Teaching Health-Promotion Knowledge To Post-Stroke Patients

Angela Atkinson

Follow this and additional works at: https://athenacommons.muw.edu/msn-projects

Part of the Nursing Commons

Recommended Citation
https://athenacommons.muw.edu/msn-projects/405

This Thesis is brought to you for free and open access by the MSN Research at ATHENA COMMONS. It has been accepted for inclusion in MSN Research Projects by an authorized administrator of ATHENA COMMONS. For more information, please contact acpowers@muw.edu.
TEACHING HEALTH-PROMOTION KNOWLEDGE
TO POST-STROKE PATIENTS

by
ANGELA ATKINSON

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 2000
Teaching Health-Promotion Knowledge to Post-Stroke Patients

by

Angela Atkinson

Associate Professor of Nursing
Director of Thesis

Donna Gelliotte
Associate Professor of Nursing
Member of Committee

Richard C.
Associate Professor of Nursing
Member of Committee

Barbara Moore
Director of the Graduate School
Abstract

Stroke is the third leading cause of death and can be prevented through health knowledge of multiple-risk factors, such as hypertension, fat intake, and cholesterol level. The purpose of this quasi-experimental, one-group test-retest study was to evaluate the effectiveness of teaching health-promotion knowledge to post-stroke patients. Pender’s Health Promotion Model guided this study. The null hypotheses were as follows: (a) There will be no statistical difference in pretest versus posttest health-promotion knowledge in post-stroke patients who attend a researcher-designed educational program on risk factor modification, (b) There will be no statistical difference in the pre-mean arterial pressure to post-mean arterial pressure in post-stroke patients who attend a researcher-designed educational program on risk factor modification, and (c) There will be no statistical difference in the pre-cholesterol level to post-cholesterol level in post-stroke patients who attend a researcher-designed educational program on risk factor modification.
modification. A convenience sample (N = 16) was obtained at a neurology office in central Mississippi. Mean arterial pressure was measured by the researcher on each participant. The participants were asked to complete the pretest questionnaire and were then educated on risk factors and lifestyle modifications associated with stroke. A pre-test cholesterol was obtained. The participants returned one month later, at which time the researcher measured mean arterial blood pressure, recorded cholesterol level, and retested the participants. Paired t test revealed there was a significant increase (p = .0009) in mean scores on the questionnaire. There was a significant increase (p < .001) in mean arterial pressure after analysis of paired t test but no significant difference (p = .0523) in mean cholesterol. Therefore, hypotheses one and two were rejected; there was an increase in knowledge as well as in mean arterial pressure. Research data failed to reject hypothesis three. Based on this research, the author recommended the following: a larger sample size, increased time for data collection, multiple sites for data collection, participants of varying races, and use of diaries by participants of daily dietary intake.
Dedication

This thesis is dedicated to two persons, my grandfather who died last November and my unborn child who will be with us next March.

Granddaddy, I wish you could be here. You said I would make it, and you were correct once more. I know you are looking down and taking care of me. I wish you could be here to feel the joy with us. Your life now will be replaced by another. My only wish is to serve and be respected by others as you have in your life, and I hope my child will love my father the way that I always loved you. I miss you!
Acknowledgments

First and foremost, I must thank God above for His wisdom, guidance, and generosity. He has watched over me for the past year and helped me through the trials and tribulations. Without him, this endeavor would be worthless. I pray to him for guidance and structure in my practice to come.

Next, I would like to thank Dr. Patsy Smyth for her devotion and never-ending help through this tough time. Many times she went beyond the scope of advisor and became a friend and confidant. In addition, I would like to thank Dr. Linda Cox and Dr. Donna Gullette for their assistance, wisdom, and expertise in the field of research.

To my family and friends, I thank you for all your support. Many times I leaned on you for a kind word and maybe a hug. All of your reassurance made the days easier. Thank you for just being there.

