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## Women'S Perception Of Heart Disease As A Health Risk Associated With Identified Risk Factors

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WOMEN'S PERCEPTION OF HEART DISEASE AS A HEALTH RISK  
ASSOCIATED WITH IDENTIFIED RISK FACTORS

by

KATHY MCKAY

A Thesis  
Submitted in Partial Fulfillment of the Requirements  
for the Degree of Master of Science in Nursing  
in the Division of Nursing  
Mississippi University for Women


COLUMBUS, MISSISSIPPI


AUGUST 1995


Women's Perception of Heart Disease as a Health Risk  
Associated with Identified Risk Factors


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iii

## Abstract

Heart disease has been identified as the leading cause of death in women in the United States, affecting an estimated 21,000 women under the age of 65. While these figures are alarming, population survey data have shown women do not perceive heart disease as a priority health problem. The purpose of this descriptive study was to investigate women's perception of heart disease as a health risk. The Health Belief Model served as the theoretical framework for this study. Two research questions guided this study: Is there a significant correlation between selected demographic variables and perception of heart disease as a health risk? and is there a significant correlation between identified risk factors and perception of heart disease as a health risk? A demographic data form, the Arizona Heart Test for Women, and the question, Compared with women your own age, how would you rate your chance of having a heart attack? were the tools used to answer the research questions. Data were collected from 113 working women at least 18 years of age in a city in East Central Mississippi. Based on the results of this study, the researcher concluded that there is no correlation between selected demographic variables and perception of heart disease as a health risk among women.

However, significant correlations between identified risk factors and perception of heart disease as a health risk were identified. Further, the researcher concluded that women are aware of risk factors for the development of heart disease but do not perceive personal susceptibility. These findings signify the need for screening and education of all women for risk factors and the development of heart disease. Further research is recommended to determine if similar findings will occur with women from other sociodemographic populations.

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## Table of Contents

	Page
Copyright . . . . .	iii
Abstract . . . . .	iv
Acknowledgements . . . . .	vi
List of Tables . . . . .	ix
 Chapter	
I. The Research Problem . . . . .	1
Establishment of the Problem . . . . .	2
Common Risk Factors . . . . .	3
Risk Factors Pertinent to Women . . . . .	5
Secondary Risk Factors . . . . .	7
Perceived Risk Attitudes . . . . .	8
Significance to Nursing . . . . .	9
Theoretical Framework . . . . .	10
Assumptions . . . . .	13
Purpose of the Study . . . . .	13
Statement of the Problem . . . . .	14
Research Questions . . . . .	14
Definition of Terms . . . . .	14
Summary . . . . .	16
II. Review of the Literature . . . . .	17
Risk Factors . . . . .	17
Perceived Risk . . . . .	24
Summary . . . . .	28
III. The Method . . . . .	30
Design of the Study . . . . .	30
Variables . . . . .	30
Setting, Population, and Sample . . . . .	31
Method of Data Collection . . . . .	32
Techniques/instrumentation . . . . .	32
Methods of Data Analysis . . . . .	34



Limitations . . . . .	34
Summary . . . . .	35
IV. The Findings . . . . .	36
Description of Sample . . . . .	36
Results of Data Analysis . . . . .	37
Research Question 1 . . . . .	37
Research Question 2 . . . . .	37
Additional Information . . . . .	38
Summary . . . . .	40
V. The Outcomes . . . . .	42
Summary of Findings . . . . .	43
Discussion . . . . .	44
Conclusions . . . . .	47
Implications for Nursing . . . . .	48
Recommendations for Further Study . . . . .	50
Summary . . . . .	51
References . . . . .	53
Appendixes	
A. Letter of Approval from Mississippi University for Women on Use of Human Subjects in Experimentation . . . . .	57
B. Letter of Request to Facility . . . . .	59
C. Explanation to Participants . . . . .	61
D. Demographic Data Form . . . . .	63
E. Arizona Heart Test Questionnaire . . . . .	65
F. Letter of Request for Permission to Use the Heart Test for Women . . . . .	68
G. Letter Granting Permission to Use the Heart Test for Women . . . . .	70

## List of Tables

Table	Page
1. Correlation of Perceived Risk and Selected Demographic Variables Using the Pearson Product Moment Correlation . . . . .	38
2. Correlation of Perceived Risk and Identified Risk Factors Using the Arizona Heart Test for Women Analyzed by the Pearson Product Moment Correlation . . . . .	39
3. Relationships Between Risk Factors Using the Arizona Heart Test for Women Analyzed by the Pearson Product Moment Correlation . . . . .	41

## Chapter I

### The Research Problem

Heart disease has been identified as the leading cause of death in women in the United States affecting an estimated 21,000 women under the age of 65 (American Heart Association, 1993). According to Holm, Penckofer, Keresztes, Biordi, and Chandler (1993), medical researchers have shown that heart disease progresses more quickly in women and that 50 percent of female heart attack victims die after their first heart attack. An additional 39 percent of these women die within a year as compared to 31 percent of men (American Heart Association, 1993). Not only are women twice as likely to die from their first heart attack, but interventions for the disease, such as coronary artery bypass surgery and percutaneous transluminal coronary angioplasty, have had lower success rates for women (Legato & Colman, 1991).

While these figures are alarming, population survey data have shown that women do not perceive heart disease as a priority health problem (Wenger, 1993). A significant number of women remain unaware that risk of heart disease has been shown to increase after menopause, while others have assumed they can postpone worrying about heart disease until they are older. The health goal identified for all

women has been to reach menopause free of avoidable heart disease risk factors (Eaker, Johnson, Loop, & Wenger, 1992). However, a woman's readiness to take this action has been determined by her perceived susceptibility or vulnerability to a particular condition (Becker, 1974). Therefore, this research sought to focus on women's perception of heart disease as a health risk related to identified risk factors and demographic variables.

### Establishment of the Problem

Although attitudes toward women and their health have changed, women with cardiovascular disease have not been diagnosed and treated as promptly as men. Although physicians have ignored important symptoms on the part of female patients, often, women have been just as neglectful (Legato & Colman, 1991). In fact, studies have shown that many women neglect to call their doctors even when having an extensive heart attack. About 35 percent of all heart attacks in women have gone unnoticed because the victims believed the pain was noncardiac (Diethrich & Cohan, 1992). The fact that more than one-third of all women's heart attacks have gone unreported reflects denial on the part of many women (Legato & Colman, 1991).

Furthermore, an emerging body of evidence has suggested that women may, in reality, present differently from men (Eaker et al., 1992). Not only have symptoms such as chest pain been more confusing but the standard diagnostic tests

have been shown to be less accurate for women. Women have more non-typical types of chest pain and more silent heart attacks than do men (Legato & Colman, 1991). However, once the disease is established, women have significantly more heart attacks, strokes, and increased mortality rate following a second myocardial infarction (Diethrich & Cohan, 1992). Because of these potential problems, prevention and prompt intervention are paramount.

Currently, there is a movement in the health care arena to shift from illness and cure to prevention. Along the line of prevention, the American Heart Association has identified risk factors for heart disease. The risk factors for cardiovascular disease, for the most part, are the same for both sexes. The most important risk factors are elevated cholesterol, cigarette smoking, hypertension, and family history. Three other risk factors especially pertinent for women are obesity, diabetes mellitus, and hormonal status. Other secondary risk factors include level of physical activity, personality, and stress. Age, sex, race, along with family history are unmodifiable risk factors (American Heart Association, 1992).

#### Common Risk Factors

At least nine studies conducted over the past two decades have examined the relationship between cholesterol levels and the rate of heart disease in women. These data convincingly showed that women who have a total serum

cholesterol level above 260 mg/dl were at two to three times greater risk of heart disease than women whose cholesterol level was below 200 mg/dl (Holm & Penckofer, 1992).

Furthermore, the breakdown of cholesterol into low-density lipoproteins (LDL) and high-density lipoproteins (HDL) has led researchers to recommend that women strive for LDL levels below 130 and HDL levels above 55 (Diethrich & Cohan, 1992).

