

THE RELATIONSHIP BETWEEN PERSONAL BELIEFS OF  
VULNERABILITY TO CARDIOVASCULAR DISEASE AND  
THE PRACTICE OF PREVENTIVE HEALTH BEHAVIORS

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## CHAPTER 1

### INTRODUCTION

In 1982, 5,369 Mississippians died of heart disease. Nationwide, some 550,000 persons died of heart disease ("Know Heart Attacks," 1984). Despite advances in prevention and treatment the incidence of heart disease continues to be high.

At the present time, there are no specific means of preventing heart disease. Epidemiological studies have identified risk factors which can increase the probability of an individual developing heart disease; however, these studies do not predict the extent or severity of the disease process. Risk factors that cannot be avoided are age, sex, race, and genetic heritage (Bullock & Rosendahl, 1984).

Susceptibility to heart disease increases with age. In men, the incidence increases steadily; in women, the incidence increases sharply after menopause, but remains less than in men. The likelihood of premature heart disease is increased in persons who have a positive family history and in those affected with diabetes mellitus. Glucose intolerance or diabetes mellitus may be one of the most important risk factors for heart disease in women but is not seen as a significant risk factor in men. Ethnic

background can be a contributing risk factor. For example, hypertension, a risk factor for heart disease, is more prevalent in black men than in white men. However, ethnicity in a broad sense implies lifestyle as well as ethnic origin. Although ethnicity cannot be altered, lifestyles associated with a particular culture can be altered. Evidence suggests that unavoidable risk factors such as age, sex, race, and genetic heritage may be modified to varying degrees by reducing risk factors that are avoidable (American Heart Association, 1980).

Avoidable risk factors are those which may be referred to as lifestyle habits including cigarette smoking, physical inactivity, obesity and weight change, use of saturated fats for cooking and eating, and use of excess salt on food. The greater the number of risk factors, the greater the risk of developing heart disease. Combinations of risk factors are viewed as having a synergistic effect (American Heart Association, 1980).

A lifestyle habit may be defined as an acquired pattern of behavior that has become an integrated way of life. Lifestyle habits, for example, behaviors that can reduce the incidence or reduce the severity of heart disease, may be referred to as preventive health behaviors. For this study the term preventive health behaviors (PHB) was used for lifestyle habits.



Over the past two decades, the health belief model (HBM) has proven to be a valuable conceptual and pragmatic tool in attempting to understand a variety of health related behaviors (Becker, 1974). The original HBM was formulated in the early 1950s by social-psychologists in the public health service who were seeking to develop a theory that would explain the differences in the use of preventive health services and preventive health behaviors (PHB). Kasl and Cobb (1966) have described preventive health behaviors (PHB) as follows: "Any activity undertaken by a person who believes himself to be healthy for the purpose of preventing disease or detecting disease in an asymptomatic stage" (p. 246). The model assumes that good health is a common goal for all people. However, there are differences in the practice of PHB. People differ in their perception of a disease and how it may affect them. Consequently, people differ in their practice of PHB. This study describes social-psychological characteristics which may influence individuals from the southeast part of Mississippi to practice health behaviors related specifically to heart disease.

#### Problem of Study

This study asks the question: Is there a relationship between one's personal beliefs of vulnerability to heart

disease and the practice of specific preventive health behaviors?

#### Justification of the Problem

Cardiovascular epidemiology continues to incriminate selective components of lifestyle (behaviors) as major risk factors predisposing an individual to the development of heart disease (Bullock & Rosendahl, 1984). Studies which examined various components of the health belief model in terms of preventive health behaviors specifically related to heart disease have been conducted with urban populations (Aho, 1979; Kok, Matrous, Van den Ban, & Hautvast, 1982; Skekelle & Liu, 1978). In general, these studies have shown that men with low levels of education, occupation, and social class were at greater risk for heart disease than other individuals in the population studied. Positive health behaviors were associated with being female and more highly educated. Aho (1979) suggested that the perceived seriousness of the influence of one's own lifestyle on health is an important factor in influencing behavior and can stimulate a more preventive health orientation.

Mikhail (1981) and Champion (1984) concluded that the health belief model is only partially developed and needs more refinement. They suggested that development of valid and reliable tools for measuring health behaviors will have

a direct benefit for professional nursing. If the model is found to be theoretically sound, it can then be used for the development of nursing interventions.

Studies which examined the relationships between specific preventive health behaviors and vulnerability to heart disease based on epidemiologically identified risk factors have not been conducted with rural populations in the United States. Nor is there a valid and reliable instrument which will measure these relationships.

In order to implement beneficial role behaviors in an appropriate manner, the nurse needs an understanding of the factors that facilitate or impede an individual's acceptance of preventive health behaviors. Through such an understanding, the nurse's role in facilitating the decision making phase and action phase can be more clearly operationalized (Pender, 1975).

#### Theoretical Framework

Rosenstock (1966), in his health belief model (HBM), used social-psychological variables to explain PHB. The model is derived from a social-psychological perspective with major influences from Lewin's (1935) general field theory. Lewin viewed the person as a totality of systems and behavior as the result of all the forces in the person and the environment acting together.

Environmental forces include the psychobiological forces containing varying degrees of dynamic physical, social, and mental forces. The psychobiological environment consists not only of those factors that are actually perceptible, but also a range of future and past events. Every force in the psychobiological environment has a positive, negative, or neutral valence, the strength of attraction or repulsion. The aggregate of forces in the psychobiological field controls the direction of the process. The forces are changed by the process, and the changed focus yields different processes in a dynamic continuum (Lewin, 1935).

Lewin (1935) viewed motivations for behavior as needs or need-like tensions. It is the person's needs that make objects, people, or events take on a positive, negative, or neutral valence. Once the tensions accompanying the needs are decreased, other tensions arise and the objects in the environment take on different valences. The whole person, the current needs, and the psychobiological environmental forces determine the directions of the process.

Problem solving (Lewin, 1935) consists of analyzing the total situation. The totality of the situation is assessed before problem-solving begins. Movement toward the goal will alter the view of the total situation and may encourage continuation of behavior or call for different

behaviors. Problem solving, therefore, requires restructuring one's view of the total situation in order to discover feasible alternatives.

The HBM's phenomenological orientation operates on the idea that it is what the person perceives and not the physical environment that determines what a person will do (Rosenstock, 1974b). An individual's health related activities are perceived as being pulled by positive forces and are repelled by negative forces. The HBM postulates that people will not generally seek preventive health care or health screening unless they possess minimal levels of health motivation and knowledge, view themselves as potentially vulnerable and the condition as threatening, are convinced of the effectiveness of the intervention, and perceive few difficulties in undertaking the recommended action (Becker, Haefner, Kasl, Kirscht, Maiman, & Rosenstock, 1977).

According to Rosenstock (1966), the objective of the HBM is to link current subjective states of the individual with current health behavior. However, for an individual to experience perception and action, motivation is required. Thus, if a person is not concerned with a particular aspect of health, that person is not likely to perceive any material that relates to that aspect.

The HBM proposes that the following states are necessary for an individual to take action to avoid disease:

1. A belief that one is susceptible.
2. A belief that the occurrence of the disease would be detrimental to life.
3. A belief that taking action would decrease the threat of disease and be beneficial.
4. A belief that the action would not involve overcoming obstacles such as time, money, pain, and so forth.
5. A cue occurs to trigger the action (Rosenstock, 1974b).

The HBM has a clear-cut avoidance orientation to disease with emphasis on disease prevention which is socially and economically cost effective when compared with the care of the ill (Rosenstock, 1974a). According to the theory of the HBM, the individuals who perceive themselves as likely candidates for developing heart disease would practice preventive health behaviors that would significantly reduce the risk for developing disease.