To my dear and loving husband, Ronnie, it has been a long and winding road with many bumps but our love has endured. Thank you for your patience, strength, and
encouragement. When there was rain, you were my sunshine. When there was wind, you were there to calm. I cannot express how my love has grown through this financial and emotional hardship. I love you more than ever.
Table of Contents

Abstract .................................................................................................. iii
Dedication ............................................................................................... v
Acknowledgments .................................................................................. vi
List of Tables ......................................................................................... x

Chapter

I. The Research Problem ..................................................................... 1
   Establishment of the Problem ......................................................... 2
   Significance to Nursing ................................................................. 7
   Theoretical Framework ................................................................. 8
   Assumptions .................................................................................. 11
   Statement of the Problem ............................................................ 12
   Hypotheses .................................................................................... 13
   Definition of Terms ....................................................................... 13
   Summary ....................................................................................... 15

II. Review of the Literature ............................................................... 16

III. The Method .................................................................................. 49
   Design of the Study ........................................................................ 49
   Variables ........................................................................................ 50
   Setting, Population, and Sample .................................................. 50
   Methods of Data Collection ......................................................... 51
   Pilot Study ..................................................................................... 53
   Methods of Data Analysis ........................................................... 54

IV. The Findings ................................................................................ 55
   Description of Sample .................................................................... 55
   Results of Data Analysis .............................................................. 57

viii
List of Tables

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Age Distribution of Sample by Frequency and Percentage</td>
<td>56</td>
</tr>
<tr>
<td>2. Paired t-Test Analysis of Pre- and Post-Knowledge Scores</td>
<td>57</td>
</tr>
<tr>
<td>3. Paired t-Test Analysis of Pre- and Post-Mean Arterial Pressure</td>
<td>58</td>
</tr>
</tbody>
</table>
Chapter I
The Research Problem

Each year approximately 150,000 Americans die of stroke (Sacco et al., 1997). Stroke, otherwise known as cerebrovascular accident, is the nation’s third leading cause of death costing $43 billion annually (National Institute of Neurological Disorders and Stroke, 2000). Approximately one third of all stroke survivors experience a recurrent stroke within 5 years, most occurring within the first 3 months (Zimmerman, 1996). According to Sacco et al. (1997), stroke is the leading cause of serious disability in the United States.

Although many researchers studied risk factors and prevention of stroke, little research explored the effectiveness of teaching health-promotion knowledge to post-stroke patients for the prevention of recurrent strokes. Therefore, the purpose of the research endeavor was to evaluate the effectiveness of teaching health-promotion knowledge to post-stroke patients.
Establishment of the Problem

Tong (1999) defined stroke as an occurrence where blood vessels carrying oxygen and other nutrients to a specific part of the brain suddenly burst or become blocked resulting in brain cell death due to lack of oxygen. There are two major types of strokes: ischemic and hemorrhagic. For the purpose of this research endeavor, the two types of stroke were classified collectively together as one general category.

Approximately 400,000 Americans survive a stroke annually, and 10% of those stroke survivors experience a recurrent stroke within one year (Zimmerman, 1996). Eighty-eight percent of stroke-related deaths occur in persons over the age of 65 years (Bonita, 1992).

For every decade after the age of 55, the risk of stroke doubles, and two-thirds of all strokes occur in people over 65 years old. People over 65 also have a seven-fold greater risk of dying from stroke than the general population. (National Institute of Neurological Disorders and Stroke, 2000, p. 9)

Sacco et al. (1997) suggested that the incidence of stroke in men is 1.25 times greater than in women. In addition, the researchers proposed that stroke incidence and mortality vary among ethnic groups. For instance, African Americans are more than twice as likely to die...
from a stroke than Caucasians. Hispanics and Japanese were found to be equal in stroke incidence and mortality, and Native Americans have lower stroke incidence and mortality than Caucasians (Sacco et al., 1997).

According to Zimmerman (1996), one third of all stroke survivors experience some form of disability. Disabilities resulting from stroke include, but are not limited to, hemiparesis, inability to carry out activities of daily living, blindness, and aphasia. With these disabilities in mind, burdens are placed on family members and the health care system. Family members are faced with financial and emotional burdens, such as placement and care after hospitalization. The health care system also is encumbered with an enormous financial burden.

Due to the increase in disability in stroke patients, demands on health care and other support systems continue to rise. Sacco et al. (1997) noted that the average estimated health care cost for stroke victims was between $8,000 and $16,500, excluding additional costs associated with morbidity after stroke, such as lost work, family expenditures, and additional nursing care. The average cost of care for a patient up to 90 days after a stroke is greater than $15,500 and rehabilitation consumes up to 16%
of that total cost (National Institute of Neurological Disorders and Stroke, 2000).