Cigarette smoking is a major risk factor for heart disease and is increasing among young women. The Harvard Nurses Health Study showed that women who smoked had a five times greater chance for fatal heart attack than non-smokers. The Framingham study showed that a 55-year-old woman who smoked was in more danger of having a heart attack than a 55-year-old man (Diethrich & Cohan, 1992). Jones and Gotto (1994) established a clear dose-response relationship between number of cigarettes smoked and heart disease mortality. Yet within two or three years of smoking cessation, heart disease risk decreases to about the level of women who have never smoked (Jones & Gotto, 1994).

Women who have undetected or uncontrolled hypertension have five times the risk of sudden death, heart attack, and chest pain than women with normal blood pressure. One in four Americans has hypertension and half of them are women. The merits of controlling hypertension were first learned from the Hypertension Detection and Follow-Up Program

launched in 1973. In this study, controlling hypertension was determined to greatly benefit Black women, saving 28 percent of their lives (Diethrich & Cohan, 1992).

### Risk Factors Pertinent to Women

Women who are obese, defined as being more than 30 percent overweight, between the ages of 30 and 55 are at greater risk for developing heart disease later in life. The more overweight a woman is, the greater her risk for heart disease. Recent studies have suggested that the distribution of body fat is more important than absolute weight in risk for heart disease. Abdominal or mesenteric fat accumulation, clinically measured as an elevated waist-to-hip ratio, appears to confer the greatest risk and has been associated with such metabolic disturbances as insulin resistance and hyperinsulinemia. Reduction in body fat has generally been shown to have beneficial effects on blood pressure, glucose tolerance, and levels of plasma triglyceride and HDL cholesterol (Jones & Gotto, 1994). However, losing weight and keeping it off poses a particular challenge to women. Women's bodies naturally have a higher fat-to-muscle ratio than men's. Also, because women's metabolism is lower than men's, many women have a harder time losing excess pounds and keeping them off. After menopause, when women have a natural tendency to gain weight, weight control becomes even tougher (Diethrich & Cohan, 1992).

Diabetes increases heart disease mortality four to six times in women compared with women who have normal glucose tolerance. What causes the enhanced atherosclerotic risk in diabetics is not completely understood. However, research has now shown that diabetics have a clustering of metabolic disturbances or risk factors that may interact to promote atherogenesis. These factors include hyperinsulinemia, hypertension, central obesity, and dyslipidemia that includes decreased HDL cholesterol (Jones & Gotto, 1994). According to Holm & Penckofer (1992), studies have shown that diabetic women lose virtually all their gender protection against heart disease. The presence of diabetes has a stronger effect on lipid and lipoprotein levels in women than in men, and female diabetics have significantly higher levels of LDL than do male diabetics (Holm & Penckofer, 1992).

Hormones produced by a woman's own body are thought to confer some protection against heart disease, which is then lost gradually over the period of menopause, usually at the age of 45 to 55. This biologic protection factor is estrogen. Considerable observational epidemiological evidence shows a 50 percent decrease of heart disease risk among post-menopausal women who have taken oral estrogens compared with post-menopausal women who have never used estrogens. In addition, case-control studies using angiographic monitoring have linked estrogen use to reduced



degrees of coronary stenosis (Jones & Gotto, 1994). Estrogen increases HDL cholesterol and decreases LDL cholesterol (Diethrich & Cohan, 1992). Estrogen also lowers fibrinogen levels which in turn increases clotting times (The Writing Group for the PEPI Trial, 1995).

### Secondary Risk Factors

Women who lead a sedentary life with little or no physical activity are at three times the risk of developing heart disease as those who don't (Legato & Colman, 1991). Data linking increased physical activity with decreased risk for heart disease are available from observational epidemiological studies. A meta-analysis of 27 cohort studies found a 45 percent lower risk for myocardial infarction for those whose lifestyle was active rather than sedentary, with all population groups benefiting (Jones & Gotto, 1994).

Stress can have a toxic effect on the body of women. Unabated stress, through biochemical mechanisms, causes an increase in LDL cholesterol. Stress also causes arteries in the heart and elsewhere in the body to constrict. In the women's work arena, feelings of frustration and hostility arise most frequently in pink-collar jobs. File clerks and factory workers are especially vulnerable because their work characteristically imposes substantial pressure without opportunity for control. This scenario causes three times

the rate of heart disease in women as white-collar work (Diethrich & Cohan, 1992).

### Perceived Risk Attitudes

According to Legato and Colman (1991), studies show that women are far more concerned about cancer. While it is true that 40,000 women die of breast cancer each year, 250,000 die each year from heart attacks, and another 250,000 die of other diseases of the heart and blood vessels. However, most of the information base used for contemporary recommendations for the prevention, diagnosis, and treatment of heart disease in women has been extracted from studies conducted in populations consisting predominantly or exclusively of middle-aged men (Wenger, 1993). Clearly, the importance of heart disease in women has been overlooked. Treatment such as angioplasty, coronary artery by-pass surgery, and drug therapies are performed to a greater degree on men than on women. A need for more research and increased awareness of the seriousness of heart disease as a women's health disease is apparent (Lile, 1990).

Accepting their risk and knowing more about what causes heart disease can help women reduce their risk and protect their health. The purpose of this study was to add to the knowledge concerning perceived risk of heart disease in women so that health care providers may be better able to

approach health care programs that promote healthy lifestyle behaviors and overcome barriers for health care in women.

### Significance to Nursing

The central purpose of Healthy People 2000: National Health Promotion and Disease Prevention Objectives set forth by the Department of Health and Human Services in 1990, is to increase the proportion of Americans who live long and healthy lives (Burns, 1994). This report sets a national strategy for improving health over the next decade with emphasis on health promotion and preventive services. The document identifies heart disease as a major priority area. Preventive services strategies were defined to include screening, counseling, and behavioral interventions for individuals across clinical settings. Specific objectives for heart disease address cardiovascular risk factors (Engler & Engler, 1994).

Nurses, as members of the largest body of health care providers and one that is comprised almost entirely of women, must take a leadership role in the prevention and detection of heart disease in women. Identifying women who are at risk for heart disease and the initiation of programs to decrease the progression of the disease is a challenge to the family nurse practitioner. The family nurse practitioner, as a primary health care provider, should develop plans of intervention based on the Health Belief Model to promote healthy heart behaviors in women. The plan

should include not only an assessment of risk factors but should provide the client with information and education to strengthen the perceived risk of heart disease in women. The plan should focus on positive behaviors and motivate the client toward high-level wellness.

Health promotion and screening have been identified as essential components of health care. It is the responsibility of the primary health care provider, specifically the family nurse practitioner, to inform women of their risk for heart disease. Family nurse practitioners need to educate female clients at risk for heart disease to enable them to make life style changes. There is no cure for heart disease; the only alternative is prevention. Prevention must be seeded in the practice guidelines of nurse practitioners to ensure a holistic approach to health care in women.

### Theoretical Framework

The theoretical framework used in this study was the Health Belief Model (HBM), which was developed in an attempt to explain or predict preventive health actions, medical care utilization, delay in seeking care, and compliance with medical regimens (Becker, 1974). Because women traditionally delay seeking health care related to heart disease and are seemingly unaware of heart disease as a health threat, this model readily adapted to this research. The emphasis on identifying barriers to health seeking behavior as an

intervention for prevention was germane to the focus of this study.

The model implies the world of the perceiver determines what he or she will do rather than environmental forces. Further, the model focuses on the current dynamics confronting the behaving individual rather than on the historical perspective of his or her prior experiences. Thus, the present state of affairs determines actions by the behaving individual with history playing a role only insofar as it is represented in the present dynamics (Becker, 1974).

The HBM is concerned with the subjective world of the acting individual. With this theory of operation, three proposals concerning health behaviors were derived from the model: 1. The individual's psychological readiness to take action relative to a particular health condition is determined by both the person's perceived susceptibility or vulnerability to a particular condition, and by his perceptions of the severity of the consequences of developing the condition; 2. The individual's evaluation of the advocated health action in terms of its feasibility and effectiveness is weighed against his perceptions of psychological and other barriers or costs of the proposed action; 3. A stimulus, either internal or external must occur to trigger the appropriate health behavior; this is termed cue to action (Becker, 1974).