This study examined the relationship between one's personal beliefs of developing heart disease and the practice of those behaviors which will reduce the incidence of heart disease. The behaviors which were examined in this study are those which have been identified epidemiologically (Bullock & Rosendahl, 1984).

### Assumptions

The following assumptions applied to this study:

1. An individual's readiness to take action with respect to heart disease is determined by the person's perceived vulnerability to heart disease and by the perception of the severity of the condition.
2. The individual will practice specific types of preventive health behavior if the benefits outweigh the barriers.
3. A cue will stimulate the individual to practice specific types of preventive health behaviors related to heart disease.

### Hypotheses

The hypotheses which were tested are:

- H<sub>O1</sub>: There will be no difference in the perception of susceptibility to heart disease in the individuals who practice specific types of PHB and in the individuals who do not practice specific types of PHB.
- H<sub>O2</sub>: There will be no difference between perception of the severity of heart disease in the individuals who practice specific types of PHB and in the individuals who do not practice specific types of PHB.

- H<sub>03</sub>: There will be no difference between the perception of barriers in individuals who practice specific types of PHB and in the individuals who do not practice specific types of PHB.
- H<sub>04</sub>: There will be no difference in the perception of benefits in individuals who practice specific types of PHB and in the individuals who do not practice specific types of PHB.
- H<sub>05</sub>: There will be no difference in the perception of cues in individuals who practice specific types of PHB and in the individuals who do not practice specific types of PHB.

#### Definition of Terms

The following terminology was used in this study. Health belief variables refer to those variables which were selected from Rosenstock's (1966) health belief model (HBM) and are listed and defined for the purpose of this study.

Cues to action--some instigating event which will facilitate the individual's movements toward the practice of preventive health behaviors. These may include support from family, friends, magazine articles, television, radio and free screening. Cues to action were measured using the Patterson Health Belief Survey (PHBS). A total of eight



statements address cues and a maximum subscore of 40 is possible (Appendix A).

Perceived barriers to action--the individual's subjective beliefs that the practice of selected preventive health behaviors would be unpleasant, time consuming, costly, distasteful, and of no value. Perceived barriers were measured using the PHBS. A total of 18 statements address barriers and a maximum subscore of 90 is possible (Appendix A).

Perceived benefits of taking action--the individual's subjective beliefs that the practice of selected preventive health behaviors (PHB) would decrease the threat of heart disease. Perceived benefits were measured using the PHBS. A total of eight statements address benefits and a maximum subscore of 40 is possible (Appendix A).

Perceived severity--the individual's subjective beliefs that if the individual developed heart disease, it could cause a change in lifestyle and make the individual deal with the reality of pain and death. Perceived severity was measured using the PHBS. A total of 10 statements address severity and a maximum subscore of 50 is possible (Appendix A).

Perceived susceptibility--the individual's subjective beliefs that the individual has a probable chance of

developing heart disease in the present and/or in the future. Perceived susceptibility was measured using the PHBS. A total of 15 statements address susceptibility and a maximum subscore of 75 is possible (Appendix A).

Selected preventive health behaviors--Bullock and Rosendahl (1984) have identified risk factors for heart disease. Some of these risk factors are smoking, diet high in saturated fats, high salt intake, obesity, and a lack of exercise. Preventive health behaviors are selected activities undertaken by the individual which can reduce risk factors for heart disease. The selected preventive health behaviors for this study are non smoking, reducing saturated fats in the diet, practicing regular exercise, reducing salt in the diet and maintaining weight within normal limits. Preventive health behaviors were measured using the PHBS. The questionnaire contains five questions that will provide nominal data and 59 statements that provide for an ordinal measurement.

#### Limitations

The limitations of this study are identified as:

1. The selection of the sample from the target population was by convenience sampling; therefore, the findings of the study did not allow for generalizations beyond those in the study.

2. A small sample limits the choice of statistical approach.

#### Summary

This study addressed the relationships between specific preventive health behaviors and vulnerability to heart disease based on epidemiologically identified risk factors in a selected population of individuals residing in a rural area of southeast Mississippi. At the time of the study an instrument designed for measuring the relationships was not available. The investigator developed an instrument which would measure the relationships between one's personal beliefs of developing heart disease and practice of specifically identified behaviors which will reduce the incidence of heart disease. It is hoped that this study will serve as an indication for expanding the role of the professional nurse as an educator for the prevention of disease.

## CHAPTER 2

### REVIEW OF LITERATURE

A review of literature was conducted to explore the subject of this study, the relationship between one's personal beliefs of vulnerability to heart disease and the practice of specific preventive health behaviors. Of equal importance was the desire to elicit documented evidence that could add insight into this study and establish the necessity for this research. The selection of studies to be included in the review was based on the following elements: empirical adequacy of the health belief model (HBM), the relationships between health beliefs and demographic factors, and the relationships between health beliefs and personality correlates.

#### Empirical Adequacy of the Health Belief Model

Empirical adequacy refers to the degree of agreement between theoretical claims and empirical results. In reviewing the studies one assesses the empirical support each study gives to the hypothesis being tested and to the theory itself (Hardy, 1974).

There have been numerous studies that have provided support for the different theoretical aspects of the HBM.

Retrospective studies that can be considered significant and will be reviewed are: Hochbaum's (1956); Heinzelmann's (1962); Kegeles' (1963a); Antonovsky and Kats' (1970); and Aho's (1979).

Hochbaum's (1956) early study dealt with perceived susceptibility of an individual toward tuberculosis and the perceived benefits of early detection. The retrospective study utilized 1,200 randomly selected subjects from three different cities. Each subject underwent an intense personal interview lasting more than one hour. It was found that those individuals who believed they might get TB and those who believed they would benefit from early detection were likely to obtain X-rays regardless of their economic status, sex, or age.

Heinzelmann (1962) studied 248 college students with a history of rheumatic fever and/or rheumatic heart disease and their compliance with prophylaxis. The three variables used in this study were: (1) beliefs concerning susceptibility to a recurrent attack of rheumatic fever, (2) beliefs concerning the seriousness of the person's rheumatic fever attack, and (3) beliefs and knowledge concerning various aspects of rheumatic fever. It was found that the practice of prophylactic behavior occurred in those individuals who perceived themselves susceptible to

recurring attacks of rheumatic fever, and that the attack would be serious. These beliefs were tied to a knowledge base about various aspects of rheumatic fever.

Kegeles (1963a) used a retrospective study to survey 426 factory employees who received free dental care. The subjects were interviewed to determine differences in the beliefs of those who made preventive visits and those who made symptomatic visits. It was found that "respondents who believed themselves highly susceptible to dental problems and/or believed that dental problems would be serious if they occurred made more dental visits than those who did not hold this belief" (p. 92).

Antonovsky and Kats' (1970) retrospective approach to PHB asked the question, "Under what circumstances will one engage in a specific preventive health behavior or pattern of actions?" (p. 368), specifically, preventive dental health behavior (PDB). They departed from the classical Rosenstock model and addressed the problem in terms of the axiom that all behavior is motivated in that it is goal directed. The data for the study were obtained by interviewing 384 subjects from a population of 1,645 employees of the Hadassah Medical Organization and the eligible dependents in Jerusalem. It was found that a minimum amount of knowledge about dental disease was associated with PDB;

however, an increment in knowledge about dental disease had no effect. Fear (anxiety) of pain and cost were blockers (barriers) to the practice of PDB.

Aho (1979) reported a retrospective study on the participation of senior citizens in the Swine Flu Innoculation Program. The study involved 122 randomly selected senior citizens. The respondents were asked questions designed to elicit attitudes, beliefs, and facts related to swine flu immunization.

The data were analyzed by comparing the answers of those who received the immunization as compared with those who did not. Specifically, those who received the immunization: (a) planned to get the immunization in the future; (b) felt the immunization was effective, safe, and did not have bad side effects; (c) had previous flu immunization; and (d) reported that most of their friends or relatives had received the flu immunization. Aho (1979) suggested that those who did not participate in the program lacked motivation because they were fearful and expressed doubts about the effectiveness and safety of the immunization.