Epidemiological studies have been consistent in identifying risk factors for stroke: hypertension, smoking, diet, and heart disease. In addition, studies also defined the major warning signs of stroke occurrence. Health care providers as well as laypersons should be aware of those warning signs: weakness; numbness or paralysis of the face, arm, or leg; vision problems; sudden or severe headache; dizziness; balance or coordination problems; and difficulty speaking or understanding words. Early detection decreases and prevents long-term disability.

Modifiable risk factors independently increase the probability of stroke. Most researchers agree that with increased knowledge of health modification of stroke-related risk factors the prevalence of stroke would decrease (National Institute of Neurological Disorders and Stroke, 2000). Steps involved in the prevention of stroke are related to modifying present lifestyle factors. Tong (1999) summarized the modifiable risk factors in the prevention and control of stroke as hypertension, smoking, heart disease, high cholesterol level, excessive alcohol
intake, obesity, sedentary lifestyle, diabetes, elevated hematocrit, use of oral contraceptives by women, and stress. Similarly, Henkel (1998) listed treatable risk factors as hypertension, cigarette smoking, heart disease, history of previous stroke, and diabetes. For the purpose of this study, the researcher focused on diet, hypertension, and cholesterol level.

According to Tong (1999), consumption of foods high in fat, cholesterol, and salt increases the risk of stroke due to a buildup of plaque in blood vessels. Stroke avoidance occurs by decreasing intake of excess fat and sodium. By limiting fat, fried foods, oil, and trimming skin from meats and poultry, dietary fat and cholesterol are reduced. In addition, excess sodium is reduced by limiting intake of canned and processed foods. This, in turn, will decrease hypertension. Increased fruit and vegetable intake, including antioxidant vitamins, potassium, folate, and flavonoids, protects against stroke.

Joseph, Babikian, Allen, and Winter (1999) established a study on risk factor modification in stroke prevention. Joseph et al. (1999) discovered that 36 of 47 patients at the end of the study continued to have
elevated lipid levels. In addition, Joseph et al. (1999) concluded that 83% of 60 patients were hypertensive at the end of the study. Transmitting knowledge of modifiable risk factors in this study was a method anticipated to improve that statistic.

Warkentin (1998) defined hypertension as a term for blood pressure that is consistently higher than 140/90. Hypertension causes increased pressure in blood vessels causing the blood vessels to burst, resulting in stroke. According to Warkentin (1998), essential hypertension may be worsened by eating a diet high in fat and salt, being overweight, consuming large amounts of alcohol, using cigarettes, consuming caffeine, and undergoing emotional stress. To lower blood pressure, changes in exercise habits, diet, weight, and medication regimen, such as taking an antihypertensive drug, must be made.

It remains of great significance that society understand stroke. However, it is of even more importance that society understand and be knowledgeable about modifiable risk factors to aid in stroke and recurrent stroke prevention. Perhaps, a greater insight has been gained from the knowledge base of post-stroke patients and guidance provided for teaching knowledge about modifiable
risk factors. Patient education is the hallmark for nurse practitioner practice. Addressing knowledge about modifiable risk factors as a nurse practitioner function will save lives and allow the health care dollar to be used in other endeavors.

Significance to Nursing

Identification of the effectiveness of teaching health-promotion knowledge has extensive significance for the nurse practitioner in the primary care setting. The primary roles of the nurse practitioner in relation to stroke are prevention, education, and evaluation of modifiable risk factor knowledge. As a primary care provider, it remains very important that the nurse practitioner teach patients health-promotion knowledge which may decrease the chance of stroke and recurrent stroke. In addition, the nurse practitioner should remain aware of educational and environmental factors that affect compliance in modification of present behavior to a healthier lifestyle. More research should be conducted by nurse practitioners since little research concerning knowledge on health modification on stroke has been identified. This researcher sought to add to nursing literature. In addition, this research endeavor evaluated
the effectiveness of teaching health-promotion knowledge to post-stroke patients. Information obtained during this study may be used to develop stroke prevention education in the community, develop stroke screening seminars, and improve standards of care for the nurse practitioner caring for post-stroke patients.