According to the Health Belief Model (Becker, 1974), perceived susceptibility and perceived severity serve as cues or triggers to motivate individuals to change detrimental health behaviors and are thought to be at least partly dependent on knowledge. Modifying factors (demographic, sociopsychological, and structural) are thought to affect the likelihood of action only indirectly but to have a direct influence on individual perceptions.

Perceptions of risk vary with individuals. Health behaviors are more likely to occur in an individual who believes that having the condition would have serious consequences. Becker believes that cues or triggers serve as motivators to change or alter behavior. For example, if a person is cued to behaviors that may be perceived as health risks, a change in behavior may result. The combined levels of susceptibility and severity provide the energy or force to act, and the perception of benefits provides a preferred path of action. A person who barely accepts susceptibility to heart disease will be unlikely to check upon risk factors until intense cues are experienced. On the other hand, persons who readily accept susceptibility to heart disease may be spurred into action by the mere sight of a relevant poster (Becker, 1974).

In addition to providing a framework that supports understanding health beliefs and the identification of barriers to health seeking behaviors, the Health Belief

Model has been helpful in providing a framework for researching heart disease in women. If women do not perceive themselves as vulnerable to heart disease, they are less likely to adopt recommended behaviors. It is therefore important to understand what determines perception of risk.

For women to take action to prevent or control the development of heart disease, they must first realize that heart disease is in fact a health risk and second, they must recognize behaviors that increase their risk. Risk behavior modification must be presented to women as obtainable goals that will fit into their busy lives without causing major disruptions in schedules or finances. Primary care providers, specifically family nurse practitioners, must provide the stimulus to trigger healthy heart behaviors in women.

### Assumptions

One underlying assumption of this study was that perceived susceptibility is essential in motivating behavior change. The other assumption was women have perceptions about risk for heart disease.

### Purpose of the Study

The purpose of this study was to investigate heart disease risk factors in women and their perception of heart disease as a health risk. The relationship between selected

demographic variables and perception of heart disease as a health risk was explored.

### Statement of the Problem

Since heart disease has been established as the leading cause of death in women in the United States, a responsibility falls to health care providers to identify barriers related to health seeking behavior in women. The problem with which this research was concerned was this: Do women perceive themselves at risk for heart disease? and is there a relationship between perceived risk and identified risk factors?

### Research Questions

The research questions investigated were these:

1. Is there a significant correlation between selected demographic variables and perception of heart disease as a health risk?
2. Is there a significant correlation between identified risk factors and perception of heart disease as a health risk?

### Definition of Terms

For the purpose of this study the following terms were defined:

1. Risk factor: Risk factor included any activity or trait that increases chances of developing a specific disease (Legato & Colman, 1991). Identified factors that increase



an individual's risk for heart disease have been classified as non-modifiable and modifiable. Non-modifiable risk factors include age, race, sex, and family history. Modifiable risk factors include smoking, hyperlipidemia, diabetes mellitus, sedentary lifestyle, hormonal status, obesity and body mass index, and stress (Holm et al., 1993). Risk factors were ascertained using the Heart Test for Women.

2. Women: For the purpose of this study, women were identified as females of at least 18 years of age, living in East Central Mississippi and working in one of four identified locations. This information was obtained with a demographic data questionnaire.
3. Health risk: Health risk has been defined as a disease precursor associated with a higher than average morbidity or mortality. The disease precursors may include demographic variables, certain individual behaviors, familial and individual histories, and certain physiologic changes (Mosby, 1994). Perceived health risk was determined by a question on the demographic data sheet.
4. Selected demographic variables: Selected demographic variables were age, race, occupation and education. This information was obtained by using a demographic data sheet.

### Summary

This chapter presented heart disease as a major health threat to women. Risk factors for heart disease and how women are affected by these factors were explained. With less available health care dollars, health care providers are focusing more and more on health promotion and primary prevention. The Health Belief Model provides the nurse practitioner with possible barriers to health seeking behaviors, one of these being perceived susceptibility.

## Chapter II

### Review of the Literature

The review of the literature focused on risk factors for heart disease in women. Studies which included women and men were reviewed concerning perception of heart disease as a health risk as no studies were found that focused only on women's perception of heart disease as a health risk.

#### Risk Factors

Penckofer and Holm (1994) surveyed cardiovascular risk factors in women who were registered nurses and read Nursing. Two hundred eighty readers responded to the survey that appeared in the June issue of Nursing 93.

The researchers sought answers to these questions:

1. What are the cardiovascular risk factors of readers of Nursing 93?
2. What are the general risk levels (low, medium, or high) of these readers?
3. What are the relationships of the cardiovascular risk factors reported by the readers?

The instrument used to gather data was the Arizona Heart Institute and Foundation's Heart Test for Women. This tool was adapted for use in the study with permission from the publisher of the instrument. Participants included

female readers who answered the questionnaire and returned the questionnaire by mail. By adding the participants' score of each cardiac risk factor on the questionnaire, participants were classified as low, medium, and high risk according to the guidelines prescribed by the Arizona Heart Institute.

The findings revealed an average cardiac risk score of 13.96 which fell into the low risk score with a range of 51.0 to 1.0. Forty-seven percent of the participants were at low risk. Most of the participants (55%) were between the ages of 35 and 50 years. The researchers noted a relationship between increasing age and a family history of heart disease and being menopausal. Smoking was inversely associated with age, which supports the belief that smoking is on the rise in young females. High blood pressure, being easily angered or frustrated, and being menopausal were associated with a personal history of heart disease which supports these variables as risk factors for heart disease in women. Higher levels of blood fat also were associated with hypertension, lower levels of exercise, a body mass index greater than 27 and a waist-to-hip ratio greater than 0.80. All correlations were significant at the .01 level.

Penckofer and Holm (1994) concluded that cardiovascular risk increases with multiple risk factors, and that risk factors exist in combination, i.e., the individual with a

larger body mass index was less likely to exercise, have higher body fat levels and have a higher waist-to-hip ratio.

Recommendations made by the researchers primarily concerned the instrument used for data collection and included the suggestions to write a statement at the beginning of the questionnaire to instruct women to record a response to each major section because many respondents failed to answer the diabetes section, and to have a section identifying the race of the respondent since there is minimal information regarding the incidence and prevalence of cardiac risk factors among racial groups, particularly in women.

Penckofer and Holm (1994) surveyed risk factors in women concerning heart disease which was germane to this current study. Further, education level, race, and women's perception of heart disease as a health threat were explored as additional factors related to women's health beliefs.

Another study of particular interest to this current study was done in 1993. Dattilo and Wilson, in cooperation with the Department of Foods and Nutrition and the Department of Health Promotion and Behavior, University of Georgia, Athens, Georgia studied coronary heart disease risk factors in Black women. The purpose of the study was to identify coronary heart disease risk factors of premenopausal Black women. Dattilo and Wilson believed that primary prevention programs targeted at modifiable coronary

heart disease risk factors in this group could potentially decrease heart disease morbidity and mortality in Black women later in life.

This descriptive study had a sample of 52 Black women who were not pregnant and were not under a physician's care for any medical condition. The participants were premenopausal and of low economic income. The participants were recruited through advertisements and through the Expanded Food and Nutrition Education Program in Savannah, Georgia. The study protocol was approved by the Human Subjects Review Board at the University of Georgia.

The instrument used, a questionnaire, was pilot tested once and revised based on comments obtained from the test population and people administering the questionnaire. In addition to the questionnaire, blood lipid, glucose analysis, blood pressure, body fat, height, and weight of each participant was recorded.