The strength of the five retrospective studies of Hochbaum (1956), Heinzelman (1962), Kegeles (1963a), Antonovsky and Kats (1970) and Aho (1979) was that the findings were internally consistent in the direction of

preventive health. A weakness was that any interpretation made of the findings of retrospective studies is based on assumptions, since it cannot be determined if beliefs precede behavior (Rosenstock, 1966).

A two-phase prospective study by Leventhal, Hochbaum, and Rosenstock (1960) sought to elicit subjects' beliefs regarding their susceptibility to Asian influenza and its severity before they had taken any preventive action or had any influenza. Due to the rapid spread of influenza, the sample size was reduced from 200 to 86 respondents. After the epidemic had subsided, a second interview was conducted with the 86 respondents. Of the 12 who scored high in both susceptibility and severity, five had made preventive preparations relative to influenza. Of the remaining 74 respondents who rejected either their susceptibility or the disease's severity, only eight persons or 11% took preventive actions.

Kegeles (1963b) did a follow-up study of his 1958 research on subjects' use of preventive dental services. The objective of the study was to determine whether or not the beliefs identified under the original research were associated with behavior during the subsequent three-year period.

Kegeles (1963b) reported that perceptions of seriousness, whether considered independently or



collectively, were not associated with subsequent behavior. Perceptions of benefits taken alone were not related to subsequent behavior. However, perceptions of susceptibility were associated with subsequent dental visits. When beliefs about susceptibility and benefits were combined, a more accurate prediction could be made of who would or would not make preventive dental visits (Kegeles, 1963b).

A research project by Kirscht, Haefner, Kegeles, and Rosenstock (1966) and Haefner, Kegeles, Kirscht, and Rosenstock (1967) differed from other studies in that there was no intensive educational campaign, offer of free medical or dental care, or dental care at cost. The project included the 1963 analysis of beliefs and behaviors of 1,493 American adults and subsequent behaviors of one-half of the respondents 15 months later. Data were collected on four health topics: cancer, tuberculosis, tooth decay and gum disease. Perceived susceptibility, severity, and benefits taken alone or in combination failed to account for a major portion of variance in subsequent preventive behavior.

A major difference between Kirscht et al.'s (1966) and Haefner et al.'s (1967) research project and other studies was the absence in their study of clear-cut cues to respondents. In the previously described studies, the

situation provided messages and circumstances which may have served as cues to action. In Hochbaum's (1956) and Leventhal et al.'s (1960) studies, mass media were used to encourage community participation. In Kegeles' (1963a, b) study, the services were free or at minimal cost.

The effect of cues was further investigated by Kegeles (1969) through the use of an experimental message. The purpose of the study was to increase participation of inner city women in a screening program for detection of cervical cancer. The experimental message emphasized women's vulnerability to cervical cancer, benefits of early detection, and information regarding where and when the services were being offered. The control group was read a message identical in length, but in addition to describing the cervical test and the time and place of the clinic, described iron deficiency (Kegeles, 1969).

Results of Kegeles' (1969) study showed that both communications raised belief scores for about two-thirds of the population with initial low scores which raised questions regarding the possibility of a Hawthorne effect for about two of every three subjects. However, subjects who received the experimental communication which strengthened their beliefs or who had strong beliefs took action much more frequently than subjects with strong beliefs who received the control communication (Kegeles, 1969).

Heinzelmann and Bagley (1970) reported on reasons given by men for participating in a physical exercise program and their perceived outcomes. The most important reasons given for participating were the desire to feel better and healthier, and to decrease the chance of heart attack. The major perceptual outcome was a feeling of being less vulnerable to health threats. Wives were found to play a significant role in relation to their husbands' adherence to the program.

Champion (1984) developed an instrument which would measure the components of the HBM in relation to the frequency of breast self-examination. It was found that subjects who saw few barriers and were highly motivated reported a greater frequency of self-examination. Susceptibility, seriousness, and benefits were not significant in predicting whether a woman practiced breast self-examination. The majority of subjects were white, protestant, and had an average education of at least two years in college. This kind of sample did not allow for generalizations.

#### Relationship Between Health Beliefs and Demographic Factors

The effects of socioeconomic status, age, sex, education, and race on the perception of health beliefs

have been widely studied. In the early studies, Hochbaum (1956) and Kegeles (1969) noted that within every demographic grouping subjects holding positive beliefs were much more likely to take action than those who did not hold positive beliefs. Even so, according to Rosenstock (1974b), these beliefs are unevenly distributed in the population and tend to be more prevalent among high income white females, the better educated, and the young.

These differences in distribution of health beliefs were attributed to parochial social groups and cosmopolitan social groups by Suchman (1964). Parochial social groups were characterized by ethnic exclusivity, friendship solidarity, and traditional/authoritarian family relations. Their health practices tended to be those that were accepted and popular in their social group, and therefore, were much less likely to adhere to norms of the health professions regarding appropriate preventive health behavior. Cosmopolitan groups were more likely to accept the preventive health behavior norms and were in a higher socioeconomic bracket generally.

Health practices of women from different socioeconomic groups were found to differ according to Pratt (1971). The health practices of exercise, nutrition, and dental hygiene were especially deficient among low-income women. This

finding corresponded with a disproportionately high number of problems in these three health areas among low-income women. Fewer than 3 in 10 low-income women had used preventive health services compared to 5 in 10 in higher income groups. There were no significant differences in the tendency of income groups to have a physical examination after an illness had developed.

A significant finding of the study (Pratt, 1971) was the relationship between health practices and level of health. When the health practices were good, the level of health was equally good in all socioeconomic groups. However, low socioeconomic women with medium or low quality health care practices had a lower level of health than those in middle or high income groups with equivalent practices. Thus, poor health practices appeared to have a more direct bearing on the health level of the lower socioeconomic status than women from a higher status. Pratt was unable to attribute cause to her findings due to the ex post facto research design of the study.

A study by Bullough (1972) contributed understanding to the deficit health practices noted by Pratt (1971). Eight hundred and six low income mothers from three ethnic groups (Anglo, Mexican-American, and Black) were questioned about the preventive health care they had obtained for themselves

and their children. Reasons given for poor utilization of preventive health services were physical barriers such as a lack of money, a broken-down car, no money for babysitter, no bus fare, or threat of the loss of a day's work. In addition, it was found that these barriers were reinforced by feelings of powerlessness, alienation, hopelessness, and social isolation. Of the three ethnic groups, the Black mothers reported feeling the most powerless and most hopeless. Black mothers also had the lowest overall pattern of preventive health care.

How to facilitate acceptance of a preventive health measure among sugar cane cutters in Puerto Rico was investigated by Suchman (1967). The use of a glove was introduced to the workers in an attempt to decrease the number of employee injuries. The workers' acceptance or rejection of the glove was related to several factors. Acceptance of the glove was significantly related to being under 50 years of age, having worked less than 20% of working life cutting cane, and having a father who was a sugar cane worker. In addition, the workers who accepted the glove showed a greater acceptance and knowledge regarding other health behavior and a greater belief that accidents can be prevented.

Langlie (1977) attempted to further explain the complexity of preventive health behavior. To do this,

preventive health behaviors were divided into two groups: direct and indirect. Direct preventive health behaviors were pedestrian behavior, driving behavior, hygiene, and smoking. Indirect preventive health behaviors did not present hazards to life and well-being in and of themselves and included immunizations (limited to American context), dental care, medical check-ups, miscellaneous exams, seat-belt use, nutrition, and exercise. A 14-page questionnaire was mailed to a systematic random sample of 617 persons with a response rate of 62% to elicit information regarding preventive health behaviors.