Theoretical Framework

The theoretical framework for this research endeavor was Pender’s Health Promotion Model. This framework is concerned with promoting optimal health in nursing practice (Tillet, 1998). Pender’s model was proposed as a framework to integrate nursing and behavioral science on factors which influence health behaviors (Pender, 1997). Pender’s model consists of 11 major concepts; however, only the following four cognitive-perceptual factors were discussed for the purpose of this study: perceived health status, perceived benefits of behaviors, perceived barrier to health-promoting behaviors, and prior related behavior (Tillet, 1998). Each concept may be applied to promote knowledge on risk factor modification in post-stroke patients.

The first concept, perceived health status, refers to whether the current state of feeling well or ill
determines the likelihood that health-promoting behaviors will be accepted (Tillet, 1998). One’s ability to adjust to the various internal and external tensions that one faces is dependent on the degree of health experienced (Pender, 1997). This research study recognized that the strokes experienced by the individuals in this study were a cue for action in seeking health-promoting knowledge, thus potentially changing current patterns of behaviors to decrease the risk of recurrent stroke.

Perceived benefits of behaviors, the second concept, suggests that individuals may be more likely to begin or continue health-promoting behaviors if the benefits from the behavior are high (Tillet, 1998).

Anticipated benefits of action are mental representations of the outcomes that will occur. According to expectancy-value theory, the motivational importance of anticipated benefits is based on personal or vicarious experience of outcomes from prior direct experience with the behavior or observational learning from others engaging in the behavior, (Pender, 1997, p. 8)

This research sought to determine if teaching knowledge on modifiable risk factors promoted change in current lifestyle, thus consequently changing mean arterial blood pressure and cholesterol level.

The third concept, perceived barrier to health-promoting behaviors, refers to influence by an
individual's belief that an activity or behavior is difficult or unavailable (Tillet, 1998). Intentions to engage in a particular behavior and the actual execution of the behavior have been affected by anticipated barriers. In addition, barriers may be real or imagined and consist of perceptions concerning the unavailability, inconvenience, expense, difficulty, or time-consuming nature of a particular action (Pender, 1997). This research study recognized that education-based knowledge plays a role in removing barriers which hinder clients from utilizing health modifications in the prevention of recurrent stroke.

Prior related behavior, the fourth concept, has two effects, direct and indirect. This concept suggests that behavior of the future may be influenced by failure or success with prior attempts to similar acts (Tillet, 1998). "The direct effect of past behavior on current health promoting behavior may be due to habit formation, predisposing one to engage in the behavior automatically, with little attention to the specific details of its execution" (Pender, 1997, p. 67). Prior behavior also has an indirect influence on health-promoting behavior through perceptions of self-efficacy, benefits, barriers, and
activity-related affect (Pender, 1997). Post-stroke patients may have attempted to modify factors such as diet and failed, thus resulting in reduced motivation to try again. The patients may not have understood why they were not successful; therefore, education to extend health-promotion knowledge is a way to change health-promoting behavior.

Pender’s Health Promotion Model presents nursing as a practice in assisting the patient in health promotion and modification of current behaviors. In order to assist patients, nurses must understand concepts that influence patients’ decision making, such as education and personal knowledge. An educationally knowledge-based decision to alter current lifestyle practices in order to decrease the risk of recurrent stroke is unique to each patient; therefore, Pender’s Health Promotion Model provided an appropriate theoretical framework for this research study.

Assumptions

The principles on which this research endeavor was based included the following:

1. People want to assume control of their own health problems.

2. People seek to regulate their own behavior.
3. Health is a priority for most people following a stroke.

4. People who perceive a health benefit will answer questions honestly.

Statement of the Problem

Although an array of research has been conducted with respect to risk factor modification in prevention of stroke, little research identified the effectiveness of teaching health-promotion knowledge to post-stroke patients. Stroke remains the third leading cause of death in the United States, killing approximately 150,000 Americans annually (Sacco et al., 1997). In addition, stroke remains the number one cause of disability (Sacco et al., 1997). Research conducted on the impact of education related to increasing the knowledge base on modifiable risk factors in post-stroke patients was not identified in the literature, thus the outcomes of such research is unknown. Therefore, the purpose of this research endeavor was to ascertain the effectiveness of teaching health-promotion knowledge to post-stroke patients as well as add to nursing literature.
Hypotheses

Three null hypotheses were used to guide the research study:

$Ho_1$: There will be no significant difference in pretest versus posttest health-promotion knowledge in post-stroke patients who attend a researcher-designed educational program on risk factor modification.