Dattilo and Wilson (1993) found that while blood lipid profiles indicated that minimal intervention strategies were needed according to National Cholesterol Education Program (NCEP) criteria, the majority of the women (51%) had at least one NCEP independent coronary heart disease risk factor, and 32% had at least two risk factors. Previous research had indicated that the presence of hypertension, hypercholesterolemia, or smoking increases the risk of coronary heart disease by 30%. The presence of any two of

these factors increased the risk threefold and all three factors increase risk for heart disease sevenfold. The researchers concluded that the women in this sample could benefit from an intervention program addressing risk factor modification.

Based on this conclusion, the researchers recommended a comprehensive approach to the prevention of heart disease in women. This approach would include several interventions designed to reduce various risk factors.

Dattilo and Wilson (1993) successfully identified one group of women at risk, premenopausal, socio-economically deprived Black women, which provided further evidence of the need for health promotion and prevention for heart disease in women. It did not establish whether or not these women were aware that they were at risk, which was the focus of the current study.

Another group of women determined to be at risk for the development of heart disease was postmenopausal women. Meta-Analyses of observational studies suggest a 50% reduction in heart disease risk in postmenopausal women taking estrogen. The Postmenopausal Estrogen/Progestin Interventions (PEPI) trial (The Writing Group for the PEPI trial, 1995) was designed to determine the differences in selected heart disease risk factors in postmenopausal women treated with placebo, unopposed estrogen, or one of three combined

estrogen/progestin regimens. The risk factors studied were HDL-C, fibrinogen, insulin, and blood pressure.

The participants were women aged 45 to 64 years, with or without a uterus. Women who had severe menopausal symptoms were excluded, as were women who had used estrogens or progestins within three months. The seven PEPI clinical centers randomized 875 women to one of the following treatments: 1. placebo; 2. conjugated equine estrogen (CEE), 0.625 mg/d; 3. CEE, 0.625 mg/d plus cyclic medroxyprogesterone acetate (MPA), 10 mg/d for 12 d/mo; 4. 0.625 mg/d plus consecutive MPA, 2.5 mg/d; or 5. CEE, 0.625 mg/d plus cyclic micronized progesterone (MP), 200 mg/d for 12 d/mo. The women were studied for three years.

Each active treatment regimen was associated with a significantly greater increment in mean HDL-C levels than the placebo group and the women in the CEE group had higher HDL-C levels than the CEE plus MPA, MP groups. Fasting glucose levels decreased significantly in all active treatment groups compared with placebo. In pairwise comparisons, women assigned to placebo had greater increases in fibrinogen than women assigned to active treatment. In PEPI women, hormone replacement did not adversely affect blood pressure, which refutes earlier studies which reported an increased blood pressure in women receiving noncontraceptive estrogens.



The Writing Group for the PEPI trial (1995) confirmed that oral estrogen taken alone or with MPA or MP is associated with improved risk of cardiovascular disease. The study further expanded Dattilo and Wilson's (1993) findings to include post-menopausal women, surgical or natural. Both samples of women were at increased risk for the development of heart disease. These findings were correlated in the current study.

Obesity, or an excessive amount of body fat, has long been recognized as an important contributor to increased risk for heart disease. More recently, research has suggested that the distribution of body fat, or fat patterning, may also contribute to the development of chronic disease. Strong correlations have been found between centralized obesity, assessed by waist-to-hip ratio and/or skinfolds, and increased morbidity and mortality.

Hopewell, Yeater, Ullrich, and Albrink (1993) profiled waist-to-hip ratios and cardiovascular disease (CVD) risk factors in mildly-obese younger American women. The study consisted of 60 sedentary, nonsmoking, premenopausal, healthy women 21 to 51 years of age. Subjects were grouped according to waist-to-hip ratio for statistical analyses into android and gynoid groups. The android group had waist-to-hip ratios of  $\geq 0.8$  and the gynoid  $< 0.8$ . The groups were not different with respect to age and body mass.

Hopewell et al. (1993) found lower blood pressures at rest and during maximal exercise in the gynoid group. Additionally, the gynoid group had lower percentage body fat, smaller subscapular and suprailiac skinfold measurements, and waist circumference than the android group. The android group had higher total cholesterol, LDL-C, triglycerides, apoprotein B, and insulin compared to the gynoid group. HDL-C was not different between the groups.

The researchers concluded that centralized obesity is associated with an increased risk of developing CVD. They based this conclusion on higher blood pressure, less desirable lipid profiles, and higher serum insulin in the android group. These findings added yet another group, young to middle age, mildly obese women, at risk for the development of heart disease. However, whether or not these women perceived themselves at risk was not known.

### Perceived Risk

To determine the importance of perceived risk factors and sociodemographic variables on subjects' perception of heart attack risk, Avis, Smith, and McKinlay (1989) studied the effect of health risk appraisal (HRA) feedback on risk perceptions, and the relationship between perceived and objectively measured heart attack risk. This longitudinal study was composed of 732 healthy men and women between the ages of 25 and 65 living in the Boston, Massachusetts, area.

The instruments used to gather data consisted of four health risk appraisals (CDC, Arizona Heart Test, RISK0, and Determine Your Medical Age) for obtaining the participants' perceived risk. The New Carter Center Healthier People HRA was used to obtain the objective measure of coronary heart disease. Perceived risk of heart attack or stroke was assessed by the question, Compared with persons of your own age and sex, how would you rate your risk of having a heart attack or stroke?

Avis et al. (1989) identified that compared to the objective measure of risk, a high percentage of people display an optimistic bias. Fifty-six percent of the participants rated their risk as lower than average. The effect of health risk feedback on risk perceptions was greatest on those who were above average risk suggesting that HRA feedback can effectively change the perceptions of those at high risk. However, the results revealed that only feedback from the Arizona Heart Institute HRA had a significant impact on heart attack risk perception. Compared to the other three HRAs, the researchers stated that the feedback from this HRA was presented in a concrete fashion directly related to heart disease risk. Thus, respondents may have been more likely to understand and use the feedback from the Arizona Heart Institute HRA. The researchers did not find a relation between increases in perceived risk and behavior change. Based on previous studies, respondents may

not have understood the feedback (Avis et al., 1989). Therefore, the researchers suggested that HRAs be given in conjunction with health education programs.

The extent to which the information gained from this study applies to women is not known due to the fact that the study did not differentiate between men and women. The current study, however, did gender differentiation as only women were participants.

While the literature is replete with studies concerning perceived risk of breast cancer in women and health seeking behaviors, very little was found concerning women's perceived risk of heart disease and health seeking behaviors. Therefore, it was necessary to include in this review, a study of the relationships of variables derived from the Health Belief Model (HBM) to the performance of breast self-examination (BSE), assuming that the same variables affect women's health seeking behavior concerning heart disease.

Wyper (1990) suggested that information on the factors that influence the performance of BSE may suggest nursing strategies to minimize deterrents and to enhance the likelihood that women will learn this behavior and practice indefinitely. Because the HBM variables are assumed to have a collective influence on health behavior, this study was undertaken to answer the following research question: What

is the combined influence of perceived threat of breast cancer and net perceived efficacy of BSE on BSE performance?

Data were collected from 202 adult women at least 18 years of age. The participants were primarily White, married, and well educated.

HBM variables measured were perceived susceptibility to breast cancer, perceived seriousness of breast cancer, perceived benefits of BSE, and perceived barriers to BSE. BSE performance was measured using a tool designed by the researcher based on previous studies and available literature about BSE.

Multiple regression of the HBM variables on all three measures of BSE (frequency, thoroughness, and practice) revealed that only susceptibility and barriers ( $r = -.59$ ) contributed to the model. Wyper (1990) determined that findings were consistent with previous studies of BSE based on the HBM although direct comparisons were difficult because of differences in the measurement of both HBM variables and BSE. Further, Wyper found that a consistent significant, negative relationship between barriers and all measures of BSE existed. Wyper concluded that if consideration of perceived benefits did not improve the explanatory value of the HBM, then attention should be directed solely to decreasing perceived barriers. This current study sought to determine the relationship between perceived risk and susceptibility to heart disease in an

effort to lay ground work to reduce perceived barriers to heart healthy behaviors.

