

THE PENNSYLVANIA STATE UNIVERSITY
SCHREYER HONORS COLLEGE

SCHOOL OF NURSING

PREVENTION OF CARDIOVASCULAR DISEASE IN YOUNG WOMEN:
AN INTEGRATIVE LITERATURE REVIEW

by

JACQUELINE LIGORSKI
Spring 2012

A thesis submitted in partial fulfillment
of the requirements for a baccalaureate degree in
Nursing with honors in Nursing

Reviewed and approved by the following:

Dr. Carol A. Smith
Associate Professor of Nursing
Thesis Supervisor

Dr. Donna M. Fick
Professor of Nursing
Honors Adviser

* Signatures are on file in the Schreyer Honors College.

Abstract

Cardiovascular disease (CVD) is a major cause of death and disability for women in the United States. The women's ability to understand their actual cardiovascular risk, the pros and cons of possible treatment and their options for modifying risks, earlier in life, when values are being developed, may increase the likelihood that they will be actively involved in adopting in health lifestyle behaviors that support heart health. The purpose of this integrative review of the literature is to review, critique and synthesize research literature on prevention of cardiovascular disease in women to enhance understanding of the problem and identify potential strategies for improvements. A comprehensive review of the literature was conducted on research studies published between 2000 and through 2011. Key search terms included: *Cardiovascular Disease, heart disease, women, awareness, prevention programs and English Language programs*. The inclusion and exclusion criteria narrowed the results to 14 studies included in this integrative review. The aims of the integrative review were to determine if any research has been done to raise awareness of cardiovascular disease risk in women; determine if strategies studied were aimed at younger ages to maximize awareness of potential for risk; determine if there is any evidence of strategies to target adult women earlier to affects their lifestyle choices, modify their risk behavior, or alter actual incidence of cardiovascular disease in women studied. The results showed that there is a lack of research done in the area of cardiovascular disease awareness and prevention. This review identified that there is a lack of research conducted on women's awareness and perception of cardiovascular disease risk, especially among young women, therefore more research is needed to evaluate the extent of the problem.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS.....	iii
Chapter 1 Introduction and Significance.....	1
Chapter 2 Background.....	6
Chapter 3 Methods	13
Chapter 4 Results	16
Chapter 5 Discussion	29
Chapter 6: Implications for Future Research	35
References	42

ACKNOWLEDGEMENTS

I would like to thank Dr. Carol Smith for the expert guidance she has provided me during the process of writing this thesis. Her knowledge about the subject of cardiovascular disease prevention and her willingness to teach has been imperative to the completion of this work. I am very grateful for her feedback and for her encouragement as I navigated a subject that would have otherwise been overwhelming.

I would also like to thank Dr. Donna Fick for her encouragement and for educating me about the process of thesis writing. I greatly benefited from her guidance and her knowledge of nursing research. I am grateful for her feedback and her support.

Chapter 1: Introduction and Significance

Cardiovascular disease (CVD) is a major cause of death and disability for women in the United States, claiming approximately 500,000 women's lives each year. CVD kills one woman per minute every year, causing more deaths in women than the subsequent six causes of death combined (Lloyd-Jones et al., 2009). Cardiovascular disease is also ranked first among all disease categories in hospital discharges for women. Nearly 37 percent of all female deaths in the United States occur from CVD, which includes coronary heart disease (CHD), stroke and other cardiovascular diseases. CVD is a particularly significant problem among minority women. The death rate due to CVD is substantially higher in black women than in white women (Lloyd-Jones et al.).

It was reported in 2005 that the top causes of death for women were CVD (454,613); cancer all forms combined (268,890); coronary heart disease (213,572); breast cancer (41,116); and lung cancer (67,894) (Facts about Women and CVD, 2011). In spite of the prevalence of heart disease, women are still less likely to receive appropriate CVD preventive care than other preventive care (e.g. mammograms) and do not recognize heart disease as a major healthcare concern (Christian; Rosamond, White, & Mosca, 2007; Mosca, Ferris, Fabunmi, & Robertson 2004).

Many contend that most women in the United States have a limited understanding of their risk of CVD. Although CVD is the primary cause of death in women, past studies have found that most women believe that breast cancer is a greater threat to their health (The Partnership for Women's Health, 1997). A 2003 American Heart

Association study of more than 1,000 women conducted by Harris Interactive, Inc., revealed the lack of understanding women have of the dangers of heart disease and stroke and found that only 13 percent of women in America considered heart disease and stroke to be the greatest health threat to women, further reinforcing that the majority of women lack knowledge and understanding of their most serious health threat (Facts about Women and CVD, 2011). The National Heart Foundation of Australia conducted a cross-sectional survey of 3,500 Australians in the year 2009 which reported that only around 20% of women knew that CVD was the leading cause of mortality for women and that they felt more threatened by breast cancer than CVD, despite the fact that mortality from heart disease is four times higher (Heeley, Peiris, & Patel, 2010). This suggests the misconception of CVD mortality risk is widespread, perhaps due to the traditional idea that cardiovascular disease is only a risk for men. Again, more recent United States patient surveys confirm that women consider breast cancer to be their primary risk, despite evidence that cardiovascular disease accounted for 45.2% of all deaths in women (Facts about Women and Cardiovascular Disease, 2011).

Heart disease also continues to be a leading cause of disability in women (Lloyd-Jones et al. 2009). Heart disease is seen as an "older women's disease" by many since it is the leading cause of death for women over 65, however it is also the third-leading cause of death among 25- to 44-year olds (Lloyd-Jones et al, 2009). Although coronary heart disease risk "in women lags 10 years behind that of men, risk does increase progressively with age" (Bello & Mosca, 2004, p. 286). Despite a declining death rate from cardiovascular disease over the past 20 years, the number of

women dying has continued to rise because of an aging population (Lloyd-Jones et al. 2009).

The more cardiovascular disease risk factors a woman has, the greater her risk is of having a heart attack or stroke. Some markers of cardiovascular disease may be identified by blood tests that include a lipid panel (lipid profile) that measures four types of fat in the blood: 1) total cholesterol (TC), all cholesterol in the blood (high level is above 240 mg/dl); 2) triglyceride stored in fat cells when the intake of calories exceeds what the body can burn (“high” if above 200 mg/dL) ; 3) Low density lipoprotein (LDL), high levels cause the buildup of plaque or fat deposits (“high” if above 160 mg/dL); and 4) High density lipoprotein (HDL) which works to take LDL cholesterol from the blood (below 70-100 mg/dL is considered ideal). Patients with coronary artery disease (CAD) commonly have low HDL cholesterol (Ballantyne et al., 1999).

In addition, the identification of high blood pressure (HBP) is often associated with the onset of CVD. Blood Pressure is the measurement of pressure of the blood flowing through the blood vessels against the vessel walls. Blood pressure above 120mmHg systolic BP/ 80mmHg diastolic (Vasan et al., 2001) supports a diagnosis of hypertension.

The identification of a high fasting serum glucose above (126mg/dl) may indicate the need for further testing to rule out the diagnosis of adult onset diabetes mellitus (Type II diabetes), a problem often associated with cardiovascular disease (Zavaroni, et al., 1989).

Some of the risk factors for CVD cannot be controlled, such as increasing age, family health history, race and gender. However, many risk factors may be controlled to

reduce risk of disease. For example, lifestyle changes that can be made to modify risk factors include: abstinence from smoking tobacco; monitoring and treating high blood cholesterol; monitor, control, and treatment high-blood pressure; increasing physical activity; controlling and managing body weight and eating a heart healthy diet; controlling and managing diabetes mellitus (type II); controlling and treating serum cholesterol levels; reducing alcohol intake; and managing individual stress with a constructive response (Lloyd-Jones et al., 2009).

As women age, they are also more likely than men to have concomitant disease such as diabetes and hypertension further placing them at higher risk for reduced functional capacity (Ades et al., 2004; Davidson et al., 2003). Postmenopausal women with three or more risk factors are at an increased risk of having a cardiovascular event (Gami et al. 2007). Therefore, having knowledge of the risk factors associated with CVD early in life could help women tailor their behavior and lifestyle to limit or prevent the onset of disease.

Health care providers and health educators need to develop improve prevention programs and design strategies to target specific populations that are based on research evidence. The need for evidence-based interventions is particularly needed for young women and women of diverse backgrounds. According to Lipp, Deane, and Trimble (1996), "Interventions must begin early in life if heart disease is to be prevented" (Lipp et al.,,p104).