Langlie's (1977) findings suggested that people who consistently and appropriately engaged in both types of preventive health behavior tended to have high socioeconomic status, had frequent interaction with other people, had positive attitudes toward health care providers, and tended to be older, female, and believed they had some control over their health. Conversely, those who consistently scored low on both types of preventive health behavior had just the opposite set of characteristics.

Behaviors were further differentiated by examining persons with good indirect and poor direct preventive health behaviors. These people had high socioeconomic status, positive attitudes toward providers, interacted frequently

with non-kin, tended to be young, male, and believed they could do little to affect their health. The converse, poor indirect and good direct preventive health behaviors was related to people who were socially isolated, had low socioeconomic status, negative attitudes toward providers, were older, more likely to be female, and believed they had some control over their health.

Harris and Guten (1979) studied the self-care practices that 842 randomly selected adults stated they performed to protect their health. The researchers' basic assumption was that "all people engage in some behaviors to protect their health, whether those behaviors are medically approved or not, and whether they are objectively effective or not" (p. 18). Their findings showed over 70% of respondents reported self-care actions regarding some aspect of nutrition. Forty-six percent of the respondents reported behaviors concerning sleep or rest, and 35.5% mentioned behavior concerning exercise. Almost one in every five respondents, or 19%, reported behavior involving contact or compliance with health care professionals.

Kok, Matrous, Van den Ban, and Hautvast (1982) designed a nationwide survey for studying heart disease risk factors in the Netherlands. Complete information was obtained from 889 men and 1,062 women. The risk factors that were



considered were smoking, dietary intake, obesity, and physical activity. The results of the survey implicated men with a low level of education and low occupation as the most likely to develop heart disease. However, the study could not establish a clear-cut coronary risk taking lifestyle.

#### Relationships Between Health Beliefs and Personality Correlates

Kawash, Woolcott, and Sabry (1980) have added an interesting dimension to the HBM. They reported on an analysis of the relationship between selected components of the HBM and a comprehensive set of personality variables. The study consisted of 195 men statistically at risk for cardiovascular disease in that they had an average age of 28 years and were employed in sedentary work. Subjects were asked by questionnaire to assess the degree to which they felt they were susceptible to cardiovascular disease, their expectation regarding the severity of the attack, and their perception of the benefits to be derived from engaging in the appropriate preventive behaviors. The elements of susceptibility, severity, and benefit of the HBM were correlated with the primary source traits of the Sixteen Personality Factor Questionnaire (16 PF).

The results of Kawash et al.'s (1980) study indicated that those men who saw themselves as most susceptible to a

severe heart attack tended to be more easily affected by their feelings and more irritated by the everyday problems of living, more sophisticated in their decision-making, more worrisome and fastidious, and more tense. There was no correlation between the 16PF group and perceived benefits. The authors suggested that those individuals who saw themselves as more susceptible to a severe heart attack were more anxious and that the perceptions of susceptibility were more related to a large, genuine pattern of worry, tension, and perhaps, immaturity.

#### Summary

Early research efforts concentrated on the significance of beliefs in susceptibility, severity, and benefit of action and found that when all three beliefs were present, preventive health behavior was most likely to occur. A corresponding decrease in the number of beliefs was related to a lower probability of preventive health behaviors.

Barriers to taking actions have been noted by Bullough (1972) and Langlie (1977). Physical barriers such as lack of money, transportation, and babysitters were reported. Psychological barriers contributing to low usage of preventive health care were feelings of alienation, powerlessness, hopelessness, and social isolation.

The effect of cues on taking action has received the least amount of research. Rosenstock (1974b) stated that the settings for most of the research on the HBM had precluded obtaining an adequate measure of the role of cues.

The relationship between demographic data and preventive health behavior has been studied by many researchers (Hochbaum, 1956; Kegeles, 1969; Kok et al., 1982; Langlie, 1977; Suchman, 1964). People most likely to take preventive health action were identified as white, educated, married, and female between the ages of 30 and 50 years.

Kawash et al. (1980) demonstrated a correlation between personality traits and the HBM. The study of men engaged in sedentary work showed a clear tendency for anxiety dimensions to correlate with perceived susceptibility and severity of heart disease but not with benefits.

A need exists to investigate the influence of health belief variables on specific health related practices that could reduce the incidence of heart disease. In order to understand behaviors related to heart disease, it may be helpful to know if there are differences in the perception of health beliefs of those individuals who do and do not practice behaviors specifically related to the prevention of heart disease.

## CHAPTER 3

### PROCEDURE FOR COLLECTION AND TREATMENT OF DATA

The descriptive research design involved administration of a questionnaire developed by the investigator to selected members of the adult population residing in Lamar County, Mississippi. The questionnaire was designed to obtain specific demographic data and elicit responses that are related to heart disease and specific types of preventive health behaviors.

#### Setting

The setting for the study was the Lamar County courthouse area in Purvis, Mississippi. Lamar County is located in the southeast quadrant of Mississippi and is predominantly rural.

The county has a population of 23,821 based on the 1980 census. The non-white population is 11.3%. Purvis is the largest town and the county seat of Lamar County and has a population of 2,256 of which 25.5% are non-white (Mississippi Community Data, 1983). The courthouse is located away from the central business district and contains the usual offices concerned with county affairs such as the courts, voter registration (the only place to register for county,

state, and national elections), and tax offices. In addition, the County Agricultural Agent, 4-H Organization, Home Demonstration Office, and law enforcement for the county are in the courthouse. Located close to and sharing the same parking facilities are the County Health Department, County Education Office, the United States Department of Agriculture A.S.C. Office, and the County Welfare Office. Most adults living in Lamar County go to the courthouse or courthouse area to transact official county business, for consumer information, health care, and education information.

#### Population and Sample

The population selected for the study was adults residing in Lamar County. A large percentage of the people living in the county are engaged in various phases of the timber industry or in operating small farms. The median family income in 1981 was \$16,385 with 14.1% of the families below poverty level. The labor force in 1981 was 5,450 males and 2,780 females and a 5.8% unemployment rate. Sixty-three percent of the white and 42% of the black population, 25 years of age or older, have four years of high school. Those individuals 25 years or older with four years of college represent 14.5% of the white population and 6.2% of the black population. A very small portion of Lamar County is included in the city limits of Hattiesburg. Many

of the individuals living in this part of Lamar County are professionals, for example, nurses, physicians, lawyers, and university professors. The Hattiesburg population of Lamar County represents less than 1% of the total population (Mississippi Community Data, 1983). The predominant political philosophy is conservative Democratic and the vast majority of the individuals attending a church choose a protestant church.

The target population was those individuals who were in the courthouse area for any type of transaction with any of the offices in the area. The investigator accepted anyone who agreed to participate in the study. The survey of the population continued until a total of 40 completed questionnaires had been obtained.

#### Protection of Human Subjects

Although this study was exempt from Texas Woman's University Human Research Review Committee approval, nevertheless their guidelines were followed in the protection of human subjects. An oral presentation (Appendix B) was provided each subject prior to data collection, and a cover letter was provided with the Patterson Health Belief Survey (PHBS) questionnaire (Appendix A). The cover letter provided for the following: (1) an introduction of the investigator; (2) an explanation of the reason for the study;

(3) a request for participation of the individual in the study; (4) a statement assuring anonymity of the study participants, and (5) a statement granting permission of the participants to use their data in a study related to heart disease.

#### Instrument

A 59-item questionnaire developed by the investigator asked individuals to rate statements which refer to selected health belief variables' effects on the perceived vulnerability to heart disease (Appendix A). A 5-point Likert-type scale was used with the responses being strongly agree = 5, agree = 4, undecided = 3, disagree = 2, and strongly disagree = 1. The arithmetic sum of the responses to statements concerning a variable constituted the scale scores for each respondent. The subscale scores for the variables were titled as follows: (a) susceptibility, (b) severity, (c) benefits, (d) barriers, and (e) cues. The coefficient alpha for the total questionnaire was  $\alpha = .86$ .