### Summary

In summary, the research studies reviewed clearly identified risk factors for heart disease in one group of Black women (Dattilo & Wilson, 1993). Definite relationships between risk factors and personal history of heart disease have been established (Penckofer & Holm, 1994). Estrogen deficiency has been well established as a risk factor in women for the development of heart disease (The Writing Group for the PEPI Trial, 1995). A waist-to-hip ratio of  $\geq 0.8$  has been associated with higher total cholesterol levels, higher LDL-C levels and hypertension in women, all of which increase risk for the development of heart disease (Hopewell et al., 1993). Research has been conducted for the purpose of studying health beliefs and practices in women. Perceived susceptibility and barriers have been determined to be good indicators of health-seeking behavior (Wyper, 1990). An optimistic bias has been shown to exist in men and women regarding personal risk for heart disease (Avis et al., 1989).

Recommendations were made by researchers for further study concerning risk factors for heart disease in women and concerning health beliefs and health practices in women. Human behaviors are complex and not easily modified or changed. Therefore, further research is required to achieve

a better understanding of human behavior. The nurse practitioner must be increasingly involved in finding better ways to promote health and involve clients in primary prevention. This research extended the attempt to identify a relationship between actual risk factors and perceived susceptibility of heart disease in women.

## Chapter III

### The Method

The purpose of this study was to investigate heart disease risk factors in women and their perception of heart disease as a health risk. The relationship between selected demographic variables and perception of heart disease as a health risk was explored.

#### Design of the Study

This study utilized a non-experimental descriptive correlational design to determine the incidence of risk factors for heart disease in women and their perception of heart disease as a health risk. According to Polit and Hungler (1991), the aim of descriptive correlational research is to describe the relationship among variables rather than to infer cause-and-relationship. Because the purpose of this study was to identify risk factors in women for heart disease and describe the relationship of risk factors to perception of risk for heart disease, a descriptive correlational design was appropriate.

#### Variables

The variables of interest were women's perception of heart disease as a health risk, race, educational level,



occupation, and risk factors for heart disease found in women. The risk factors surveyed were age, family history, personal history, smoking, blood pressure, hormone status, exercise, blood fats, diabetes, body mass, and stress.

#### Setting, Population, and Sample

This study was conducted in a small city in East Central Mississippi with a population of 41,036 and average income of \$25,489. The main industry for this city was manufacturing. Study sites were local manufacturing industries, a local hospital, and a local school.

When examining geographic patterns of heart disease mortality, the Southern states are clearly ranked the highest (Holm et al., 1993). Mississippi ranks 34th from death related to coronary heart disease alone and has the highest death rate in the United States from total cardiovascular disease (American Heart Association, 1993). Mississippi has been identified by the American Heart Association (1993) as having the highest death rate per population from heart disease.

The sample was one of convenience as it consisted of women who were employed at one of the study sites, were at least 18 years of age, and returned the survey. Approximately 375 women were surveyed, with a resulting sample of  $N = 113$  representing a return of 33%.

### Method of Data Collection

Approval to conduct the research was secured from the Mississippi University for Women Committee on the Use of Human Subjects and Experimentation (see Appendix A). Permission to distribute the survey with the participants' regular pay checks was sought from the employers (see Appendix B). Participants were solicited for participation in the survey by an invitation in the form of a letter which included an explanation of the study and instructions for completion of the survey (see Appendix C). The letter was attached to a regular pay envelope. A demographic data form (see Appendix D) and the Heart Test for Women (see Appendix E) along with a stamped pre-addressed return envelope was included for the return of the survey. Since inclusion in this survey was voluntary, return of the survey was considered consent to participate. Data collection dates were from May 10th to June 1st.

### Instrumentation

Data were collected using a demographic data sheet and the Arizona Heart Institute's Heart Test for Women. The demographic data sheet was a researcher-designed tool developed to collect pertinent data pertaining to the characteristics of the participants. The question, Compared with persons of your own age and sex, how would you rate your risk of having a heart attack? was included on the demographic data form. This question had no established

validity or reliability but had been piloted and used in a previous research study (Avis et al., 1989). The participants perceived risk of heart disease was defined using a visual analog. The visual analog was scored on a continuum of 0 to 100 mm, with 0 being no perceived risk and 100 being great risk.

The Heart Test for Women was designed by researchers at the Arizona Heart Institute based on the unique dynamics of risk in women. The test covers those risk factors that have been proven to influence women's risk in a predictable way. The statisticians who devised this survey attempted to strengthen its validity by including only those factors whose degree of influence has been repeatedly, and therefore, reliably, confirmed (Diethrich & Cohan, 1992). This questionnaire had no established validity or reliability but had been used in previous research (Penckofer and Holm, 1994).

Permission to use and reproduce the Heart Test for Women was requested from (see Appendix F) and granted by (see Appendix G) the Arizona Heart Institute and Foundation.

The Heart Test for Women is composed of 11 subscales. The subscales consisted of risk factors such as family history, age, personal history, smoking status, blood pressure, exercise habits, blood fats, hormone status, diabetic history, body mass and stress level. Each subscale was individually scored and ranged from a 0 to 20 depending

on the weight assigned to the risk by the designers of the tool. Three possible classifications resulted from the total of the subscales: Low risk (15 points or below), medium risk (16 - 32 points), or high risk (33 points or above).

### Method of Data Analysis

Data were described and classified using descriptive statistics of means and standard deviations. The Pearson Product Moment Correlation statistical measure was used to summarize the magnitude and direction of relationship between perceived risk and actual risk of heart disease. The level of significance was set at .05.

### Limitations

The subjects for this study were comprised of a voluntary convenience sample of women. The women were all employed and most had at least two years of college education which may not be representative of non-working, less educated women. Also, 80% of the women in this sample were White, which may have biased the sample. On the other hand, women from varying occupations and professions were used to represent a wider array of women.

The fact that subjects were given the questionnaire to take home and return at a later date may have biased the sample as subjects may have been influenced by someone to answer the questions differently. Several of the returned questionnaires could not be used because they were not

completed. It may have been difficult to understand portions of the tool. However, only one tool was found that specifically looked at women's risk for heart disease. While the instruments for data collection have been used in previous research, validity and reliability have not been firmly established; therefore, the instruments may not consistently measure the attributes they are intended to measure. Generalization to the total population should be done with caution.

#### Summary

The descriptive research included 113 women eighteen years and over. Variables of interest were perceived risk of heart disease and risk factors for heart disease. The Arizona Heart Institute & Foundation's Heart Test for Women containing 11 subscales addressed the variables of risk factors. The question, Compared with persons your own age and sex, how would you rate your risk of having a heart attack? assessed perceived risk of heart attack. Descriptive statistics described demographic variables.

## Chapter IV

### The Findings

This descriptive study addressed women's perception of heart disease as a health risk associated with identified risk factors. A description of the sample, including the demographic variables, and results of data analysis to answer the research questions are presented.

#### Description of Sample

This study included 113 women who were employed at one of three survey sites located in a small city in East Central Mississippi. Forty-seven (41.2%) were employed at a local manufacturing industry, 28 (24.6%) were employed at a local hospital, and 35 (30.7%) were employed at a local public school.

The subjects were classified into three age groups, 34 years and under (24%), 35 to 50 years (62%), and 51 years and over (14%). Most (80%) of the women were White, while 22 (20%) were African American. The sample was well educated with 44.1% of the women having a college education of four or more years, 39% having at least two years of college, 15% with a high school education, and one (.9%) that did not graduate from high school.

## Results of Data Analysis

Data were collected to answer two research questions. Descriptive statistics and the Pearson Product Moment Correlation were used to analyze the data.

Research question 1. The first research question sought to determine if there was a significant correlation between selected demographic variables and perception of heart disease as a health risk. Demographic variables included age, education, race, and place of employment. Perception of heart disease was assessed by responses to the question, Compared with persons of your own age and sex, how would you rate your risk of having a heart attack?. Respondents were asked to score their risk on a visual analog scale rated from 0 to 10, with 0 being no risk and 10 being great risk. Subjects rate of perceived risk was from 0 to 10 with a mean of 4.06. No significant correlations emerged between perceived risk and the demographic variables (see Table 1).