The purpose of this review is to provide an integrative literature review of research focused on prevention of cardiovascular disease in women with an emphasis on studies focused on your women. The specific aims are to 1) determine strategies that have

been most effective in raising awareness of cardiovascular disease risk in women; 2) determine if strategies studied were aimed at younger ages to maximize awareness of potential for risk; and 3) determine if there is any evidence that strategies that target adult women earlier affects the lifestyle choices, modifies their risk behavior, or alters actual incidence of cardiovascular disease in this population. For the purpose of this review, “young women” has been defined as 45 years old age and younger.

Chapter 2: Background

Cardiovascular Disease (CVD) is a broad term used to describe a range of diseases that affect the heart. The various diseases that fall under the umbrella of heart disease include diseases of the blood vessels, such as coronary artery disease; heart rhythm problems also termed arrhythmias; heart infections; and heart defects people are born with congenital heart defects. The term "heart disease" is often used interchangeably with "cardiovascular disease." Cardiovascular disease generally refers to conditions that involve narrowed or blocked blood vessels that can lead to a reduction of blood flow to the heart muscle resulting in chest pain (angina) or stroke. Other heart conditions, such as infections and conditions that affect the heart's muscle, valves or beating rhythm, also are considered forms of heart disease (Nash, 2008).

Major causal risk factors associated with cardiovascular disease include an unhealthy diet, physical inactivity, smoking, high blood pressure, dyslipidemia, high plasma glucose, and being overweight (Yusuf, Hawken, & Ounpuu, 2004). The cardiovascular burden and risk of disease could be drastically reduced by adequately addressing modifiable risk factors.

In women, the modifiable risk factors for heart disease are in many ways similar to the risk factors in men. Primary risk factors for women include: tobacco use, sedentary lifestyle, or physical inactivity, and obesity (Nash, 2008).

Tobacco use remains a significant risk factor. Women who smoke have an extremely high relative risk for myocardial infarction, 2.24 times more of a risk compared with 1.43 for men (Heim & Brunzell, 2000). Although the prevalence of women smoking

in the United States has declined, the percentage of smokers who are women is expected to exceed men in the future due to the increasing number of women starting to smoke at younger ages. Clinical implications indicate a need to target younger female populations to stop smoking or better yet prevent cigarette smoking before it starts (Heim and Brunzell).

Sedentary lifestyle and the general physical inactivity has been identified by the American Heart Association (2007) as an independent risk factor for Cardiovascular Disease. Physical inactivity is a significant risk factor for heart disease, yet millions of women still do not exercise at all. Many studies have shown that exercise reduces the risk of heart attack and stroke, increases HDL cholesterol levels, regulates glucose, lowers blood pressure, and increases the flexibility of arteries. Exercise has also been shown to reduce mental stress as well, which has been found to benefit cardiac health. Many people can benefit from exercising for 30 minutes a day, at least three times a week (Desvigne-Nickens, 2009).

Obesity is a strong predictor of heart disease, especially among women. A person is considered obese if body weight exceeds the "desirable" weight for height and gender by 20 percent or more (Desvigne-Nickens, 2009). Where fat settles on the body is also an important predictor. Women who have a lot of fat around the waist are at greater risk than those who have fat around the hips. In the United States, about one third of women are classified as obese and a diet and exercise plan approved by a health care provider is viewed by some as the best way to safely lose weight (Desvigne-Nickens).

Age has been found to impact the association of body mass and cardiovascular disease mortality. Analysis of the American Cancer Society's Cancer Prevention Study data found that among men and women aged 30–74 years, a greater body weight was associated with an increased risk of death from cardiovascular disease, and that the risk associated with excess weight was greater in younger people (Stevens, et al. 1998).

Although age is a non-modifiable risk factor, it is known that as one ages, cardiovascular disease risk increases, since heart disease can often be prevented it can be considered a controllable aspect of aging (Stevens, et al. 1998). Many heart disease risk factors can be managed through lifestyle modification.

Increasing women's ability to understand their actual cardiovascular risk, the pros and cons of possible treatment and their option for modifying risk, earlier in life, when values are being developed, may increase the likelihood that they will be actively involved in the decision to make a changes in health lifestyle behavior that will result in improved and sustained heart health.

Perception:

It has been found that even if women are at high risk for cardiovascular disease, they often lack knowledge, perception, and awareness which puts them at an even greater risk of developing heart disease (Scott and Curbow, 2006).

Studies of risk perception examine the judgments people make when they are asked to characterize and evaluate harmful behaviors and activities (Slovic, 1987). This type of research aims to aid risk analysis and policy-making by providing a basis for understanding and anticipating public responses to behaviors and improving the

communication of risk information among lay people, and healthcare providers. This work assumes that those who promote and regulate health and safety need to understand how people think about and respond to risk. Without such understanding, well-intended policies may be ineffective (Slovic).

Risk Assessment Tools:

In primary prevention of cardiovascular disease (CVD), it is generally accepted that the intensity of risk factor treatment should be guided by the magnitude of absolute risk. When considering the assessment and evaluation tools used to assess the risk of cardiovascular disease and the perception of risk in the patient, a tool was recurrent in many of the studies. The FRAMINGHAM RISK ASSESSMENT TOOL was found in this review to be the most common tool used for assessment of Cardiovascular Disease risk. This risk assessment tool is based on information from the Framingham Heart Study to predict the risk of developing a cardiovascular disease event such as a myocardial infarction (heart attack) or death from coronary disease within the next 10 years. This tool is designed for people aged 20 years and older without known heart disease, who do not have diabetes. The focus of the questions is designed to assess cardiac risk factors and yield an estimated risk of a heart attack. (Nash, 2008)

Based on the results of the risk assessment using the Framingham Heart Assessment, three categories of risk (Highest Risk, Intermediate Risk and Low Risk) are assigned that incorporate the guidelines established by the National Cholesterol Education Program.

- **Highest risk:** A greater than 20% risk that you will develop a heart attack or die from coronary disease in the next 10 years. This risk can be reduced by addressing and managing your risk factors with the help of your doctor.
- **Intermediate risk:** A 10 to 20% risk that you will develop a heart attack or die from coronary disease in the next 10 years. Addressing and managing your risk factors with the help of your doctor can reduce this risk.
- **Low risk:** Less than 10% risk that you will develop a heart attack or die from coronary disease in the next 10 years. Continue to manage your risk factors and visit your doctor regularly to assess your risk. (Wilson et al., 1998, p 1840).

The risk factor markers in the Framingham calculation are age; cigarette smoking; total cholesterol; HDL cholesterol; systolic blood pressure measurement and treatment for hypertension (high blood pressure). Point values are calculated based on calculation of each of these risk factors. However, the risk score may not adequately reflect the long-term or lifetime coronary heart disease risk of young adults, which are one in two for men and one in three for women. (Wilson et al., 1998)

Other Risk Assessment Tools:

GEISELMAN FOOD PREFERENCE QUESTIONNAIRE (GFPQ): The GFPQ 14 uses a list of foods to assess overall fat preference of adults and to assess their habitual fat intake. It contains a total of 72 foods with 12 foods in each of six categories listed in random order. Subjects rate each food hedonically on a 9-point Likert scale as follows: 1 = dislike extremely; 5 = neutral, neither like nor dislike; 9= like extremely (Geiselman

et al.,1998). Test-retest reliability yielded correlation coefficients ranging from 0.82 to 0.96 for each of the six categories of foods. Validity was measured by inter-correlations of high fat versus low fat foods and was reported as 1=-86 (Geiselman et al.)

PENNINGTON BIOMEDICAL RESEARCH CENTER: FOOD FREQUENCY QUESTIONNAIRE (FFQ): is a self-administered diet history food list based on the NHANES II survey. The respondent may indicate the usual pattern of consumption as number of times per day, week, month, or year (Geiselman et al., 1998). In addition to the line-item food list, the questionnaire includes a prompted open-ended question where the respondent can indicate other frequently eaten foods. In the computer program developed to accompany the questionnaire, nutrient estimates are adjusted based on the responses to these questions (Geiselman, et al.) This tool was reported to have strong test-retest reliability for overall fat and other macronutrient intake total caloric intake; hunger and fullness ratings food listed on the FFQ were highly consistent across trials (Geiselman, et al.).

PERSONAL WELLNESS PROFILE (PWP): the PWP is a 75-item questionnaire used to assess level of wellness and cardiovascular risk behaviors. The PWP has been used extensively in health screening, managed care and health promotion programs and consists of the following subscales: eating habits, alcohol/drug use (including tobacco), stress/coping, and exercise (Brown et al, 2005). The PWP also contains subscales to assess exercise preference (for example, walking briskly, jogging, performing aerobics to music) and developing a personal interest in health-promotion programs (for example, smoking cessation, weight control, nutrition education, and stress management). The software for this instrument generates a summary report for

any sample of subjects that is tested with this instrument. The summary report for a given sample of subjects includes an overall wellness score and overall scores for the following factors: coronary risk, cancer risk, nutrition status, fitness status, stress status, substance use, and safety status (Brown et al.).