Page one for the questionnaire requested the following demographic data--age, race, marital status, education, history of heart disease, history of hypertension, medication for heart disease, and medication for hypertension. The following questions relate to specific preventive health behaviors: Do you exercise regularly? Do you salt your

food? Do you smoke? Do you eat foods cooked with animal fat? Do you maintain normal weight?

Content validity was facilitated from a review of the literature. Epidemiological evidence has shown that the following risk factors are avoidable: cigarette smoking, physical inactivity, obesity, use of saturated fats for cooking and eating, and the use of excess salt on food (American Heart Association, 1980; Bullock & Rosendahl, 1984). Rosenstock's contribution in The Health Belief Model and Personal Health Behavior (Becker, 1974) provided direction in the development of the questionnaire.

Internal consistency reliabilities were determined after data collection had been completed. An instrument may be said to be internally consistent when the use of statistics show that all the subparts of an instrument measure consistently the desired characteristics. Coefficient alpha which has a range of values between  $r = 0.0$  to  $1.00$  was used to determine the degree of internal consistency of the questionnaire. The higher values reflect a higher degree of internal consistency (Polit & Hungler, 1978).

The composition of the questionnaire consisted of 15 statements concerning susceptibility. The scale for susceptibility included items 3, 6, 9, 13, 15, 33, 34, 37, 44, 46, 48, 50, 52, 54, and 57. A maximum subscore of 75 and a



minimum score of 15 was possible. The coefficient alpha for susceptibility was  $\underline{r} = .53$ .

Severity was measured by 10 items: 4, 12, 14, 18, 21, 24, 30, 35, 45, and 49. A maximum subscore of 50 and a minimum subscore of 10 was possible. The alpha coefficient was  $\underline{r} = .79$ . The eight items which measured benefits were 8, 19, 26, 36, 42, 53, 55, and 56. A maximum subscore of 40 and a minimum subscore of 8 was possible. The coefficient alpha for benefits was  $\underline{r} = .64$ . The 18 statements for barriers were 5, 7, 16, 17, 20, 22, 25, 27, 28, 29, 31, 39, 41, 43, 47, 51, 58, and 59. A maximum subscore of 90 and a minimum subscore of 18 were possible. The coefficient alpha for barriers was  $\underline{r} = .71$ . The scale for cues was eight items, 1, 2, 10, 11, 23, 32, 38, and 40. The maximum subscore was 40 and the minimum subscore for cues was 8 possible. The coefficient alpha for cues was  $\underline{r} = .71$ .

#### Data Collection

Data were collected using the PHBS questionnaire. The instrument consisted of a questionnaire and a cover letter. Adults were approached by the investigator outside the Lamar County Courthouse in Purvis, Mississippi, on a weekday morning or afternoon. Data collection continued until a minimum of 40 questionnaires were collected. The investigator introduced herself as a graduate student at Texas Woman's

University and as a faculty member of the University of Southern Mississippi. It was thought that more persons were likely to participate if they knew that the investigator was affiliated with the University of Southern Mississippi.

The investigator explained that this study was part of a research project to study what people believe about heart disease in relation to their own health. The investigator requested that the participants take about 15 minutes to fill out the questionnaire. She assured the individual's anonymity verbally as well as in the cover letter.

Those persons who agreed to participate in the study were provided with a pencil, a questionnaire to which was attached a cover letter, and a clipboard on which to write.

#### Treatment of Data

All data were collected and tabulated by the investigator. The levels of data were nominal and ordinal. The sample size was small; therefore, only nonparametric statistics were used.

Nominal level data including race, sex, marital status, and the five risk factors were categorized into frequency distributions and summarized in percentages. Analysis of ordinal data for age, education, and the five risk factor variables related to exercise, salt intake, animal fat

intake, smoking, and weight were analyzed for frequency distribution and variability.

Additional analysis of the ordinal level data was done by utilizing the Mann-Whitney U test. The level of significance was set at  $p \leq .05$  (Polit & Hungler, 1978).

## CHAPTER 4

### ANALYSIS OF DATA

This nonexperimental study was designed to answer the question of whether there is a relationship between personal beliefs of vulnerability to heart disease and the practice of specific preventive health behaviors. The chapter contains the analysis of the data obtained as responses to the Patterson Health Belief Survey (PHBS) questionnaire. The data were nominal and ordinal and addressed the five hypotheses. This chapter presents a description of the sample, the findings, and a summary of the findings.

#### Description of the Sample

The 40 adult subjects who agreed to be in the study were selected by convenience sampling from a group of individuals who were in the Lamar County courthouse area. The 40 subjects completed PHBS questionnaires. Of the 40 questionnaires, 36 were accepted for data analysis and 4 were rejected because the respondents had a history of heart disease and/or hypertension.

The sample was composed of 22 (61%) females and 14 (39%) males. The ethnic distribution was 31 (86.2%) white and 5 (13.8%) black subjects. The 1980 Lamar County,

Mississippi, census figures for ethnic origins was 88.6% white, 10.8% black, and 0.6% other (Mississippi Community Data, 1983).

The age distribution of the subjects is shown in Table 1. For the females, the median age was 39.5 years and the mean was 43 years. The males were somewhat younger with a median age of 32.5 years and a mean of 37.6 years. The greatest number of females (7; 31%) fell into the age group of 30-39 years, while most of the males (7; 50%) were in the 20-29 year age group. For the total sample, 11 (31%) were in the 20-29 year age group.

Table 1

Frequency Distribution of Age Groups of Subjects  
by Sex, Number, Percentage, and Measures  
of Central Tendency

Age Group (Years)	Females		Males		Total	
	<u>n</u>	%	<u>n</u>	%	<u>n</u>	%
17-19	1	4	0	0	1	2.8
20-29	4	19	7	50	11	30.6
30-39	7	31	1	7	8	22.2
40-49	4	19	3	22	7	19.4
50-59	3	14	2	14	5	13.9
60-69	2	9	1	7	3	8.3
70-79	<u>1</u>	<u>4</u>	<u>0</u>	<u>0</u>	<u>1</u>	<u>2.8</u>
Totals	22	100	14	100	36	100.0
Median	39.5		32.5		39	
Mean	43.18		37.57		41	
Mode	28, 37, 39, 55		21		21, 55	
	(multimodal)				(bimodal)	

The educational level achieved by the females, males, and total sample is shown in Table 2. Twelve (54.5%) of the females and four (28.6%) of the males had an educational level greater than 12 years. The male subjects had the highest percentage of less than 12 years of education.

Table 2

Frequency Distribution of Educational Levels  
of Subjects by Sex, Number and Percentages

Educational Level (Years)	Females		Males		Total	
	<u>n</u>	%	<u>n</u>	%	<u>n</u>	%
Less than 12	3	13.7	5	35.7	8	22.2
12	7	31.8	5	35.7	12	33.3
More than 12	<u>12</u>	<u>54.5</u>	<u>4</u>	<u>28.6</u>	<u>16</u>	<u>44.5</u>
Totals	22	100.0	14	100.0	36	100.0

The data for marital status showed that the majority (19; 53%) of the subjects were married. By sex, 12 (55%) of the females and 7 (50%) of the males were married. Seven (32%) of the females and none of the male subjects had been divorced.

Additional nominal data were obtained from the PHBS questionnaire and asked the following questions: (1) Do you exercise regularly? (2) Do you salt your food? (3) Do you

smoke? (4) Do you eat food cooked with animal fat? (5) Do you maintain normal weight? These questions addressed the five epidemiologically identified preventive health behaviors (PHBs). Table 3 shows the summary of the frequency distribution for these practices by female and male subjects, as well as the total sample.