Research question 2. The second question sought to determine if a significant correlation existed between identified risk factors and perception of heart disease as a health risk. Risk factors were assessed by the Arizona Heart Test for Women (AHT). Risk factors included on the survey were age, family history, personal history, smoking status, blood pressure, exercise habits, blood fats, hormone status, history of diabetes, body mass, waist-to-hip ratio, and stress. After totaling individual risk factor scores,

Table 1

Correlation of Perceived Risk and Selected Demographic Variables Using the Pearson Product Moment Correlation

Variable	n	r	p
Race	113	-.03	.77
Age	113	.16	.08
Education Level	113	.10	.29
Employment	113	.02	.87

participants were placed in one of three risk groups. Low risk category (15 points and below), medium risk, (16 to 32 points), and high risk (33 points and above). AHT scores ranged from 3 to 50, with a mean score of 17.53, which indicated the medium risk category. Significant correlations were found to exist between perceived risk and family history, personal history, blood pressure, exercise habits, blood fats, body mass, waist-to-hip ratio, and diabetes. Correlation results for all variables are presented in Table 2.

Additional Information

After data collection, the researcher desired to identify the relationship between risk factors to determine if subjects exhibiting one risk factor were likely to have



Table 2

Correlation of Perceived Risk and Identified Risk Factors  
Using the Arizona Heart Test for Women Analyzed by the  
Pearson Product Moment Correlation

Variable	n	r	p
Age	113	.16	.08
Family History	113	.22 *	.02
Personal History	113	.28 *	.00
Smoking	113	.12	.22
Blood Pressure	113	.30 *	.00
Exercise	113	.25 *	.01
Blood Fats	113	.25 *	.00
Body Mass	113	.32 *	.00
Waist-to-Hip Ratio	113	.26 *	.01
Hormone Status	113	.12	.22
Stress	113	.16	.08

\*  $p \leq .05$

others, and if so, which risk factors seem to coincide. The following significant relationships emerged (see Table 3).

### Summary

This chapter presented data obtained using the Arizona Heart Test for Women, the researcher designed question for perceived risk of heart disease as a health risk, and a demographic data form. Results of the data collection were described in narrative and table format.

Table 3

Relationships Between Risk Factors Using the Arizona Heart  
Test for Women Analyzed by the Pearson Product Moment

Correlation

Variable	n	r	p
Personal History and			
Stress	113	.28 *	.01
Blood Fats	113	.28 *	.00
Blood Pressure	113	.19 *	.04
Blood Fats and			
Exercise	113	.31 *	.00
Waist-to-Hip Ratio	113	.30 *	.00
Blood Pressure	113	.32 *	.00
Body Mass and			
Exercise	113	.21 *	.02
Waist-to-Hip Ratio	113	.24 *	.00
Blood Pressure	113	.31 *	.00
Diabetes and			
Blood Pressure	113	.36 *	.00
Exercise and			
Waist-to-Hip Ratio	113	.28 *	.00
Blood Pressure	113	.24 *	.00
Family History and			
Age	113	.20 *	.04
Blood Pressure	113	.25 *	.01

\*  $p \leq .05$

## Chapter V

### The Outcomes

Heart disease has been established as the leading cause of death in women in the United States, affecting an estimated 21,000 women under the age of 65 (American Heart Association, 1993). Health researchers have shown that heart disease progresses more quickly in women and that 50% of female heart attack victims die after their first heart attack (Holm et al., 1993). While these figures are alarming, population survey data have shown that women do not perceive heart disease as a priority health problem.

The purpose of this descriptive study was to investigate women's perception of heart disease as a health risk. The Health Belief Model served as the theoretical framework. Two questions guided the study:

1. Is there a significant correlation between selected demographic variables and perception of heart disease as a health risk?
2. Is there a significant correlation between identified risk factors and perception of heart disease as a health risk?

The Arizona Heart Test for Women, a demographic data form, and the researcher designed question, Compared with

persons of your own age and sex, how would you rate your risk of having a heart attack? were questionnaires used to answer the research questions. Data were analyzed using both descriptive statistics and the Pearson Product Moment Correlation.

This chapter includes a discussion of the findings of the study. The conclusions, implications, and recommendations which evolved from these findings also are presented.

### Summary of Findings

The sample consisted of 113 women who were recruited from a manufacturing industry, a local hospital, and a local public school located in East Central Mississippi. The majority (62%) were in the age category 35 to 50 years, 24% were 34 years and under, and 14% were 51 years and over. Seventy-nine percent of the women were White. The sample was well educated; 83% had at least two years of college.

No significant correlations emerged between the demographic variables of race, age, education level, and place of employment and the perception of heart disease as a health risk. The group mean score on the Arizona Heart Test for Women was 17.54, placing subjects in the below average risk category. Significant correlations were found to exist between perceived risk and the health risks of family history, personal history, blood pressure, exercise habits,

blood fats, body mass, waist-to-hip ratio, and diabetes. Significant relationships between risk factors also emerged.

### Discussion

As there were no studies that focused specifically on women's perception of risk, the results of this study can neither be supported nor refuted. However, findings seem to correlate with those of Avis et al. (1989), who concluded that their sample of men and women, when compared with people their own age and sex, did not rate themselves at risk for heart attack. Since Avis et al. (1989) grouped both genders in their results, a comparison of findings must be done with caution as the male rating influence cannot be determined.

Interestingly, in the current study, the mean score for the subjects ratings of risk factors for developing heart disease (17.53) placed them in the medium risk category, while they scored low on perception of heart disease as a health risk (4.06), perceiving themselves as having little risk for developing heart disease. Yet significant correlations between perceived risk and risk factors emerged. These findings tend to support Becker's (1974) Health Belief Model which identified one barrier to developing healthy behaviors as perceived susceptibility. According to Becker (1974), individuals (women) who do not perceive themselves as susceptible (heart disease) will be unlikely to change risk factors until intense cues are

experienced. This may well explain the less than average risk (4.06) perceived by the subjects, while at the same time showing a correlation between perceived risk and several of the risk factors.

Risk factor analysis of the current research supported findings by Dattilo and Wilson (1993), Hopewell et al. (1993), and Penckofer and Holm (1994). Dattilo and Wilson (1993) concluded that the majority of the women (51%) in their study had at least one heart disease risk factor, and 32% had at least two risk factors. The subjects in this study were pre-menopausal (age 18 to 52) Black women. In the current study, 54% had at least one risk factor (body mass index of  $> 27$ ). Body mass was found to correlate with poor exercise habits, increased waist-to-hip ratio, and elevated blood pressure, signifying that risk factors exist in combination. The data seem to suggest that premenopausal women may have altered eating habits which has resulted in increased weight and elevated blood fats. Another explanation of this finding could be these women have a lifestyle that excludes exercise and encourages poor food choices resulting in undesirable risk profiles. On the other hand, these findings may be peculiar to this sample and may not be applicable to all women. Of interest is the fact that Dattilo and Wilson's (1993) subjects were premenopausal Black women and the subjects in this study were mostly (80%) premenopausal White women (age 18 to 50) suggesting that

women, regardless of race and age, have risk factors for the development of heart disease.

Results of the current study indicate the importance of risk factor identification in apparently healthy women. Women in this sample could benefit from an intervention program that addressed a number of risk factors.

Penckofer and Holm (1994) concluded that cardiovascular risk increased with multiple risk factors, and that risk factors exist in combination. The same held true for this study. Relationships between several of the risk factors from the Arizona Heart Test for Women emerged. Women who had a personal history of heart disease were also found to have more stress, increased blood fats and elevated blood pressure. Increased body mass correlated with poor exercise habits, increased waist-to-hip ratio and increased blood pressure. These findings seem to suggest that these women with a personal history of heart disease also have increased stress which may be responsible for dietary indiscretions which soothe the stress. This vicious cycle has resulted in hypertension and ultimately personal history of heart disease, or perhaps these women had central obesity and were sedentary which placed them at greater risk for hypertension.