The risk assessment tool used was identified for each study, along with reliability and validity information, if available. Other risk assessment processes that did not include a specific tool were also isolated and described.

Chapter 3: Methods

A comprehensive review of the literature was conducted on original research articles reporting sources of data on the topic area that were published between 2000 through 2011. The initial search conducted used the following databases: MEDLINE, The Cumulative Index of Nursing and Allied Health (CINAHL), Pubmed, and ProQuest. Key search terms included: *Cardiovascular Disease, heart disease, women, awareness, prevention programs and English Language programs*. This search resulted in 1,539 articles, which was reduced to 801 with the exclusion criteria of disregarding research before 2000. 735 articles were excluded by review of their titles and abstract content. 66 full-text articles were retrieved and reviewed, then synthesized to 14 articles included in the review based on relevant content. Studies were included in the review if they fulfilled specific criteria, as follows.

Inclusion and Exclusion Criteria

Few relevant experimental studies were found, and no nationally representative empirical studies were found. Therefore, observational and cross-sectional studies, as well as previous literature reviews, were included in this integrated review. Studies completed outside of the United States, as long as they were written in English, were also included in order to expand the scope of studies available for review. Studies focused on women of multiple ages were reviewed to determine specific findings for younger women. Studies that did not clarify the age of female subjects were included to add to the scope of information on prevention of heart disease in women overall. The

study was not required to include a control group or a randomized sample. Studies that offered activity advice as part of a package of lifestyle choices were also included.

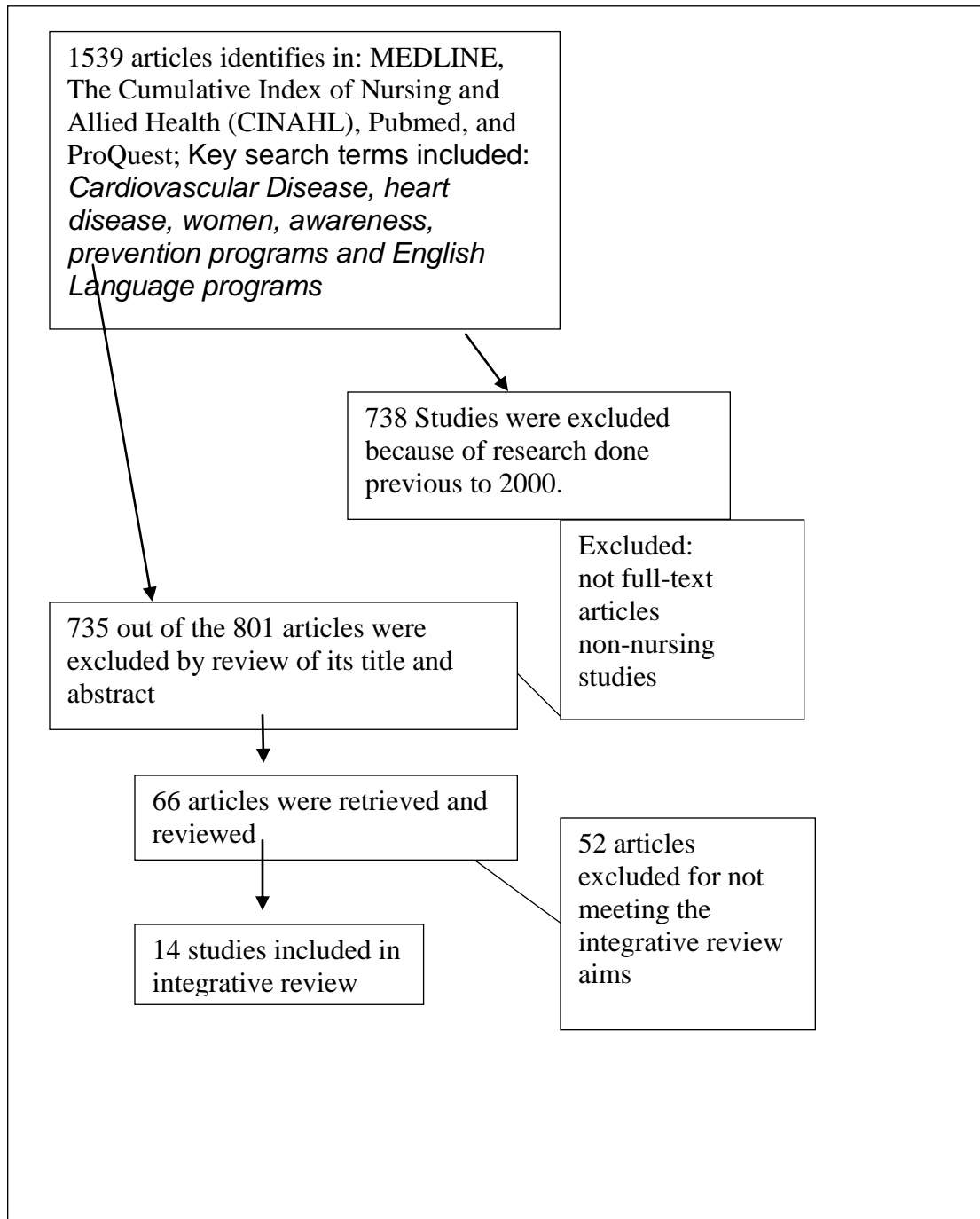


Figure 1. Article Selection Process for Strategies to Increase Awareness Of Cardiovascular Disease in Women

Chapter 4: Results

The data compiled from the analysis of the selected literature are reviewed in this section. Fourteen studies met the criteria for inclusion within the final review. The studies were published between the years 2001 and 2011.

Brown et al. (2005) developed a descriptive study to assess the cardiovascular risk factors and health promotion program preferences of African American college women: *The CARE study- Cardiac assessment risk evaluation- of African American college women*. The purpose of the study was to identify physiological and psychological variables of young African American women that may serve as a risk factor for heart disease and to assess their health promotion program preferences. One hundred (100) African American women ages 18-40 years were include in the study. The mean age of the participants was 25.5 years of age. The subjects were recruited from Historically Black Colleges and Universities in the southeast United States. The study assessed the cardiovascular risk factors and health promotion for African American college females. The instruments used in this study were four questionnaires: Gieselman Food Preference Questionnaire (GFPQ), PBRC Food Frequency Questionnaire (FFQ); and the Personal Wellness Profile (PWP). Physiological data were obtained using a stadiometer, beam balance scale, Lifescan blood glucose monitoring system, Bioscanner 200 Test System, sphygmomanometer, and carbon monoxide analyzer. The study found that the weight management behaviors of college students correlate to the rest of the population. College students exhibit high-risk behaviors that lead to obesity in later years of life. The study identified four most prevalent risk factors: poor nutrition;

overweight or obese; stress management; and inadequate exercise. Brown et al. identified physiological variables of young African American women that serve as risk factors for CVD: elevated BMI, fewer healthy nutritional behaviors and less interpersonal support for weight management. The African American population diet consists of more atherogenic foods. The researchers found that these behaviors are paralleling through all socioeconomic and education levels. The study also found that about half of the subjects had no regular exercise program. Other findings concluded that the most prevalent psychological variables of this population include stress and coping. Women regardless of race have stress due to change in roles and responsibilities. An increased stress level tends to lead to higher systolic blood pressure and cholesterol levels. The study concluded that early intervention of young African American women focusing on the most prevalent risk factor modification will promote healthy behaviors in short term and long term time spans.

Clark et al. (2011) conducted an 18 month randomized controlled trial of two designs of a program (Women Take PRIDE) to understand which intervention format prevails. The researchers hypothesized “that women assigned to an individual format of that program would exhibit the same or improved health-related quality-of-life outcomes as to the women assigned to the group program” (Clark et al.). The subjects consisted of 575 older women (60 years or older) from hospitals in southeastern Michigan that had been diagnosed with heart conditions. The subjects were randomly assigned to one of three groups- the self-directed program, the group format, or the controlled condition. In increments of 4, 12, and 18 months subject data was collected regarding functional health status, cardiovascular disease symptoms, and weight. The

measurement tool used in this study to calculate heart disease symptoms was Symptom and Health Problem Profile. The functional health status was measured by the Sickness Impact Profile (SIP), which is a 136-item generic instrument assessing ambulation, mobility and body care, and movement. Ambulation was also measured using The Six Minute Walk Test, which tested the exercise capacity of subjects. The study found that at 18 months the self-directed format was better than the control group regarding weight and symptoms. The group format was more effective for problems that required more social support such as cardiovascular problems and weight loss and exercise. Women in the group format exhibited higher levels of program participation than women in the self directed format; therefore women did better in the group program in improving management of cardiovascular disease in patients.

