavaro <jthanava@slu.edu>
Date	Tuesday, September 28, 2010 7:57 pm
To	Kimberly Brown <brownk87@uwosh.edu>
Attachments	CHDK_Tool_With_Answers.pdf

Hi Kimberly,

Glad to hear you're interested in using my CHD knowledge tool.

I've attached it and I am giving you permission to use it.

Please let me know if it worked out well with your paper.

Dr. Thanavaro

APPENDIX G
UW OSHKOSH IRB LETTER



OSHKOSH

November 12, 2010

Ms. Kimberly Brown
UWOSH
CON

Dear Ms. Brown:

On behalf of the UW Oshkosh Institutional Review Board for Protection of Human Participants (IRB), I am pleased to inform you that your application has been approved for the following research: Young Women's Knowledge & Beliefs about Heart Disease.

Your research protocol has been classified as EXEMPT. This means you will not be required to obtain signed consent. However, unless your research involves only the collection or study of existing data, documents, or records, you must provide each participant with a summary of your research that contains all of the elements of an Informed Consent document, as described in the IRB application material. Permitting the participant, or parent/legal representative, to make a fully informed decision to participate in a research activity avoids potentially inequitable or coercive conditions of human participation and assures the voluntary nature of participant involvement.

Please note that it is the principal investigator's responsibility to promptly report to the IRB Committee any changes in the research project, whether these changes occur prior to undertaking, or during the research. In addition, if harm or discomfort to anyone becomes apparent during the research, the principal investigator must contact the IRB Committee Chairperson. Harm or discomfort includes, but is not limited to, adverse reactions to psychology experiments, biologies, radioisotopes, labeled drugs, or to medical or other devices used. Please contact me if you have any questions (PH# 920/424-7172 or e-mail: rauscher@uwosh.edu).

Sincerely,
Dr. Frances
Rauscher IRB
Chair

cc: Dr. Judith Westphal
1906

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REFERENCES

- Ali, N. S. (2002). Prediction of coronary heart disease prevention behaviors in women: A test of the Health Belief Model. *Women & Health, 35*(1), 83-96.
- American Heart Association. (2010). *Heart Disease and Stroke Statistics*. Retrieved from American Heart Association website:
http://americanheart.org/downloadable/heart/1265665152970DS-3241%20HeartStrokeUpdate_2010.pdf
- Anderson, J., & Kessenich, C. R. (2001, August). Women and coronary heart disease. *The Nurse Practitioner, 26*(8), 12, 18-23, 27-28, 30-33.
- Birchfield, P. C. (2003, January). Identifying women at risk for coronary artery disease. *American Association of Occupational Health Nurses, 51*(1), 15-22.
- Brown, S. C., Geiselman, P. J., Copeland, A. L., Gordon, C., Dudley, M., Manogin, T., Ghebretatios, G. (2005). Cardiac assessment risk evaluation (CARE study) of African American college women. *Health Education Journal, 64*(1), 13-30.
- Christian, A. H., Mochari, H. Y., & Mosca, L. J. (2005, December). Coronary heart disease in ethnically diverse women: Risk perception and communication. *Mayo Clinic Proceedings, 80*(12), 1593-1599. Retrieved from www.mayoclinicproceedings.com
- Christian, A. H., Rosamond, W., White, A. R., & Mosca, L. (2007). Nine-year trends in racial and ethnic disparities in women's awareness of heart disease and stroke: An American Heart Association national study. *Journal of Women's Health, 16*(1), 68-81. doi: 10.1089/jwh.2006.m072

- Collins, K. M., Dantico, M., Shearer, N. B., & Mossman, K. L. (2004, October). Heart disease awareness among college students. *Journal of Community Health, 29*(5), 405-420.
- Green, J. S., Grant, M., Hill, K. L., Brizzolara, J., & Belmont, B. (2003, March). Heart disease risk perception in college men and women. *Journal of American College Health, 51*(5), 207-211.
- Hart, P. L. (2005). Women's perceptions of coronary heart disease. *Journal of Cardiovascular Nursing, 20*(3), 170-176.
- Jensen, L. A., & Moser, D. K. (2008). Gender differences in knowledge, attitudes, and beliefs about heart disease. *Nursing Clinics of North America, 43*, 77-104. doi: 10.1016/j.cnur.2007.10.005
- Kasper, M. J., Garber, M., & Walsdorf, K. (2007). Young women's knowledge and beliefs about osteoporosis: Results from a cross-sectional survey of college females. *American Journal of Health Education, 38*(4), 186-193.
- Marcuccio, E., Loving, N., Bennett, S. K., & Hayes, S. N. (2002). A survey of attitudes and experiences of women with heart disease. *Women's Health Issues, 13*, 23-31.
- McCance, K. L., & Heuther, S. E. (2006). *Pathophysiology: The biologic basis for disease in adults and children* (5th ed.). Philadelphia, PA: Elsevier's Health Sciences.
- McPhee, S. J., & Papadakis, M. A. (Eds.). (2010). *Current medical diagnosis & treatment* (49th ed.). San Fransisco, California: McGraw Hill.
- Merriam-Webster online dictionary. (2010). <http://www.merriam-webster.com/dictionary>

- Mosca, L., Ferris, A., Fabunmi, R., & Robertson, M. (2003). Tracking women's awareness of heart disease: An American Heart Association national study [Online exclusive]. *Circulation*. doi: 10.1161/01.cir.0000115222.69428.c9
- Mosca, L., Mochari, H., Christian, A., Berra, K., Taubert, K., Mills, T., ... Simpson, S. L. (2006). National study of women's awareness, preventive action, and barriers to cardiovascular health [Online exclusive]. *Circulation*. doi: 10.1161/circulationaha.105.588103
- Munoz, L. R., Etnyre, A., Adams, M., Herbers, S., Witte, A., Horlen, C., ... Jones, M. E. (2010). Awareness of heart disease among female college students. *Journal of Women's Health, 19*(12), 2253-2259. doi: 10.1089/jwh.2009.1635
- Oliver-McNeil, S., & Artinian, N. T. (2002, May). Women's perceptions of personal cardiovascular risk and their risk-reducing behaviors. *American Journal of Critical Care, 11*(3), 221-227. Retrieved from ajcc.aacnjournals.org
- Schroetter, S. A., & Peck, S. D. (2008, April). Women's risk of heart disease: Promoting awareness and prevention - A primary care approach. *MedSurg Nursing, 17*(2), 107-113.
- Stempfler, M. J., Hu, F. B., Manson, J. E., Rimm, E. B., & Willett, W. C. (2000, July 6). Primary prevention of coronary heart disease in women through diet and lifestyle. *New England Journal of Medicine, 343*(1).
- Thanavaro, J. L., Moore, S. M., Anthony, M. K., Narsavage, G., & Delicath, T. (2006, May). Predictors of poor coronary heart disease knowledge level in women without prior coronary heart disease. *Journal of the American Academy of Nurse Practitioners, 18*, 574-581. doi: 10.1111/j.1745-7599.2006.00174.x

- Thanavaro, J. L., Thanavaro, S., & Delicath, T. (2010). Coronary heart disease knowledge tool for women. *Journal of the American Academy of Nurse Practitioners*, 22, 62-69. doi: 10.1111/j.1745-7599.2009.00476.x
- Vale, A. (2000). Heart disease and young adults: Is prevention important?. *Journal of Community Health Nursing*, 17(4), 225-233.
- Wendt, S. J. (2005, August). Perception of future risk of breast cancer and coronary heart disease in female undergraduates. *Psychology, Health and Medicine*, 10(3), 253-262. doi: 10.1080/13548500412331334145