Previous research has indicated that the presence of more than one risk factor increased the risk of heart disease. As health care providers, nurse practitioners must



be prepared to discuss the risk factors associated with heart disease and educate women concerning strategies for preventing the disease.

Hopewell et al. (1993) found an increased risk for the development of heart disease in women with waist-to-hip ratio of  $> 0.8$ . Hopewell et al. also found a correlation between increased waist-to-hip ratio and higher blood pressure and blood fats. The current study's findings support this research as correlations between waist-to-hip ratio, blood pressure, blood fats and exercise habits were found to be significant ( $p = .00$ ). Data from the current study suggest that centralized fat distribution (waist-to-hip ratio  $> 0.8$ ) is associated with a less than desirable risk profile for heart disease. The less desirable risk profiles may indicate more rapid progression or earlier onset of heart disease.

### Conclusions

No studies were found that focused specifically on women's perception of heart disease as a health risk; therefore, the results of this study can neither be supported nor refuted. Based on the results of this study, this researcher concluded that there is no significant correlation between selected demographic variables and perception of heart disease as a health risk among women. Further, the researcher concluded that women are aware of risk factors for the development of heart disease but do not

perceive personal susceptibility. However, significant correlations between identified risk factors and perception of heart disease as a health risk were identified.

### Implications for Nursing

A number of implications for nursing science were derived from this study. Implications are suggested for research, theory, practice, and education.

Research. Many studies have been used to evaluate risk factors for heart disease in women. However, little research was found concerning women's perception of heart disease as a health risk. The findings of this study suggest that more research effort is needed to gain greater insight into women's perception of health risks. Future research should include more detailed tools to measure health beliefs and health practices of women using a broader sample of women. The samples should include non-working, less educated women of various ethnic backgrounds as well as the sample identified in this study.

Theory. Theory is tested through research. This research looked at Becker's (1974) Health Belief Model as it pertained to perception of risk and health seeking behaviors. The findings of this research supported the Health Belief Model in identifying at least one barrier to preventive care, perceived susceptibility. The Health Belief Model must be tested in future research to provide new evidence of the applicability of the Health Belief Model

when studying barriers to preventive health care. The Health Belief Model should also be tested with larger, broader populations in other areas of Mississippi.

Practice. In providing primary care for women, nurses must acknowledge the important role of prevention. With the findings of this study in mind, the importance of an accurate risk assessment cannot be overemphasized when planning care for women. This plan of care must include appropriate counseling to educate women concerning the risk of heart disease and the effectiveness of preventive care. Also, the establishment of obtainable and realistic goals for healthy heart behaviors in women for the prevention of heart disease must be included in this plan. Women are often seen for primary care, and the need for preventive care is often overlooked.

Education. As the number of women with heart disease increases, it is essential that nurses be prepared to respond to the needs of women and individuals in all age groups regarding heart disease and preventive measures. The findings of this study demonstrate the importance of enhancing nursing curricula to include an emphasis on heart disease prevention as it relates to women.

Patient education is a hallmark of nurse practitioners. Nurse practitioners generally spend more time with the client than any other health care provider. Patient education by the nurse practitioner, centered on the

prevention of heart disease can decrease the number of deaths associated with heart disease.

This research found that while women are aware of risk factors for the development of heart disease, they do not perceive themselves at risk. According to Becker (1974), the combined levels of susceptibility and severity provide the energy or force to act and the perception of benefits provide a preferred path of action. Screening, education, encouragement, and identification of barriers concerning healthy heart behaviors on the part of the nurse practitioner can possibly provide the most influencing factor to increase compliance for life style changes in women.

#### Recommendations for Further Study

Based on the findings of this study, the following recommendations are made for future research and practice in nursing.

1. Replication of this study with a sample of women representing additional ethnic and educational level groups.
2. Conduction of research which identifies barriers to healthy heart behaviors in women.
3. Conduction of more research using the Health Belief Model as a framework for examining the health risk perceptions of women.

4. Development of valid and reliable research instruments for measuring perception of health risk in women.
5. Education of women of all ages concerning risk for the development of heart disease.
6. Screening all women for risk factors pertaining to the development of heart disease.
7. Establishment of obtainable and realistic goals for healthy heart behaviors in women who have risk factors.

### Summary

This study supported findings of previous research studies concerning heart disease risk factors in women. The majority of women are informed as to risk factors for heart disease; however, perception of heart disease as a health risk remains low.

The results of this study were not unusual. It did show, however, a need to educate women concerning personal risk for the development of heart disease.

Conclusions were drawn from the data gathered in this study. Implications for nursing were derived from the study. Results and recommendations for further study were suggested.

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## Appendixes

Appendix A

Letter of Approval from  
Mississippi University for Women  
on Use of Human Subjects in Experimentation



MISSISSIPPI  
UNIVERSITY  
FOR WOMEN

Columbus, MS 39701

Vice President for Academic Affairs  
P.O. Box W-1603  
(601) 329-7142

February 22, 1995

Ms. Kathy T. McKay  
c/o Graduate Nursing Program  
Campus

Dear Ms. McKay:

I am pleased to inform you that the members of the Committee on Human Subjects in Experimentation have approved your proposed research with the requirement that the consent form reflect that consent is voluntary and that the subjects may withdraw at any time.

I wish you much success in your research.

Sincerely,

A handwritten signature in cursive script, appearing to read "T. Richardson".

Thomas C. Richardson  
Vice President  
for Academic Affairs

TR:wr

cc: Mr. Jim Davidson  
Dr. Mary Pat Curtis  
Dr. Rent

Appendix B

Letter of Request to Facility

## Letter of Request to Facility

Kathy T. McKay, R. N.  
12357 Hand Road  
Collinsville, MS 39325

Dear \_\_\_\_\_,

I am currently enrolled in the Masters of Science in the Family Nurse Practitioner Program at Mississippi University for Women. Presently, I am investigating the incidence of risk factors in women for heart disease and their perception of heart disease as a health risk.

I would like permission to distribute questionnaires to your female employees. The questionnaires are brief and may be completed at home. No budget expense will be incurred.

There is no risk involved in completion of the questionnaires and anonymity for the participants is absolutely guaranteed. Neither your company nor the participants will be identified in the study.

Enclosed is a brief abstract of the study and copies of the questionnaires and Letter of Explanation to the Participant. If you have any questions or concerns regarding the study, please feel free to contact me at your convenience.

I would appreciate your cooperation with this research project. Your immediate attention to my request will be greatly appreciated.

Sincerely,

Kathy T. McKay, R. N.

Appendix C  
Explanation to Participants

### Explanation to Participants

I am currently enrolled in the graduate nursing Program at Mississippi University for Women in Columbus, Mississippi. Presently I am involved in a research project needed to fulfill the requirement for a Master of Science Degree.

Briefly, I am investigating the incidence of women's risk factors for heart disease and women's perception of heart disease as a health threat.

I am soliciting your cooperation in completing the enclosed questionnaires. It should take you approximately 30 minutes total to complete. While there is no direct benefit for you, your participation may enable health care providers to better understand heart disease in women.

There is no personal risk involved in the completion of the questionnaires and you are guaranteed anonymity. Your participation is voluntary and is valuable to the success of this study.

Please return your completed questionnaire by sealing it in the envelope that is provided and placing it in the collection box located in the cafeteria. Return of the survey will indicate your consent to participate. I appreciate your cooperation with this research project. Thank you.

Sincerely,

Kathy T. McKay, R.N.

Appendix D  
Demographic Data Form



## Demographic Data Form

Circle the appropriate response.

1. Race: White; African-American; Native American; Latino/Hispanic/Mexican ; or Asian.
2. Place of employment: Manufacturing Industry; Health Care Facility; Public School System.
3. Educational Background: College 4 or more years; College less than 4 years; High School graduate or GED; Did not graduate.