Table 3  
Frequency Distribution of Subjects' Preventive  
Health Behavior Practices by Sex, Number,  
and Percentage

Behaviors	Females		Males		Totals	
	<u>n</u>	%	<u>n</u>	%	<u>n</u>	%
Regular exercise	10	45.5	9	64.3	19	52.8
Dietary salt	17	77.3	12	85.7	29	80.6
Smoke	7	31.8	5	35.7	12	33.3
Dietary animal fat	12	54.5	9	64.3	21	58.3
Normal weight	11	50.0	10	71.4	21	58.3

Of the female subjects, 10 (45.5%) exercised regularly, 17 (77.3%) salted their food, 7 (31.8%) smoked, 12 (85.7%) used animal fat in their diets, and 11 (50%) maintained normal weight. The male subjects had higher percentages in each of the five categories of PHBs. Of the males, 9 (64.3%) used animal fat in their diets, and 10 (71.4%) maintained normal weight.

The practice of preventive health behaviors was examined in terms of age distribution and sex of subjects. There was no significant difference in the practice of preventive health behaviors by age distribution in either the male or female subjects.

The PHBS questionnaire contained four statements for each of the preventive health behaviors. The statements were marked according to whether the subjects agreed, disagreed, or were undecided. The statements were examined for frequency distribution and are found in Table 4.

Of the 36 subjects in the study, 23 (63.9%) did not have time to exercise, 17 (38.9%) did not believe that regular exercise will protect them from heart disease, and 20 (55.5%) of the subjects disagreed with the idea that reading about heart disease would remind them to exercise. Twenty (55.5%) subjects did not associate worry about heart disease with regular exercise.

Of the subjects, 23 (63.9%) agreed with the statement that the physician tells them to stop using salt. However, 17 (42.2%) did not believe that salt in the diet will increase the risk of heart disease, nor that reducing salt in the diet will be a means of taking care of one's self (28; 77%). These numbers (percentages) do not agree with



Table 4

Frequency Distribution of Patterson Health Belief Survey  
Questionnaire Statements that Address the Preventive  
Health Behaviors as Reported by Subjects

Preventive Health Behavior Statements	<u>Agree</u>		<u>Disagree</u>		<u>Undecided</u>	
	<u>n</u>	%	<u>n</u>	%	<u>n</u>	%
<u>Regular Exercise</u>						
When I read or hear something about heart disease it reminds me to exercise and diet properly.	8	22.2	20	55.5	8	22.2
I do not have time to exercise regularly.	23	63.9	13	36.1	0	0.0
Regular exercise will protect me from heart disease.	14	38.9	8	22.2	14	38.9
When I exercise regularly I worry less about heart disease.	2	5.6	20	55.5	14	38.9
<u>Dietary Salt</u>						
I do not like food that has been cooked without salt.	9	25.0	22	61.1	5	13.9
When I go to the doctor he tells me to stop using salt.	23	63.9	6	16.7	7	19.4
I do not believe salt in my diet will increase the risk of heart disease.	17	47.2	10	27.0	9	25.3
Reducing table salt in my diet is one way I can help take care of myself.	5	13.9	28	77.0	3	8.3

Table 4 (Continued)

Preventive Health Behavior Statements	<u>Agree</u>		<u>Disagree</u>		<u>Undecided</u>	
	<u>n</u>	%	<u>n</u>	%	<u>n</u>	%
<u>Smoke</u>						
I do not smoke because I know it contributes to heart disease.	9	25.0	21	58.3	6	16.7
The warning about cigarette smoking makes me think about heart disease.	9	25.0	21	58.3	6	16.7
Smoking will increase my chances of developing heart disease.	1	2.8	32	88.8	3	8.3
When I go to the doctor he tells me to stop smoking.	7	19.5	11	30.5	18	50.0
<u>Dietary Animal Fat</u>						
Eating foods cooked with animal fat will not increase my chances of getting heart disease.	15	41.7	7	19.5	14	38.9
I do not understand about animal fat and cholesterol in my diet.	12	32.5	17	47.0	7	20.5
When I go to the doctor he tells me to cut out cholesterol.	14	38.8	8	22.2	14	38.8
Eating and/or cooking with less animal fat will reduce my chances of getting heart disease.	1	2.8	23	63.9	12	33.3

Table 4 (Continued)

Preventive Health Behavior Statements	Agree		Disagree		Undecided	
	<u>n</u>	%	<u>n</u>	%	<u>n</u>	%
<u>Normal Weight</u>						
When I go to the doctor he tells me to lose weight.	20	55.5	12	33.3	4	11.1
When I keep my weight down I know I am pro- tecting myself from heart attacks.	4	11.1	24	66.6	8	22.2
If I am overweight I increase my chances of developing heart disease.	4	11.1	30	83.3	2	5.6
I do not like to weigh myself because I know I have gained weight.	15	41.6	20	55.5	1	2.8

Note: n = 36.

the statement--I do not like food that has been cooked without salt. In this case 22 (61.1%) disagreed with the statement.

Of the respondents, 21 (58.3%) did not believe that smoking will contribute to heart disease nor did the warning about cigarette smoking make them think about heart disease. Eleven (30.5%) agreed that the physician tells them to stop smoking; however, 32 (88.8%) did not believe that smoking will increase the chances of developing heart disease.

The majority of the subjects did not associate the consumption of animal fat in the diet with heart disease. Fifteen (41.7%) did not believe that animal fat in the diet will increase the chance of getting heart disease, and 23 (63.9%) did not believe that eating and/or cooking with less animal fat will reduce the chances of getting heart disease. Seventeen (47%) agreed that they understand about cholesterol in their diet.

Twenty (55.5%) of the respondents agreed with the statement that the physician told them to lose weight and the same number, 20 (55.5%), did not like to weigh themselves because they know they have gained weight. However, 30 (83.3%) did not associate overweight with increased risk of developing heart disease, and 24 (66.6%) did not believe that maintaining normal weight will protect against heart attack.

### Findings

The primary aim of this study was to determine whether there was a relationship between personal beliefs of vulnerability to heart disease and the practice of specific health behaviors. Each of the five hypotheses was analyzed using the Mann-Whitney U test. The level of significance was set at  $p \leq .05$ . Before analysis of the data, questions 2, 5, 10, 11, 16, 17, 20, 22, 23, 25, 27, 28, 29, 39, 40,

43, 47, and 51 were eliminated. These factual questions were judged not to measure beliefs. Following is a discussion of the analysis of each hypothesis.

Stated in the null, it was hypothesized that there will be no difference in the perception of susceptibility to heart disease in the individuals who practice specific types of PHB and in the individuals who do not practice specific types of PHB. Table 5 shows the mean ranks for each of the five categories of PHBs. The computed value of  $\underline{U}$  for regular exercise was 108; for dietary salt,  $\underline{U} = 92$ ; for smoking,  $\underline{U} = 116$ ; for dietary animal fat,  $\underline{U} = 120.5$ ; and for maintaining normal weight  $\underline{U} = 158$ . The value of  $\underline{U}$  was not significant at  $p \leq .05$ . Therefore, the null hypothesis was not rejected.

Hypothesis 2 stated that there will be no difference between perception of the severity of heart disease in the individuals who practice specific types of PHB and in the individuals who do not practice specific types of PHB. Table 5 shows the mean ranks for severity for each of the five PHBs. The computed value of  $\underline{U}$  for regular exercise was 156; for dietary salt,  $\underline{U} = 83$ ; for smoking,  $\underline{U} = 122$ ; for dietary animal fat,  $\underline{U} = 127$ ; and for maintaining normal weight,  $\underline{U} = 130.5$ . The value of  $\underline{U}$  was not significant at  $p \leq .05$ . Therefore, the null hypothesis was not rejected.