$Ho_2$: There will be no statistical difference in the pre-mean arterial pressure to post-mean arterial pressure in post-stroke patients who attend a researcher-designed educational program on risk factor modification.

$Ho_3$: There will be no statistical difference in pre-cholesterol level to post-cholesterol level in post-stroke patients who attend a researcher-designed educational program on risk factor modification.

Definition of Terms

The following definitions were given to provide a greater understanding of the research:

Teaching: Theoretical: Teaching is defined as the educational process of instructing (On-line Medical Dictionary, 1998b). Operational: Teaching in this study is defined as instruction given to post-stroke patients by
the researcher during a researcher-designed educational program.

Health promotion: Theoretical: Health promotion is defined as the science and art of helping people change their lifestyle to move toward a state of optimal health (O'Donnell, 1989). Operational: In this study, health promotion was defined as those efforts or measures taken to enhance awareness of risk factors of lifestyle in order to facilitate a change in behavior that supports good health practices.

Knowledge: Theoretical: Knowledge is defined as the act or state of knowing; that which is or may be known (On-line Medical Dictionary, 1998a). Operational: In this study, knowledge was defined as the information contained in the teaching plan.

Post-stroke patient: Theoretical: Post-stroke patient is defined as one who has survived an occurrence in the brain where the blood vessels carrying oxygen and other nutrients to a specific part of the brain suddenly burst or become blocked causing the cells in that area to die (Tong, 1999). Operational: In this study, the post-stroke patient is defined as one who has survived an occurrence in the brain where the blood vessels carrying oxygen and
other nutrients to a specific part of the brain suddenly burst or become blocked causing the cells in that area to die, is between the age of 30 and 90 years, presents to the physicians’ office after being discharged from the hospital, and attends a researcher-designed educational program. The post-stroke patient must be able to speak and understand the written and spoken word.

Summary

To summarize, the researcher has provided an establishment of the problem, the significance of the problem to nursing, a theoretical framework, major assumptions, hypotheses used to guide the study, and a definition of terms to facilitate the reader. The following chapter will provide a review of literature evaluating research on stroke and risk factors associated with stroke, including variables such as age, gender, and ethnicity.
Chapter II

Review of the Literature

In the literature relating to the effectiveness of teaching health-promotion knowledge to post-stroke patients, little research was identified about teaching stroke prevention. Most research attempted to define the prevalence and risk factors associated with stroke. The following review of literature supported the current research endeavor, which contains information on the effects of high blood pressure, cholesterol along with other dietary factors, and the success of various educational programs.

Ascherio et al. (1998) examined the association of potassium and related nutrients with risk of stroke in a sample of 43,738 United States men. Ascherio et al. (1998) hypothesized that a high potassium intake reduced the risk of stroke in a large cohort of men who completed a detailed and validated semi-quantitative food frequency questionnaire at baseline and were followed up for 8 years. Variables that were also examined were fiber,
magnesium, and calcium dietary intake in correlation with intake of potassium in relation to the risk of stroke. Physical variables included normal systolic and diastolic blood pressures and whether or not the members of the sample had been physician-diagnosed hypertensive.

In the large cohort study, the researchers provided a 131-item food-frequency questionnaire to 51,529 health professionals between the ages of 40 and 75 years in 1986. Until 1994 follow-up questionnaires were sent every 2 years to the final sample of 43,738 males who met the necessary criteria to update information on potential risk factors and to identify newly diagnosed cases of stroke and other diseases (Ascherio et al., 1998). Those excluded from the study did not meet the criteria of men 40 to 75 years of age, nondiabetic, nondiagnosed cardiovascular disease, and completion of the 131-item food-frequency questionnaire.

Ascherio et al. (1998) calculated the age-adjusted relative risks (RR) by dividing the incidence of stroke among men in each fifth of energy-adjusted potassium intake at baseline by the incidence among men in the lowest fifth of intake and similarly calculated the other nutrients. The Mantel extension test was used to test for
linear trends. Pooled logistic regression with 2-intervals was used to adjust for other risk factors. Covariates in the study included calendar time (2-year intervals), total energy intake (continuous variable), smoking (current, past, and 1 to 14, 15 to 24, and > 25 cigarettes/day), alcohol consumption (<5, 5 to 9, 10 to 14, 15 to 29, and > 30 g/d), history of hypertension, history of hypercholesterolemia, parental history of myocardial infarction before 65 years of age, profession, and quintiles of body mass index and physical activity (Ascherio et al., 1998).