Compared with persons of your own age and sex, how would you rate your risk of having a heart attack? (Respond on the scale below with 0 being no risk and 10 being great risk )

0 \_\_\_\_\_ 10

*On the attached questionnaire, record a response for EACH major section. If you have any questions regarding the questionnaire, or your risk for heart-disease, feel free to contact me. I may be reached at this number 484-1627.*

Appendix E

Arizona Heart Test Questionnaire

## HEART TEST FOR WOMEN

## AGE

\*51 and over .....5

\*35 to 50 .....2

\*34 and under .....0

enter your score \_\_\_\_\_

**FAMILY HISTORY** If you have parents, brothers, or sisters who have had a heart attack, stroke or heart bypass surgery at:

\*Age 55 or before .....5

\*Age 56 or after .....3

\*None or don't know .....0

enter your score \_\_\_\_\_

**PERSONAL HISTORY** Have you had:

\*A heart attack .....20

\*Angina, heart bypass surgery, angioplasty, stroke or blood vessel surgery .....10

\*None of the above ....0

enter your score \_\_\_\_\_

**SMOKING** Current smoker:

How many cigarettes per day?

\*5 or more .....20

\*4 or fewer .....10

If you are a smoker taking oral

contraceptives and are:

\*Under 35 years old ....add 2

\*35 years old and over ...add 5

or

Previous smoker who quit less than 2 years ago: how many cigarettes did you smoke?

\*5 or more .....10

\*4 or fewer .....5

or

\*Never smoked or quit more than 2 years ago .....0

enter your score \_\_\_\_\_

**BLOOD PRESSURE** If you have had your blood pressure taken in the last year, was it:

\*Elevated or high (either or both readings above 160/95) .....6

\*Borderline (between 140/90 and 160/95) .....3

\*Normal (below 140/90) .....0

enter your score \_\_\_\_\_

**EXERCISE** Do you engage in any aerobic activity, such as brisk walking, jogging, bicycling or swimming for more than 20 minutes?

\*Less than once a week .....6

\*1 or 2 times a week .....3

\*3 or more times a week .....0

enter your score \_\_\_\_\_

**BLOOD FATS** If you have had your cholesterol and blood fat levels checked in the last year, score your risk here:

\*Over 240 .....6

\*200 - 240 .....3

\*Cholesterol under 200 .....0

\*If your HDL's are lower than 45 .....add 1

or

If you know your cholesterol to HDL ratio, use this section to score your risk:

\*7.1 and above .....6

\*3.6 - 7.0 .....3

\*3.5 or below .....0

or

If you do not know your blood fat levels, use this section to score your risk:

Which of the following best describes your eating pattern?

\*High fat: red meat, "fast" foods, and/or fried foods daily; more than 7 eggs per week; regular consumption of butter, whole milk, and cheese .....6

\*Moderate fat: red meat, "fast" food, and/or fried foods 4 - 6 times per week; 4 - 7 eggs weekly; regular use of margarine, vegetable oils, and/or low-fat dairy products .....3

\*Low fat: poultry, fish, and little or no red meat, "fast" foods, fried foods, or

saturated fats: fewer than 3 eggs per week; minimal margarine and vegetable oils; primarily non-fat dairy products .....0

enter your score \_\_\_\_\_

**HORMONE STATUS** If you have undergone natural menopause, your age at its start:

\*41 or older .....1

\*40 or younger .....2

If you have had a total hysterectomy, your age when it was done:

\*41 or older .....1

\*40 or younger .....3

If you take an oral estrogen supplement ..... subtract 2

or

If you are still menstruating .....subtract 1

enter your score \_\_\_\_\_

**DIABETES** If you have diabetes (blood sugar level above 140), your age when you found out:

\*40 or before .....6

\*41 or older .....4

or

Do not have diabetes .....0

enter your score \_\_\_\_\_

**BODY MASS** Calculate your body mass index with the following formula:

Weight (pounds): \_\_\_\_\_ x 0.45 = W

Height (inches): \_\_\_\_\_ x 0.025 = H

Divide (W) by the square of (H) = Body Mass Index (BMI)

(W) \_\_\_\_\_ ÷ (H x H) \_\_\_\_\_ = \_\_\_\_\_ BMI

\*If your BMI is 27 or greater .....2

\*If your BMI is below 27 .....0

enter your score \_\_\_\_\_

Now measure your waist and hips and divide your waist measurement by your hip measurement.

(waist) \_\_\_\_\_ ÷ (hips) \_\_\_\_\_ = \_\_\_\_\_

\*If your waist to hip ratio is 0.8 or greater .....2

\*If your ratio is 0.79 or less ...0

enter your score \_\_\_\_\_

**STRESS** Are you easily angered and frustrated:

\*Most of the time .....6

\*Some of the time .....3

\*Rarely .....0

enter your score \_\_\_\_\_

TOTAL SCORE \_\_\_\_\_

### WHAT YOUR RISK FACTOR SCORE MEANS .....

#### 15 POINTS OR BELOW: LOW RISK

Congratulations! Maintain your heart-healthy status by watching your weight, blood pressure, and blood fat levels; get regular check-ups and don't smoke.

Retake this test every year to monitor your heart-health risk profile.

#### 16 - 32 POINTS: MEDIUM RISK

Experience indicates that your medium risk level warrants attention. Personal factors or lifestyle habits may be increasing your vulnerability to heart disease. I strongly recommend you schedule an appointment with a health care professional for an evaluation, and get advice on how you can improve your heart-health status.

#### 33 POINTS OR ABOVE: HIGH RISK

Your potential for experiencing a heart attack or stroke is significant. You must take action NOW. If you are not already being treated for heart disease, you are advised to see a health-care professional and seek ways to reduce risk!

Appendix F

Letter of Request for Permission  
to Use the Heart Test  
for Women

Letter of Request for Permission to use  
the Heart Test for Women

Kathy D. McKay  
12357 Hand Road  
Collinsville, MS 39325

November 4, 1994

Denise Frakes  
Public Relations  
Arizona Heart Institute and Foundation  
2632 North 20th Street  
Phoenix, Arizona 85006

Dear Ms. Frakes,

I am currently enrolled in the Masters of Science in Family Nurse Practitioner program at Mississippi University for Women, Columbus, MS. Presently I am involved in a research project needed to fulfill the requirement for a thesis. My investigation is intended to describe women's risk for heart disease and their perception of heart disease as a health risk.

I believe your questionnaire, "Arizona Heart Institute and Foundation's Heart Test for Women," will be beneficial to my research and am therefore requesting permission to utilize this instrument in my study. Any information you may have regarding the reliability and validity of this questionnaire will be invaluable to my study. I will gladly incur any expenses necessary in obtaining this questionnaire or other data.

I hope to be able to distribute the questionnaire by the first week of March in order to complete my thesis in time for graduation in August, 1995. Your immediate attention regarding my requests will be greatly appreciated.

Sincerely,

Kathy D. McKay

Appendix G

Letter Granting Permission  
to Use the Heart Test for Women

Letter Granting Permission to use the  
Heart Test for Women



ARIZONA HEART INSTITUTE & FOUNDATION

November 23, 1994

Ms. Kathy D. McKay  
12357 Hand Road  
Collinsville, MS 39325

Dear Kathy,

You have the permission of the Arizona Heart Institute to reproduce any materials relating to the Arizona Heart Institute & Foundation's Heart Test for Women. Much of Dr. Diethrich's research has been compiled into the book The Arizona Heart Institute's Heart Test, by Edward B. Diethrich, M.D., Medical Director of AHI.

The book discusses how to evaluate your risk of heart disease or detect an existing condition. The book was published in 1981 and distributed by Simon and Schuster. The only problem is that I no longer have any copies. You may want to contact Simon and Schuster directly to see if you can retrieve a copy. I am enclosing another book that Dr. Diethrich wrote called Women and Heart Disease. Also enclosed is a television documentary that has aired on PBS regarding women and heart disease.

If you could send a check for \$20.00 for the video and the book, I would appreciate it. Please let me know if you have any questions on this material. I can be reached at (602) 266-2200, ext. 625. Good luck on your research project and thank you for considering the Arizona Heart Institute.

Sincerely,

Denise M. Frakes  
Public Relations Manager