Colkesen et al. conducted a web-based study (2011) that investigated the CVD risk changes among subjects who voluntarily participated in a Web-based health risk assessment including tailored feedback. The study's goal was to target a large proportion of people with cardiovascular disease risk and to use primary prevention programs to address major risks. The study used a retrospective follow-up study design with three hundred and sixty-eight (368) volunteers. The study did not provide an age group. The program included online questionnaires, biometrics, doctors' appointments, over a one-year time frame. The study used the Framingham CVD risk Assessment Tool to assess the progress of pre and post study. The results of the assessment showed a relative risk reduction of 17.9%. The researches observed significant decrease in CVD morbidity and mortality risk among participants who completed the Web-based health risk assessment, those who received tailored health

advice, as measured by the Framingham scores post intervention.

Collins, Dantico, Shearer, and Mossman (2004) conducted a study in which the purpose was to explore college students' attitudes about heart disease risks and preventative strategies. The study assessed college students' knowledge of heart disease risk factors and the preventative measure that could impede the development of cardiovascular disease, by means of a survey that the researchers developed for the study. The survey instrument was reviewed and approved by the Arizona State University Institutional Review Board. The survey consisted of questions related to the perception of students about their own health risk and public health risk. The population collected consisted of 1481 student enrolled at Arizona State University. Students were of all races and both male and female. No age group was indicated. 1481 surveys were used in data analysis. Respondent surveys used for data analysis indicated that respondents did not believe that heart disease was not the number one cause of death for women. Respondents were asked to identify their own greatest health risk from: cancer, heart disease, accidents or homicides, AIDs, or Tuberculosis. Forty-four percent (n=650) of the respondents believed that cancer was their greatest health risk and only twenty four percent (n=356) thought that heart disease was the greatest health risk. The majority of students reported believing that women had a relatively low risk level for developing heart disease compared to men. The most common cause of death was cited by participants to be due to cancer. Both were incorrect (Collins et al). The results indicated that both gender and ethnicity are important factors in the perceived cardiovascular disease risk, but generally students in the study had a low perception and low knowledge level about heart disease (Collins et al.). The majority of

respondents believed that women had a generally skewed perception of and a relatively low knowledge about CVD and heart disease risk.

Fakiri, Bruijnzeels, and Hoes (2006) conducted a randomized controlled trial. The goal of the trial was to determine whether the use of the current guidelines in CVD excluded any group of substantially at risk patients. The most widely used method for CVD risk assessment. The Framingham Risk Assessment Tool, which was used to project the 10-year absolute risk. The researchers collected the data in low-income areas. The population of both men and women without a history of CVD were from different ethnic groups living in deprived neighborhoods. The population consisted of an intervention group that received intensified preventive care and a control group that received usual general practitioner care. The authors concluded that the guidelines for CVD risk and treatment of patients, with the focus on an absolute 10-year risk greater than 20%, excluded a large group of patients, specifically patients who are young and female. The researchers stated they believed that patients should be assessed based on proposed modifiable risk factors because it is more likely to identify young patients at high risk of developing CVD. Also, the absolute risk of CVD is lower in women than men using the Framingham Risk Assessment however that does not correlated to women's actual risk. The result of the randomized control trial was that of the 293 at risk patients, aged 30-70 years and 66% of them being women, the patients with the most absolute risk were predominately young women.

Folta et al (2009) conducted a randomized control study to test a community-based intervention designed to reduce CVD risk in sedentary midlife and older women who were overweight or obese. The researchers conducted a randomized controlled

trial in different counties of Arkansas and Kansas. The subjects were 40 years of age or older and had a Body Mass Index of 24 kg/m^2 or greater. The women in the intervention were asked lifestyle questions about diet, exercise, family history, and enrolled in the study program, which took place “2 days per week for 12 weeks” (Folta et al.). The participants were presented content on diet, exercise and lifestyle changes. The measurement tools used were anthropometric measurements, which were comprised of height (in centimeters) and waist and hip circumferences in inches. Weight and height were measured to calculate Body Mass Index (BMI). The results between the control group and the intervention group showed that women in the program had a trend to improve cardio-respiratory fitness and health; However, it was more likely that participants in the StrongWomen- Healthy Hearts program lost weight and decreased waist circumference over the trial time period, therefore reducing cardiovascular disease risk (Folta et al.). The results suggest that the StrongWomen-Healthy Heart program was effective in changing self-efficacy, a determinant of behavior, and several targeted behaviors (Folta et al).

Green, Grant, Hill, Brizzolara, and Belmont (2003) conducted a descriptive University and IRB approved study in 2003. The researchers aimed to assess the perception of risk at the collegiate level. 470 undergraduate students from two large four-year state universities were recruited into the study. The subjects had to complete a questionnaire that measured perceived risk for heart disease. The researchers used the 40-item causation instrument. This instrument assessed the perception of causality between risk markers thought to be causally related (Green et al). The study also used Cronbach’s alpha to test the reliability analysis of the 40-item causation instrument,

which resulted in .943 recognizing good reliability. The results of the study showed that students lack the understanding of basic causal relationships to perceive the risk of cardiovascular disease accurately (Green et al). The study found that undergraduate women perceived a number of risk markers to be more important than men did.

Halm and Denker (2003) conducted a study and used the findings to design and establish a community-based clinic within the walls of a heart hospital. The program was created to improve cardiovascular health of women in the communities. The method the researchers used was to begin with a 1 hour personalized assessment using a family genogram and heart risk screening tools. A total of 175 women went through the primary prevention programs, with a mean age of 51 years of age, age range between 20 and 70. The physical component involved an assessment of heart rate and blood pressure and height/weight” and fat analysis, a fasting cholesterol panel was also conducted. (Halm and Denker). After all the assessments were completed the patient is provided education about their current condition and educate risk prevention. The study did a follow-up in 3, 6, 12 months. The results showed that 97% of woman contacting the community-based program showed a high level of commitment to behavior changes and program effectiveness.

Koelewign-van Loon et al. (2008) conducted a randomized controlled trial to research adherence to lifestyle cardiovascular prevention advice. The interventional trial - the *IMPALA* trial- focused on determining if the intervention provided would improve adherence to lifestyle advice by involving patients in decision making on cardiovascular prevention. The method used was a cluster randomized controlled trial with 720 patients without existing cardiovascular disease but “eligible for cardiovascular risk assessment”

(Koelewign et al). No age range was provided. Subjects were recruited from twenty general practices in the Netherlands. Male and female subjects were based on the Dutch guidelines for CVRM, eligible participants required cardiovascular disease risk, for example, patients who have hypertension, smokers, diabetics, obesity, etc. The IMPALA study incorporated key factors of risk assessment, risk communication, a decision aid, and adapted motivational interviewing. The IMPALA study authors investigated whether patients' adherence to medication and lifestyle advice can be increased through patient involvement and shared decision making" (Koelewign-van Loon et al.) The primary outcome measures were the patient's adherence to lifestyle advice and drug treatment. The authors also reported that perception of risks tends to be inaccurate and people find it difficult to interpret and act upon risk information.

Liewer, Mains, Lykens, and Rene (2008) conducted a case study to identify barriers to women's cardiovascular risk knowledge, both personal and organizational, through key informant interviews of health leaders involved in health education and employed at 10 community health organizations (Liewer et al.). Subjects were females, but ages were not provided. The methods the researchers used were questionnaires and personal interviews. The Internal Review Board of the University of North Texas Health Science Center approved the research. A 10-item questionnaire was used to collect information from the women about barriers to knowledge of female cardiovascular disease risk. The investigators designed the survey, and conducted the interviews. The following key items were addressed in the interview: subjects were asked whether they thought that the following issues for women were being addressed: "the risks themselves (controllable and non-controllable); signs and symptoms; testing;

and the disease process, of women were different from men (Liewer et al.). The results of the study showed a lack of awareness of CVD risk for women. The main barriers the researchers found included the belief that the subjects' health care provider do not investigate cardiovascular health in female patients; women down play their symptoms; and women lack knowledge about female signs and symptoms of cardiovascular disease.