During follow-up, Ascherio et al. (1998) documented 328 cases of cerebrovascular accidents, including 210 ischemic, 70 hemorrhagic, and 48 unclassified strokes. Those men in the top fifth of potassium intake were less likely to smoke, were more physically active, and consumed less alcohol, less fat, more protein, and more micronutrients than men in the bottom fifth of potassium intake. The dietary intake of fiber and magnesium was both inversely associated with risk of total stroke in age-adjusted analyses (RR = 0.57, < .001). In addition, the researchers found that cereal fiber appeared to be more inversely associated with the risk of total stroke.
Calcium and sodium intake was not significantly associated with the risk of total, ischemic, or hemorrhagic stroke (Ascherio et al., 1998).

Although the use of potassium supplements was not associated with the risk of total or ischemic stroke in age-adjusted analyses, the use of potassium supplements did show a strong inverse association after adjustment for history of hypertension.

The inverse association between use of potassium supplements and risk of stroke in multivariate analyses was independent of dietary intakes of nutrients, including potassium, magnesium, and fiber, and was stronger among men with low dietary intake of potassium, magnesium, and cereal fiber. (Ascherio et al., 1998, p. 1201)

Ascherio et al. (1998) suggested that men with diets higher in potassium, cereal fiber, and magnesium had a substantially reduced risk of stroke. Although these inverse associations were only partly explained by nondietary risk factors, there was a strong and significant finding among men with diagnosed hypertension. There was no significant association between the intake of calcium and sodium and the risk of stroke. The dietary intake of magnesium and fiber was inversely associated with risk of stroke, but their correlation with the intake of potassium and measurement errors reduced the ability of
multivariate analyses to discriminate between them (Ascherio et al., 1998). There was a lack of association between sodium intake and risk of stroke in the researchers' study which may have been due to the difficulty in measuring sodium intake accurately.

Ascherio et al. (1998) did not establish a causal relationship but did provide strong support for a preventative effect of diets rich in potassium, magnesium, and cereal fiber on stroke, especially among hypertensive men. The authors suggested that an increase in dietary intake of potassium alone may decrease the risk of stroke; therefore, potassium supplements for hypertensive patients should be considered. Potassium intake could be increased by substituting fruits, vegetables, and their natural juices for low-potassium processed foods and sodas (Ascherio et al., 1998). Because the present research had a teaching program based on risk factors and modifications associated with stroke, this research study gave support to the present study.

Tanne, Yaari, and Goldbourt (1999) assessed and established a risk factor profile for long-term stroke mortality based on stroke as the most common life-threatening neurological disease and the third leading
cause of death. Tanne et al. (1999) hypothesized that environmental and genetic factors affect death rates from ischemic stroke in diverse population groups.

Utilizing a 21-year mortality longitudinal study beginning in 1965, Tanne et al. (1999) investigated the incidence of risk factors for cardiovascular disease among those chosen from a stratified sample of 9,734 tenured male employees of Israel, Haifa, Jerusalem, and Tel Aviv. The participants were born in Israel, central Europe, one of the Balkan countries, the Mideast, or North Africa. Baseline clinical and biochemical blood evaluations were collected in 1963 when all men were age 40 or older, and follow-up examinations occurred in 1965 and 1968. The researchers noted smoking habits, demographics, and cardiovascular risk factors and performed systematic physical examinations.

Tanne et al. (1999) discovered that one third (n = 3,276) of the males under investigation (N = 9,734) died, and 282 of those deaths resulted from ischemic strokes. Employing a multivariate analysis of the 21-year study, the researchers adjusted for and assessed the contribution of age, geographical area of birth, diabetes mellitus, systolic blood pressure, left ventricular...
hypertrophy on electrocardiogram (ECG), history of coronary heart disease (CHD), cigarette smoking status, peripheral vascular disease, body mass index, serum glucose, uric acid, percentage of serum cholesterol contained in the high density lipoprotein fraction (% HDL), and hematocrit in relation to stroke mortality. Tanne et al. (1999) explicated several predictors of death from stroke. A threefold increase in risk per 10-year increment in age emerged. Further, a greater than twofold risk increase in left ventricular hypertrophy on ECG, a greater than twofold risk increase in systolic blood pressure (20 mmHg corresponding to 1 SD change), and greater than threefold increase in a change of 12 mmHg in diastolic blood pressure. In addition, the researchers found that an excess risk of 50% was associated with history of peripheral vascular disease, CHD, and diabetes mellitus. An excess risk of 80% was associated with more than 20 cigarettes smoked per day. A decrease of 5% in the high density lipoprotein fraction was discovered to be associated with an excess risk of 23% of fatal ischemic stroke. Finally, Tanne et al. suggested that those born in North Africa had the highest risk of stroke mortality, whereas there was a decreasing risk of stroke mortality in
Israeli-born participants (0.76) and in immigrants from the Mideast (0.94), eastern Europe (0.63), central Europe (0.62), and the Balkan countries (0.56).