Table 5

Summary of the Results of Mann-Whitney U Test of 41 Health Belief  
Model Statements for Five Preventive Health Behaviors

Preventive Health Behavior	Mean Rank									
	<u>Susceptibility</u>		<u>Severity</u>		<u>Barriers</u>		<u>Benefits</u>		<u>Cues</u>	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Regular exercise	20.05	16.33	16.57	21.20	18.86	18.00	19.17	17.57	17.86	19.40
Dietary salt	18.33	19.00	19.57	15.28	17.59	21.22	16.57	24.28	18.69	17.20
Smoke	20.67	17.42	17.71	18.90	18.08	18.71	16.46	18.52	21.67	16.92
Dietary animal fat	17.31	20.17	18.55	18.43	17.10	20.47	16.14	20.80	19.02	17.77
Normal weight	19.67	16.87	19.98	16.43	20.19	16.13	18.05	19.13	20.07	14.70

Hypothesis 3 stated that there will be no difference in the perception of barriers in individuals who practice specific types of PHB and in the individuals who do not practice specific types of PHB. Table 5 shows the mean ranks for barriers for each of the five PHBs. The computed value of  $\underline{U}$  for regular exercise was 155.5; for dietary salt,  $\underline{U} = 99$ ; for smoking,  $\underline{U} = 92.5$ ; for dietary animal fat,  $\underline{U} = 96$ ; and for maintaining normal weight,  $\underline{U} = 136.5$ . The value of  $\underline{U}$  was not significant at  $p \leq .05$ . Therefore, the null hypothesis was not rejected.

Hypothesis 4 stated that there will be no difference in the perception of benefits in individuals who practice specific types of PHB and in the individuals who do not practice specific types of PHB. Table 5 shows the mean rank for benefits for each of the five PHBs. The computed value of  $\underline{U}$  for regular exercise was 158.5; for dietary salt,  $\underline{U} = 72.5$ ; for smoking,  $\underline{U} = 129.5$ ; for dietary animal fat,  $\underline{U} = 99$ ; and for maintaining normal weight,  $\underline{U} = 124$ . The value of  $\underline{U}$  was not significant at  $p \leq .05$ . Therefore, the null hypothesis was not rejected.

Hypothesis 5 stated that there will be no difference in the perception of cues in individuals who practice specific types of PHB and in the individuals who do not practice specific types of PHB. Table 5 shows the mean

ranks for cues for each of the five PHBs. The computed value of  $\underline{U}$  for regular exercise was 160; for dietary salt,  $\underline{U} = 80$ ; for smoking,  $\underline{U} = 134.5$ ; for dietary animal fat,  $\underline{U} = 132$ ; and for maintaining normal weight,  $\underline{U} = 116.5$ . The value of  $\underline{U}$  was not significant at  $p \leq .05$ . Therefore, the null hypothesis was not rejected.

#### Summary of Findings

Thirty-six questionnaires were accepted for data analysis. The sample was composed of 22 females and 14 males. The females were older, better educated, and more than half were married. The male subjects were younger, had less education, and half of them were married.

Analysis of the data for the practice of preventive health behaviors showed that the majority of the respondents in the total sample exercised regularly, maintained normal weight, and only one third smoked; however, they also salted their food and ate foods cooked with animal fat. Analysis of the data by sex showed that less than half of the females exercised regularly and only half maintained normal weight.

The null hypotheses for susceptibility, severity, barriers, benefits and cues in terms of the practice of the five specific PHBs were analyzed using the Mann-Whitney  $\underline{U}$



test. In each case the value of  $\underline{U}$  was not significant at  $\underline{p} \leq .05$ . Therefore, the null hypotheses were not rejected.

The statements in the PHBS questionnaire that addressed the five specific PHBs were examined for frequency distribution as to whether they agreed, disagreed, or were undecided. The majority of the respondents did not associate these behaviors with heart disease.

## CHAPTER 5

### SUMMARY OF THE STUDY

This descriptive study was designed to answer the question: Is there a relationship between personal beliefs of vulnerability to heart disease and the practice of specific preventive health behaviors? A questionnaire developed by the investigator, entitled the Patterson Health Belief Survey (PHBS), was administered to selected members of the adult population residing in Lamar County, Mississippi. The subjects were chosen by convenience sampling. The questionnaire included specific demographic information related to age, sex, education, and marital status. In addition, the subjects were asked to respond to statements related to heart disease and specific types of preventive health behaviors (PHBs). The nominal data obtained from the questionnaire were subjected to frequency distribution analyses and the ordinal data were analyzed using the Mann-Whitney U test for statistical significance.

#### Summary

The subjects were 36 individuals from Lamar County, Mississippi, who agreed to participate in the study by completing the PHBS questionnaire. The subjects were

composed of 22 females and 14 males. It was found that the female respondent was older, better educated and more than half were married. The male subjects were younger, had less education and half were married.

Analysis of the data for the practice of preventive health behaviors showed that the majority of the respondents in the total sample exercised regularly, maintained normal weight and only one half smoked. However, the majority salted their food and ate foods cooked with animal fat.

Each of the five specific behaviors were addressed with four statements each in the questionnaire. The statements were extracted, categorized into five behaviors, and analyzed for frequency distribution. It was found that the majority of the respondents did not associate the five PHBs with heart disease.

The hypotheses addressing the components of the health belief model (HBM), specifically susceptibility, severity, barriers, benefits, and cues, were analyzed in terms of the five specific PHBs. The Mann-Whitney U test was used for the analysis of the hypotheses. It was found that there were not differences in the perception of heart disease in individuals who practiced the five specific types of PHBs and in the individuals who did not practice the five specific types of PHBs.

### Discussion of the Findings

According to the theory of the HBM, the individuals who perceive themselves as vulnerable to a disease would practice specific behaviors that would reduce the probability of developing that disease (Becker, 1974). This study examined heart disease in the context of the HBM. The identified behaviors were those related to exercise, dietary salt, smoking, dietary animal fat, and maintaining normal weight.

An extensive literature search failed to provide evidence of studies that examined heart disease within the HBM framework. However, the demographic findings of this study were similar to those found by Kok, Matrous, Van den Ban, and Hautvast (1982) in a randomized national study conducted in the Netherlands. The identified behaviors (risk factors) used in the Kok et al. investigation were physical inactivity, smoking, inadequate nutrition, and obesity. The behaviors identified in the Patterson Health Belief Survey (PHBS) were regular exercise, dietary salt, smoking, dietary animal fat, and maintaining normal weight. The demographic findings of both studies indicated that the subjects practiced one or more of the behaviors that are considered to be risk factors for the development of heart disease. The data suggest that the majority of the subjects did not have a preventive health orientation.

Skekelle and Liu (1978) found that the majority of a randomly selected population of subjects in the Chicago area did not associate smoking, high fat diet and high blood pressure with the development of heart disease. The 36 subjects of the present study, based on the testing of the hypothesis, did not associate the five specific preventive health behaviors with the development and/or prevention of heart disease.

The Rosenstock HBM (Becker, 1974; Rosenstock, 1974b) includes the stipulation that an individual needs a minimal level of knowledge and motivation for the practice of PHBs. If one assumes the model to be theoretically sound, then the results of this study suggest that the 36 subjects do not see themselves as being vulnerable to the development of heart disease. These findings could be related to a lack of knowledge and/or a lack of motivation. The findings of Skekelle and Liu (1978) and Kok et al. (1982) were not based on the HBM; however, they did find evidence in their studies that the subjects had a definite lack of knowledge about the prevention of heart disease.