Moore, Kimble, and Minick (2010) conducted a qualitative study using hermeneutics, also known as interpretive phenomenology. The purpose of the study was to investigate the perceptions of risk for Chronic Heart Disease (CHD) and to examine perceptions of risk-reducing behaviors in women with diagnosed CHD and CVD (Moore, et al.). There were seven subjects, women with CHD and CVD. The women's mean age was 69.1 years (no range provided); all participants were white. Data collection continued until saturation occurred. The researchers established a rapport with the participants to increase trustworthiness and allowed them to collect a more accurate data collection: transcripts, peer debriefing, field notes. The results showed that the seven women believed their Chronic Heart Disease was currently not major problem because they were asymptomatic; therefore risk factor reduction was not something they thought much about or engaged in (Moore et al.). The study concluded that many women may not understand the severity of their disease and may not recognize the importance of reducing their risk for future cardiac events, particularly if symptoms of disease were not apparent (Moore et al.).

Mosca, Mochari, and Christian conducted a study in 2006. The purpose of this study was to evaluate the current level of females' awareness of CVD as the leading

cause of death and to evaluate whether greater awareness is associated with increased action to lower risk (Mosca et al.). 1487 women were randomly selected to be in this study and receive a standardized interviewer-assisted questionnaire. All female subjects were asked to answer questions about leading causes of death for women, personal history of CVD, personal risk factors, family history, and reasons for not speaking to their health care provider about CVD risks. Results showed that the mean age of respondents was 51.3 years of age; women participating in this study were 25 years of age or older. The demographics of the population included more Hispanic women aged 35-45 than any other racial/ethnic group. Subjects were questioned about their knowledge of current health status and recent health care evaluations through closed ended questions. The researchers found an inverse relationship between increased age and knowledge about healthy blood glucose levels, and personal and family histories of cardiovascular disease. The researchers reported that many of the subjects were not aware of health of significant health risk factors including, It was found that they did not have personal awareness of whether their own level of risk factors was healthy or not, and what possible preventative action they could take. The researchers concluded that an increased awareness of health risks is related to an increased awareness of personal risks that resulted in action taken to lower CVD risk. And in contrast, less awareness of risk was associated with inaction related to protection of self to limit risk of CVD (Mosca et al., 2006).

Munoz et al. (2006) conducted a cross-sectional design trial using a 13-item survey. The purpose of the study was to evaluate the level of awareness and knowledge of heart disease in women among college students. The researchers used a

320 collegiate women in a cross sectional designed study. The subjects were recruited from a private, federally designated Hispanic-serving Catholic university in southern Texas (Munoz et al.). The subjects' ages ranged from 18 years to 34 years. A 13 item researcher developed survey, which was based on the AHA national survey, assessed demographics, cardiovascular disease awareness, and knowledge. The study had University IRB approval. The results showed that students aged 18-24 years were significantly less likely than students aged 25-34 to identify heart disease/heart attack as the leading cause of death (Munoz et al). The study indicated that awareness of CVD in ethnic groups was much less than the awareness of CVD in white- non Hispanic-women (Munoz et al.) The study also indicated that less than a quarter of the subjects have discussed heart disease with their health care provider (Munoz et al). The researchers concluded that the perception of CVD risk in women is the primary key to prevention of CVD.

Rodriguez-Salceda et al. (2010) conducted a randomized two-year community based parallel clinical trial, its goals were to determine the best method to use to reduce blood pressure (hypertension) and lower CVD risk. The trial was randomized by clusters, to assess the effects of a visual learning method- the EDUCORE method- on blood pressure control in the primary healthcare setting. The study was conducted in twenty-two healthcare clinics. There were 736 subjects between 40-65 years of age, diagnosed with hypertension were randomly assigned to a treatment or a control group. All subjects were assessed and informed of their CVD risk. The subjects who received the EQUCORE method were measured in six-month increments. These subjects were provided with high impact images that depicted different stages of CVD and a pamphlet

that gave advice to control CVD. The control group subjects were given information and advised on risk factor control. The EDUCORE method provide a method that is a simple, inexpensive and effect way to improve blood pressure and reduce cardiovascular risk.

Villablanca et al. (2010) conducted a pre and post educational intervention study, which was evaluated for effectiveness upon completion. The purpose of the study was to increase knowledge and decrease cardiovascular disease risk in women in heart programs. The study was conducted over six months in a pre and post longitudinal educational intervention program of 1310 high-risk women. The subjects were high-risk women living in rural areas; women greater than 60 years of age; racial and ethnic minority women. Recruitment was achieved through promotions such as advertisements, flyers, health care referrals, etc (Villablanca et al). The intervention consisted of heart health counseling using interventions such as risk behavior modification, medical health screenings, and risk predictions. The heart health counseling included topics of education/awareness, screening/risk assessment, diagnostic testing/treatment, lifestyle modifications/rehab and tracking/evaluating. The FRAMINGHAM RISK ASSESSMENT TOOL was used in this study to evaluate risk, awareness of risk and prediction of risk behavior. The results of this study showed statistically significant improvement in knowledge, risk awareness, and clinical outcomes after the six-month trial. The study did not indicate any significant reduction using this intervention on each of the major CVD risk factors: obesity, physical inactivity, hypertension, diabetes, cholesterol. However, the trial did report that increased awareness of CVD risk factors, symptoms, and statistics was found in participants

engaged in the educational intervention.

Chapter 5: Discussion

Diseases of the heart are the third-leading cause of death for ages 25 through 44 years, behind accidents and malignant neoplasms (Anderson & Smith, 2003). A special concern is the reality that younger women experiencing a first heart attack have a higher mortality rate than younger men (Liewer et al., 2008). When ages 65 and above are examined, diseases of the heart are cited to the first cause, but again at a later stage of life. Some individuals might then blame the lack of knowledge, or some failure of health care providers and the health care system, or a combination. The rates of disease could possibly change with the increase in knowledge regarding women's risks, symptoms, testing, and disease process. The tool currently used in many of the studies to determine risk is the FRAMINGHAM HEART RISK ASSESSMENT TOOL.

Green, et al. (2003, p 208) states that "college-aged - women underestimate their risks for heart attack." Most young adults have the perception that many young adults have the perception that they are invincible and not subject to the risk of developing cardiovascular disease.

This integrative literature review aimed at determining strategies that have been most effective in raising awareness of cardiovascular disease risk in women; determining if strategies studied were aimed at younger ages to maximize awareness of potential for risk; determining if there is any evidence of strategies to target adult women earlier to affect their lifestyle choices, modify their risk behavior, or alter actual incidence of cardiovascular disease in women studied.

It was found that the strategies that have been most effective in raising awareness

of cardiovascular disease risk in women have been associated with interventions, which increased education on perception of risk.

Interventional studies proved to be an effective strategy in increasing awareness in some cases. However, there is not a sufficient amount of interventional studies in the literature to identify an ideal approach. Four interventional studies, Villablanca et al. (2010); Colkesen et al. (2011); Koelewign-van Loon et al. (2008) and Folta et al. (2009) reported results that showed statistically significant improvement in knowledge, risk awareness, and clinical outcomes and a significant decrease in CVD morbidity and mortality risk among participants. The authors also reported finding that perception of risks tends to be inaccurate and people find it difficult to interpret and act upon risk information. Intervention techniques such as questioning lifestyle diet, exercise, family history; educating subjects on diet, exercise and lifestyle changes to decrease risk proved to be very effective (Folta et al.)

Community-based programs (Halm and Denker, 2003; Collins, et al. 2004) also proved to be an effective method of targeting women and increasing awareness. These programs were created to improve cardiovascular health of women within communities. Community-based education programs were directed at altering personal behaviors remains the most effective strategy for reducing disease risk. The risk factors for cardiovascular disease are progressive throughout the life course; therefore the design of CVD community based education programs and health behavior interventions targeting adult women at an earlier age of 18-24 years may reduce the number of cardiovascular events in later life.

Early intervention may help the unaware person who has risk factors agree to

adopt risk reducing strategies (Koelewijn-van Loon et al, 2008). It has been suggested that adolescents have some knowledge of behavioral strategies to prevent heart disease, but lack the knowledge necessary to carry out specific prevention methods (Collins, et al. 2004).

Even with great strides in awareness Collins et al. (2004) stated that after a “five-year evaluation of a community-wide cardiovascular disease intervention program- women showed lower levels of knowledge about heart disease than men, and often failed to identify heart disease as the greatest cause of death for women or their most important health concern” (p215). This study indicated a low level of knowledge about heart disease and a highly limited access to information about heart disease (Collins et al.). This statement relays why primary prevention and increased awareness are most pertinent for young women. Public education directed at altering personal behaviors remains the most effective strategy for reducing disease risk (Collins et al., 2004). If women know their risk earlier there is a possibility they will reduce their risk for developing cardiovascular disease later in life.

Four studies investigated women’s awareness of cardiovascular disease and risk; Clark et al. (2011); Folta et al. (2009); Mosca et al. (2006); Colkesen et al. (2011) reported finding that there was a significant increase in the rate of awareness of heart disease among women after the intervention suggesting that these recent efforts to educate women about cardiovascular disease risk were highly successful. The study by Mosca et al. (2006) evaluated the current level of females (older than 25 years) awareness of CVD as the leading cause of death and whether greater awareness is associated with increased action to improved health behavior (Mosca et al., 2006). The

interventions in these studies improved general awareness of risk was associated with greater personal awareness and increased action to lower CVD risk (Mosca et al., 2006); Folta et al, (2009); Clark. et al (2011). It was found that women's knowledge about CVD increased significantly from 30% in 1997 to 46% in 2003; however, when women were asked to identify their greatest health threat, 51% of the women participants named cancer, while 13% responded that heart disease was their greatest risk (Mosca et al., 2006). These findings demonstrate that much more needs to be done to improve awareness of CVD in women throughout the national population.

Three studies focused on identifying the perception of cardiovascular disease in women and barriers of awareness: Green et al. (2003); Liewer et al. (2008) and Munoz et al. (2006). The researchers aimed to assess the perception of risk. These studies used questionnaires, surveys, and personal interviews that measured perceived risk for heart disease. The main barriers Liewer et al. found in the study included the subjects' belief that subjects' health care providers do investigate cardiovascular health; women down play their symptoms; women lack knowledge about female signs and symptoms of cardiovascular disease. Munoz, et al. indicated that awareness of CVD in ethnic groups was much less than the awareness in white- non Hispanic- women and that less than a quarter of the subjects have discussed heart disease with their health care provider (Munoz et al). These three studies concluded that the perception of CVD risk in women is the primary key to prevention of CVD.

Only four of the fourteen studies targeted young adults: Brown et al. (2005); Collins et al. (2004); Green et al. (2003); and Munoz et al. (2010). These researchers aimed to understand college students and young adults' perception of CVD risk. Of the

four studies, only two focused on young women; Brown et al. (2005) and Munoz et al. (2010). Green et al. (2003) states that their most important finding was that college-aged men and women underestimate their risk of a heart attack. Based on these findings, it is likely that there may be a large proportion of students who lack awareness and knowledge, irrespective of their level of education (Munoz et al., 2010). These findings demonstrate that there is a lack of research conducted with young adults and young women and there is a clear need to increase awareness on the risk of CVD in this population.

The limitations to this review were that most studies in the literature do not target young women- women younger than 45. Most research has studied risk assessment and awareness of women older than 45 and with high CVD risk or with already diagnosed cardiovascular disease. Therefore limited findings related to women age 45 or younger were found.

Another limitation is that most of the research conducted on the topic of cardiovascular disease risk and prevention in women is focused on the perception and awareness of risk factors and heart disease; for example, Moore et al. (2010); Collins et al. 2004; Colkesen et al. (2011); Liewer et al. (2011). Most studies also found there is a general lack of awareness in the community about the risk of cardiovascular disease in young women (Collins et al., 2004; Folta et al., 2009; Liewer et al., 2008; Villablanca et al., 2010).

Based on this review of the literature, there is a general lack of literature on programs that have been tested and can be used to increase awareness of young women in the community about cardiovascular disease. The foci of studies currently

reports a general lack of awareness of heart disease prevention in young women. Most do not reveal a recommended solution to the problem of increasing awareness in this population.

This literature review also reveals that there is very limited empirical knowledge of best practices in the area of cardiovascular disease prevention for this population. Although the need for increased knowledge of risk factors is confirmed, a method for effective individual or community-wide dissemination of the information has not been identified. Research is needed to test the effectiveness of community based education strategies and other programs.

According to Brown et al., “the college years, being a time of identity and attitude formation, offers an excellent opportunity for health care providers to impact change” (2005). This statement supports the need for taking action to educate young women and increase their awareness of cardiovascular disease and prevention of the disease to reduce the high risk of CVD in this population.

Chapter 6: Implications

There is a major gap in the literature about early awareness and the prevention of cardiovascular disease in young women. Research studies show that there is a lack of knowledge in young women; however, no published research has created a solution for how to implement primary prevention in young women.

The area of primary prevention of heart disease in young women is open to research possibilities. An inherent need exists in furthering research in the area of the younger population and women. Research needs to be investigated the effect that education intervention has on lifestyle choices and interest in making changes. The study should measure behaviors before and after knowledge is obtained.

Research findings suggests several gaps in knowledge related to the prevention of cardiovascular disease need to be addressed in young women to optimize the cardiovascular health of women later in life. Additional research is needed to create new guidelines for prevention of risk factors and for slowing the progression of actual risk. The development and testing of effective methods to implement guidelines in various health care settings and community-based settings should be considered for future research priorities. The role of communication of risk and barriers to CVD prevention among diverse ethnic groups should be studied and incorporated into future research. There is also a lack of research done on young women and their education, perception, and awareness of cardiovascular disease. Research and awareness programs should be initiated to prevent CVD in this population.

Developing and testing primary prevention strategies that improve health outcomes and are cost-efficient is critical, yet few studies have evaluated the potential effect of early screening and educational interventions on utilization of healthcare resources. Research needs to be done to indicate the best practice of increasing awareness. Therefore, research is still need in this area.

With the ever changing US healthcare system and its reduced reimbursements, and time constraints on healthcare providers, it is important to explore the type and number of personnel needed to provide aspects of preventive care that may be time-consuming for physicians, for example assistants trained to provide lifestyle counseling may be helpful.

Nursing practice should be focused on utilizing time with the patient to inform them about resources for preventing CVD, improving CVD health, and interventional programs. Nursing should also focus on advocacy for their patients, making primary health care providers investigate female cardiovascular health. Healthcare professionals need to help women see their health as a priority, to update their knowledge on current guidelines for heart health, and must use every opportunity to counsel women on lifestyle changes early enough to prevent the risk of developing cardiovascular disease.

Author	Title/ Year	Journal Publication	Purpose	Type of Study Method	Subject	Focus Group	Measurement Tool
Brown, Geiselman, Copeland, Gordon, Dudley, Manogin, Backstedt, Paurciau, Ghebretatio	Cardiac Assessment risk evaluation (CARE study) of Af Am college Women 2005	Health Education Journal	To identify physiological and psychological variables of young African American women that may serve as a risk factor for heart disease	Descriptive Design	100 African American women ages: 18-40	Young African American Women (18-40 y/o)	A demographic questionnaire; Gieselman Food preference Questionnaire (GFPQ), PBRAC Food Frequency Questionnaire (FQ), and the Personal Wellness Profile (PWP)
Clark, Janz, Dodge, Lin, Britton Trabert, Kaciroti, Mosca, Wheeler, Keteyian	Heart Disease Management by women: Does Intervention Format Matter 2009	Health Education And Behavior	Presents findings of a clinical trial conducted as part of a larger study to assess outcomes of a group format compared to self-directed programs.	18 month study- Three programs: 1) the Women Take PRIDE 2) self directed format 3) usual care	575 women: >60 yrs; diagnose Cardiovascular Disease	Patients with preexisting cardiovascular disease	The Sickness Impact Profile (SIP)
Colkesen, Ferket, Tijssen, Kraaijenhagen, Kalken, Peters	Effects on Cardiovascular disease risk of a web-based health risk assessment 2011	Vascular Health and Risk Management	The primary aim of the study was to measure whether CVD risk was improved	Randomized Prospective Follow up study	772 voluntary employees (age not specified)	Volunteers in a work environment	Framingham Study Risk Assessment Tool
Collins; Dantico, Shearer, Mossman	Heart Disease Awareness among College Students 2004	Journal of Community Health,	The purpose of this research was to explore college students' attitudes about heart disease risks and preventive strategies.	Survey	1481 surveys sent to college students	College Aged Students (Young Women <40)	Statistical Package for the Social Sciences