#### Conclusions and Implications

Based on the findings of this study, the following conclusions were made:

1. All of the subjects in the study practiced one or more of the behaviors (risk factors) that are associated with the development of heart disease.
2. The subjects of the study did not associate the practice of the five epidemiologically identified preventive health behaviors with the prevention of heart disease.
3. There was no significant difference in the perception of susceptibility to heart disease in the individuals who practice specific types of PHB and in the individuals who do not practice specific types of PHB.
4. There was no significant difference between perception of the severity of heart disease in the individuals who practice specific types of PHB and in the individuals who do not practice specific types of PHB.
5. There was no significant difference between the perception of barriers in individuals who practice specific types of PHB and in the individuals who do not practice specific types of PHB.
6. There was no significant difference in the perception of benefits in individuals who practice specific types of PHB and in the individuals who do not practice specific types of PHB.
7. There was no significant difference in the perception of cues in individuals who practice specific types of PHB

and in the individuals who do not practice specific types of PHB.

The following implications were derived from the results of the study:

1. The subjects do not see themselves as candidates for the development of heart disease.
2. The subjects may recognize the preventability of heart disease but may choose to ignore and/or not practice the behaviors associated with the reduction of the incidence of heart disease.
3. The small size of the sample did not allow for a clear cut delineation of the demographic variables in terms of the five preventive health behaviors.
4. Exposure to radio and television public service announcements dealing with dietary salt and hypertension appear to have had little effect on the practice of preventive behaviors with respect to heart disease.
5. The professional nurse as an educator should not assume that the client has a workable knowledge about the prevention of heart disease.

### Recommendations for Further Study

As a result of the findings of this study the following recommendations are made:

1. Replicate this study using a larger, randomized selection of subjects.
2. Further test and refine the questionnaire to increase reliability.
3. Develop an experimentally designed longitudinal study that would provide for the testing of the hypotheses of this study.



APPENDIX A

QUESTIONNAIRE PACKET: PATTERSON'S HEALTH  
BELIEF SURVEY

Dear Study Participant:

My name is Betty Patterson. I am a member of the faculty at the University of Southern Mississippi, School of Nursing and I am a graduate student at Texas Woman's University. As part of my graduate study I am conducting a survey to measure people's beliefs about heart disease in relation to their personal health practices.

I am asking some of the adult citizens of Lamar County to participate in my study by filling out a questionnaire, which takes about 15 minutes.

No names are written on the questionnaire and all information provided by study participants is confidential. Your anonymity is assured.

By filling out the questionnaire, you are agreeing to participate in the survey and to having the information provided by you to be used collectively in a study on heart disease.

Thank you very much for your participation.

Sincerely,

Betty W. Patterson

BWP/mr

Questionnaire

Please answer the following questions by writing in your answer or putting a check in the appropriate place.

Age: \_\_\_\_\_ Are you: Black \_\_\_\_\_ Sex: Male \_\_\_\_\_  
 White \_\_\_\_\_ Female \_\_\_\_\_  
 Other \_\_\_\_\_

Are you: Married \_\_\_\_\_ Single \_\_\_\_\_ Divorced \_\_\_\_\_  
 Widowed \_\_\_\_\_ Separated \_\_\_\_\_

How many years of school have you completed? \_\_\_\_\_

	Yes	No
Have you ever been told you have heart disease?	_____	_____
Have you ever been told you have high blood pressure?	_____	_____
Are you taking medication for heart disease?	_____	_____
Are you taking medication for high blood pressure?	_____	_____
Do you exercise regularly?	_____	_____
Do you salt your food?	_____	_____
Do you smoke?	_____	_____
Do you eat foods cooked with animal fat?	_____	_____
Do you maintain normal weight?	_____	_____

The following sentences reflect beliefs that are thought to affect whether or not people practice preventive health behaviors. Based on what you believe, what rating would each sentence receive on the following scale? Please place a check in the appropriate column. There are no right or wrong answers.	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
1. My fear of heart disease helps me to take care of myself.					
2. When I read or hear something about heart disease it reminds me to exercise and diet properly.					
3. It is unlikely that I will have heart disease in the next 12 months.					
4. Of all the illnesses I could get, I believe heart disease is one of the worse.					
5. I do not talk about heart disease because I do not know what to ask.					
6. Eating foods cooked with animal fat will not increase my chances of getting heart disease.					
7. Blood pressure examinations should be done by a doctor or nurse.					
8. I do not smoke because I know it contributes to heart disease.					
9. Compared to other people, I have an equal chance of getting heart disease.					

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
10. When there is a chance to have my blood pressure taken free, I always get mine checked.					
11. The warning about cigarette smoking make me think about heart disease.					
12. The thought of getting heart disease scares me.					
13. I do not believe salt in my diet will increase the risk of heart disease.					
14. If I get heart disease, I will not be a useful member of society.					
15. I have a chance of developing heart disease.					
16. It costs money to get my blood pressure checked.					
17. I do not understand about animal fat and cholesterol in my diet.					
18. Heart disease would have a bad effect on me and my family.					
19. If I go to my doctor regularly there is less chance that I will die from heart disease.					

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
20. When I go to the doctor, he just tells me to cut out cholesterol.					
21. Heart disease will make me an invalid.					
22. I do not have time to exercise regularly.					
23. My friends and I talk about what we can do to prevent heart disease.					
24. Developing heart disease means only having a short time to live.					
25. I do not like to weigh myself because I know I have gained weight.					
26. I would have a better chance of survival if heart disease was found early.					
27. I forget to have my blood pressure checked.					
28. When I go to the doctor, he just tells me to stop using salt.					
29. I do not go to the doctor unless I am sick.					
30. Some of my friends have died of heart disease and I know I will also.					

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
31. I do not go to the doctor for a physical exam because he/she is too busy.					
32. Some of my friends have heart disease and this reminds me to take care of myself.					
33. Regular exercise will not protect me from heart disease.					
34. Sometimes I worry about getting heart disease.					
35. If I had heart disease I would not be able to work or take care of my family.					
36. Eating and/or cooking with less animal fat will reduce my chances of getting heart disease.					
37. Smoking will increase my chance of developing heart disease.					
38. My family encourages me to take care of myself so that I do not develop heart disease.					
39. I cannot afford to go to the doctor unless I am very sick.					
40. My friends and I have talked about our concerns regarding heart disease.					

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
41. If I had a heart problem, nothing could be done for me.					
42. Reducing table salt in my diet is one way I can help take care of myself.					
43. When I go to the doctor, he just tells me to stop smoking.					
44. I think about the possibility of getting heart disease now more than I did five years ago.					
45. When I think of heart disease, pain and death comes to mind.					
46. Some of my family have heart disease, so I know I will get heart disease.					
47. I do not like food that has been cooked without salt.					
48. When I hear of a friend getting heart disease, it makes me think that I could get heart disease.					
49. Having heart disease would be a hardship in my life.					
50. Even if I do nothing to protect myself, I know I will not get heart disease.					



	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
51. When I go to the doctor, he tells me to lose weight.					
52. Right now, I have no chance of getting heart disease.					
53. When I keep my weight down, I know I am protecting myself from heart attacks.					
54. If I am overweight, I increase my chance of developing heart disease.					
55. When I exercise regularly, I worry less about heart disease.					
56. If I check my blood pressure regularly, I am contributing to my future good health.					
57. It is unlikely that I will get heart disease.					
58. As long as I feel okay, I do not think about getting heart disease.					
59. My friends make fun of me because I worry about heart disease.					

APPENDIX B  
ORAL PRESENTATION

### Oral Presentation

My name is Betty Patterson. I live in Lamar County and teach at the University of Southern Mississippi in the School of Nursing. I am a graduate student at Texas Woman's University. As part of my graduate studies, I am doing a survey on heart disease.

I am trying to measure people's beliefs about heart disease in relation to their personal health practices. The people I have chosen to study are adults who live in Lamar County. Your name will not be used, and all information obtained will be used collectively. Consequently, your anonymity is assured.

The results of the survey will be used in my study of heart disease only and will be submitted to Texas Woman's University in Houston, Texas, as part of my Master's Thesis.

Will you please take about 15 minutes to read and answer the questionnaire? If not, thank you very much for listening.

If yes, thank you very much. Here is a pencil, a questionnaire, and a clip board on which to write.

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