Author	Title/ Year	Journal Publication	Purpose	Type of Study Method	Subject	Focus Group	Measurement Tool
Fakiri, Bruijnzeels, Hoe	Prevention of Cardiovascular diseases: focuses on modifiable cardiovascular risk 2006	Heart	To determine whether the use of a 20% absolute risk threshold for CVD as recommended in current guidelines leads to exclusion of patients with a substantial modifiable risk (> or = 5%_	Descriptive Design	293 patients aged 30-70 yrs at risk of developing cardiovascular disease were included. 66%-women	Population of men and women at High Risk of developing CVD, but with no diagnosed CVD, and different ethnic groups	A demographic questionnaire; Gieselman Food preference Questionnaire (GFPQ), PBRAC Food Frequency Questionnaire (FQ), and the Personal Wellness Profile (PWP)
Folta, Lichtenstein, Seguin, Goldberg, Kuder, Nelson	The Strong Women Healthy Hearts Program: Reducing Cardiovascular Disease Risk Factors in Rural Sedentary Overweight, and Obese Midlife and Older Women 2009	American Journal of Public Health	Tested a community-based intervention designed to reduce Cardiovascular Disease risk in sedentary midlife and older women who were overweight or obese.programs	Randomized controlled trial- 12 wk, twice weekly heart health program	85 women: 8 counties in Arkansas and Kansas: women >40yrs, BMI >24;	Sedentary Overweight, and Obese Midlife and Older Women	The Sickness Impact Profile (SIP)
Green, Grant, Hill, Brizzolara, Belmont	Heart Disease Risk Perception in College Men and Women 2003	Journal Of American College Health	To Describe and quantify heart disease risk perception in a cohort of college aged men and women	Investigative Study	341 undergraduate student both male and female (18-35 y/o	College men and Women	40-iten "causation intrument"

Author	Title/ Year	Journal Publication	Purpose	Type of Study Method	Subject	Focus Group	Measurement Tool
Koelewijn-van Loon, Steenkiste, Ronda, Wensing, Stoffers, Elwyn, Grol ¹ , and Weijden	Improving patient adherence to lifestyle advice (IMPALA): a cluster-randomized controlled trial on the implementation of a nurse-led intervention for cardiovascular risk management in primary care (protocol) 2008	BMC Health Service Research	IMPALA intends to improve adherence to lifestyle adherence to lifestyle advice by involving patients in decision-making on CV prevention by nurse-led Clinics. The Aim is to describe the design and method of a study to evaluate an intervention aimed at involving patients in CV risk management	A cluster-randomized controlled trial in 20 general practices.	720 patients without existing CDS but eligible for CV risk assessment	Patients without existing CVD but eligible for a cardiovascular risk assessment	The Risk Communication Tool
Liewer Mains, Lykens, and Rene	Barriers to Women's Cardiovascular Risk Knowledge 2008	Health Care for Women International	The purpose was to identify barriers to women's cardiovascular risk knowledge, both personal and organizational, through key informant interviews of health leaders at 10 community health organizations.	The purpose was to identify barriers to women's cardiovascular risk knowledge, both personal and organizational, through key informant interviews of health leaders at 10 community health organizations.	51 low-income African American, Hispanic, and white Women (Middle Aged Women: 40-60 y/o)	Women of low socioeconomic status	10 item questionnaire, interview.

Author	Title/ Year	Journal Publication	Purpose	Type of Study Method	Subject	Focus Group	Measurement Tool
Moore, Kimble, Minick	Perceptions of Cardiac Risk Factors and Risk-Reduction Behavior in Women With Known Coronary Heart Disease 2010	Journal of Cardiovascular Nursing	The purpose of this study was to explore perceptions of risk for CHD and to examine perceptions of risk-reducing behaviors in women with known CHD.	Interpretative qualitative study	7 women with CHF (Middle aged women – 40-60 y/o)	Middle aged Women with known CVD	Interview Process
Mosca, Mochari, Christian, Berra, Taubert, Mills, Keisha, Arrowood Burdick, Susan Lee Simpson	Nation Study of Women's Awareness Preventive Action, and Barriers to Cardiovascular Health 2006	Circulation	The purpose of this study was to assess the current level of awareness of CVD as the leading cause of death in women and to evaluate whether greater awareness is associated with increased action to lower risk as defined by the American Heart Association Evidence- Based Guidelines for the Prevention of CVD in Women	Cross Sectional Design; Standardized interviewer – assisted questionnaire	1485 women greater than 25 years of age (210 blacks, 171 Hispanics, 565 whites, 61 other)	Women with or without known CVD, women of multiple ages and women from different socioeconomic statuses	SPSS Logistic Regression model was used in this study

Author	Title/ Year	Journal Publication	Purpose	Type of Study Method	Subject	Focus Group	Measurement Tool
Munoz, Etnyre, Adams, Herbers, Witte, Horlen, Baynton, Estrada, Jones	Awareness of Heart Disease Among Female College Students 2010	Journal of Women's Health	The study evaluated the level of awareness and knowledge of heart disease in women among college students	Cross Sectional Design, 13 item survey	320 Women- age: 18-34yrs	Female college students	13 item Survey based on the AHA national telephone survey
Rodríguez-Salceda, Escortell-Mayor, Rico-Blázquez, Riesgo-Fuertes, Barco, Valdivia-Pérez, I Cura-González, García-Cañón, Ortiz-Jiménez, Cabello-Ballesteros, Garrido-Elustondo, Chamorro-González, Rodríguez-Barriento, EDUCORE Group	EDUCORE project: a clinical trial, randomized by clusters, to asses the effect of visual learning methods on blood pressure control in primary health care setting 2010	BMC Public Health	Determine whether the use of CV risk visual learning method (EDUCORE) is more effective than normal clinical practice in improving BP	Randomized clinical trial	Age: 40-65yrs All patients diagnose with High Blood Pressure- both genders	Middle aged patients diagnosed with hypertension but no background of CVD	Framingham Study Risk Assessment Tool
Villablanca, Beckett, Yueja Li, Leatherwoof, Gill, Giardina, Barron, Foody, Haynes, and D'Onofrio	Outcomes of Comprehensive Heart Care Programs in High-Risk Women 2010	Journal of Women's Health 2010	Improve the fund of knowledge, reduce CVD risk, and attain Healthy people	6 month pre/post longitudinal educational intervention	1310 high risk women: >60 yrs, racial and ethnic minority women, women in rural communities	Older High risk women	Framingham Study Risk Assessment Tool

References

- Ades, P. A., Savage, P. D., Brawner, C. A., Lyon, C. E., Ehrman, J. K., Bunn, J. Y.,
(2006). Aerobic capacity in patients entering cardiac rehabilitation. *Circulation*,
113(23), 2706-2712.
- American Heart Association. (2006). *Heart disease and stroke statistics—2006 update*.
Dallas, TX: American Heart Association.
- American Heart Association. (2007). *Heart Disease and Stroke statistics- 2007 update*.
Dallas, Texas: American Heart Association
- Anderson, R. N., & Smith, B. L. (2003). Deaths: Leading cause for 2001. Division of
Vital Statistics National Vital Statistics Reports, 52(9), 17–19. Retrieved: March
22, 2004, from http://www.cdc.gov/nchs/data/nvsr/nvsr52/nvsr52_09.pdf
- Ballantyne, C., Herd, J., Ferlic, L., Dunn, J., Farmer, J., Jones, P., Schein, J., & Gotto,
A., (1999). Influence of low HDL on progression of coronary artery disease and
response to fluvastatin therapy. *Circulation*, 1999(6), 736-743.
- Bello, N., & Mosca, L. (2004). Epidemiology of coronary heart disease in women.
Progress in Cardiovascular Diseases, 46(4), 287-295.
- Brown, S. C., Geiselman, P. J., Copeland, A. L., Gordon, C., Dudley, M., Manogin, T., &
Backstedt, C. (2005). Cardiac Assessment Risk Evaluation (CARE study) of
African American college women. *Health Education Journal*, 64(1), 13-30.
- Christian, A. H, Rosamond, W., White, A.R., & Mosca, L (2007) Nine-year trends and
racial and ethnic disparities in women's awareness of heart disease and stroke:
An American Heart Association national study. *Journal of Women's Health*
(Larchmont), 16(1), 68-81

- Clark, N. M., Janz, N. K., Dodge, J. A., Lin, X., Trabert, B. L., & Kaciroti, N. (2009). Heart Disease Management by Women: Does Intervention Format Matter. *Health Education and Behavior, 36*, 394-409.
- Colkesen, E. B., Ferket, B. S., Tijssen, J. G., Kraaijenhagen, R. A., van Kalken, C. K., & Peters, R. J. (2011). Effects on Cardiovascular disease risk of a web-based health risk assessment with tailored health advice: a follow up study. *Vascular Health and Risk Management, 67-74*.
- Collins, K. M., Dantico, M., Shearer, N., & Mossman, K. L. (2004, October). Heart Disease Awareness among College Students. *Journal of Community Health, 29(5)*, 405-420.
- Davidson, P. M., Daly, J., Hancock, K., Moser, D., Chang, E., & Cockburn, J. (2003). Perceptions and experiences of heart disease: A literature review and identification of a research agenda in older women. *European Journal of Cardiovascular Nursing, 2*, 255-264.
- Desvigne-Nickens, P., (2009, February 2). *Women and heart disease*. Retrieved from <http://www.texasheart.org/HIC/Topics/HSmart/women.cfm>
- Facts about Women and Cardiovascular Diseases. (2011, January). In *American Heart Association*. Retrieved February 22, 2011 http://www.heart.org/HEARTORG/Advocate/StateIssues/FindStateSpecificInformation/Women-and-Cardiovascular-Disease-State-Fact-Sheets_UCM_426368_Article.jsp.
- Fakiri, F. E., Bruijnzeels, M. A., & Hoes, A. W. (2006). Prevention of Cardiovascular disease: focus on modifiable Cardiovascular risk. *Heart: Cardiovascular*

Medicine, 92, 741-745.

- Folta, S. C., Lichtenstein, A. H., Sefuin, R. A., Goldberg, J. P., Kuder, J. F., & Nelson, M. E. (2009, July). The StrongWomen- Healthy Hearts Programs: Reducing Cardiovascular Disease Risk Factors in Rural Sedentary Overweight, and Obese Midlife and Older Women. *American Journal of Public Health*, 99(7), 1271-1277.
- Gami, A. S., Witt, B.J., Howard, D.E., Erwin, P.J., Gami, L.A., & Somers, V. K., (2007). Metabolic syndrome and risk of incident cardiovascular events and death: a systematic review and meta- analysis of longitudinal studies. *Journal of the American College of Cardiology*, 49(4), 403-414.
- Geiselman, P., Anderson, A., Dowdy, M., West, D., Redman, S., Smith, S., (1998). Reliability and validity of macronutrient self selection paradigm and a food preference questionnaire. *Physiological Behavior*, 63; 919-928.
- 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), 205-211.
- Halm, M. A., & Denker, J. (2003). Primary Prevention Programs to Reduce Heart Disease Risk in Women. *Clinical Nurse Specialist*, 17(2), 101-109.
- Heeley, E., Peiris, D., Patel, A., Cardiovascular risk perception and evidence practice gaps in Australian general practice (the AusHEART study). *Med J Aust*. 2010; 192(5): 254–259.
- Heim, L. J., & Brunzell, S.C. (2000). Heart disease in women. *Primary Care: Clinics in Office Practice*, 27(3).
- Koelewijn-van Loon, M. S., Steenkiste, B. V., Ronda, G., Wensing, M., Stoffers, H. E.,

- Elwyn, g., & Grol, R. (2008). Improving patient adherence to lifestyle advice (IMPALA): a cluster- randomized controlled trial on the implementation of a nurse-led intervention for cardiovascular risk management in primary care (. *BMC Health Services Research*, 8(9). Kuller L, Meilahn E, Bunker C et al. Development of risk factors for cardiovascular disease among women from adolescence to older ages. *American Journal of Medical Science*. 1995; 310 (suppl 1): 91-100.
- Liewer, L., Mains, D. A., Lykens, K., & Rene, A. A. (2008). Barriers to Women's Cardiovascular Risk Knowledge. *Health Care for Women International*, 29, 23-38.
- Lipp, E. J., Deane, D., & Trimble, N. (1996). Cardiovascular disease risks in adolescent males. *Applied Nursing Research*, 9(3), 102-107.
- Lloyd-Jones, D., Adams, R., Carnethon, M., De Simone, G., Ferguson, B., Flegal, K., Ford, E., Heart Disease and Stroke Statistics- (Jan 2009) Update: A report from the American Heart Association Statistics Committee and Stroke statistics Subcommittee. *Circulation*; 119(3); 182-185
- Moore, L., Kimble, L., & Minick, P. (2010). Perceptions of cardiac risk factors and risk-reduction behavior in women with known coronary heart disease. *Journal of Cardiovascular Nursing*, 25(6), 433-443.
- Mosca, L., Ferris, A., Fabunmi, R., Robertson, R., (2004) Tracking women's awareness of heart disease: an American Heart Association national study. *Circulation*; 109:573-579.
- Mosca, L., Mochari, H., Christian, AH., (2006). National study of women's awareness,

- preventive action and barriers to cardiovascular health. *Circulation*; 113:525–534.
- Munoz, L. R., Etnyre, A., Adams, M., Herbers, S., Witte, A., Horlen, C., & Baynton, S. (2010). Awareness of Heart Disease Among Female College Students. *Journal of Women's Health*, 19(12), 2253-2259.
- Nash, I. (2008). *Clinical Practice Guidelines in Cardiovascular Disease. Hurst's The Heart*. 12th ed: The McGraw-Hill Companies.
<http://www.accessmedicine.com/resourceTOC.aspx?resourceID=5>.
- Rodrigues-Salceda, I., Escortell-Mayor, E., Rico-Blazquez, M., Riedgo-Fuertes, R., Asunsolo-del Barco, A., Valdivia-Perez, A., & Cura-Gonzalez, I. D. (2010). EDUCORE project: a clinical trial, randomised by cluster, to assess the effect of a visual learning method on blood pressure control in the primary healthcare setting. *BMC Health Services Research*, 10(449).
- The Partnership for Women's Health (1997). *Heart to Heart: the gender gap in understanding cardiovascular disease*. New York: Columbia University.
- Scott, L.B., & Curbow, B., (2006). The effect of message frames and Cardiovascular Disease risk factors on behavioral outcomes. *American Journal of Health Behavior*, 30(6), 582.
- Slovic, I., (1987). *Science. Perception of risk*, 236(4799), 280-285.
- Stevens, J., Cari, J., Pamuk, ER., Williamson, DF., Thun MJ, Wood JL. (1998) The effect of age on the association between body-mass index and mortality. *N Engl J Med*;338:1–7. [PubMed]
- Vasan, R., Larson, M., Leip, E., Evans, J., O, C., Kannel, W., & Levy, D. (2001). Impact of high-normal blood pressure on the risk of cardiovascular disease. *N Engl J*

Med, 345, 1291-1297.

Villablanca, A. C., Beckett, L. A., Li, Y., Leatherwood, S., Gill, S. K., Giardina, E. V., & Barron, C. (2010). Outcomes of Comprehensive Heart Care Programs in High-Risk Women. *Journal of Women's Health*, 19(7), 1313-1324.

Wilson P, D'Agostino, R., Levy, D., Belanger, A., Silbershatz, H., & Kannel, W., (1998). Prediction of coronary heart disease using risk factor categories. *Circulation* 97(18):1837-1847.

Yusuf, S., Hawken, S., Ounpuu, S., (2004). Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study): case- control study. *Lancet.*; 364: 937-952.

Zavaroni, I., Bonora, E., Pagliara, M., Dall, E., Luchetti, L., Buonanno, G., Bonati, P., & Bergonzani, M. (1989). Risk factors for coronary artery disease in healthy persons with hyperinsulinemia and normal glucose tolerance. *N Engl J Med*, 320(11), 702-706.

ACADEMIC VITA

Jacqueline Ligorski
2216 Arvell ct
Toms River, NJ, 08755
Jligorski@gmail.com

Education: Bachelor of Science, Nursing, Penn State University, Spring 2012
Honors in Nursing

Thesis Title: Prevention of Cardiovascular Disease in Young Women: A Integrative Literature Review
Thesis Supervisor: Carol Smith

Related Experience:

Completed a summer externship with Robertwood Johnson University Hospital - a Level II trauma center in Oncology Unit
Supervisor: Lisa Nevius
Summer 2011

Completed a summer Internship with the Ocean County Prosecutors Office with SVU unit- Forensic SANE/SART nurse.
Supervisor: Rita O'Connor
Summer 2010

Awards:

Dean's List all Academic Semesters
Sigma Theta Tau International Honors Society of Nursing, Beta Sigma Chapter
National Honors Society

Presentations/Activities:

THON, Penn State IFC/Panhellenic Dance Marathon, is largest student run philanthropic organization in the world. It is a yearlong effort, which raises funds and awareness for the fight against pediatric cancer: Committee Involvement, Independent Organization Involvement, and Danced in 2012

Mission work in Eastern Europe, Baltic Countries (2010)

Alumni Mentoring Program (2010-2012)

Member of Student Nurses Association of Pennsylvania (SNAP) (2009-2012)

Teaching Assistant for Nurs 306- Nursing Care of Children and Adolescents