In conclusion, Tanne et al. (1999) provided a quantitative estimate of risk based on multiple-risk factors in an immigrant working population with various ethnic and cultural backgrounds. The researchers provided information to support the hypothesis that undetermined and powerful environmental and genetic factors affect death rates from ischemic stroke and that stroke mortality varied among ethnic groups. Risk of dying from fatal stroke increased directly with increasing systolic blood pressure, diastolic blood pressure, left ventricular hypertrophy, low HDL cholesterol, cigarette smoking, diabetes mellitus, and peripheral vascular disease. High HDL cholesterol was discovered to be inversely proportional with the risk of dying from ischemic stroke. Tanne et al. (1999) concluded that by identifying risk factors for stroke mortality and occurrence and by improving public awareness, stroke could be prevented and recurrence reduced.

Tanne et al. (1999) strongly supports the present research study due to the conclusion that public awareness
of stroke risk factors can decrease and possibly prevent stroke. The current study provides support for providing information to previous stroke patients to aid in prevention of recurrent strokes.

Reyes-Iglesias, Melendez, Hernandez, and Perez (1999) performed a descriptive study to identify stroke syndromes and risk factors specific to the Puerto Rican male population in hopes that there will be more effective diagnosis, treatment, and prevention programs. In previous studies, risk factor prevalence and distribution of atherosclerotic cerebrovascular disease have been reported in different racial-ethnic groups but not specifically for Puerto Rican males.

Over a 3-month period Reyes-Iglesias et al. (1999) evaluated 118 Hispanic male patients admitted to the Stroke Unit-Neurology Section (SUNS) of the San Juan Veterans Administration Medical Center with a focal retinal or neurologic deficit suggestive of stroke. These patients admitted to the SUNS had noncontrast computed tomography (CT) of the brain within 48 hours of hospital admission, a completed National Institutes of Health Stroke Data Bank Form, and a neurologic examination (Reyes-Iglesias et al., 1999).
The researchers grouped the SUNS patients by anterior or posterior circulation stroke or transient ischemic attack (TIA) according to the neurologic symptoms, initial symptoms, and neuroimaging studies. Risk factors assessed were hypertension (as evidenced by current use of antihypertensives, evidence of left ventricular hypertrophy by 12-lead electrocardiogram, or chart review yielding three or more readings of systolic blood pressure > 140 mmHg or diastolic blood pressure > 90 mmHg one week after the admission), diabetes mellitus (as evidenced by self report or current use of pertinent medications), hyperlipidemia (as evidenced by self report or current use of pertinent medications), cigarette smoking (as evidenced by recorded current or past use), and coronary artery disease (as evidenced by a history of angina pectoris, myocardial infarction, abnormal results as an exercise tolerance test, coronary artery bypass graft surgery, or coronary angioplasty, respectively).

Forty patients received cerebral angiography due to evidence of extracranial carotid stenosis (defined as carotid stenosis > 60% when the common or internal carotid artery had a peak systolic velocity > 2 m/s by Doppler criteria) greater than 70% by carotid ultrasonography or
if there was suspicion on the basis of clinical history, physical examination, or neuroimaging studies of vertebrobasilar stenosis (Reyes-Iglesias et al., 1999). Reyes-Iglesias et al. (1999) utilized the Glasgow Outcome Scale at one month after the initial symptoms to determine the level of disability.

Reyes-Iglesias et al. (1999) determined that, of 118 patients, 90 (76%) had an ischemic infarct, 26 (22%) had a TIA, and 2 (2%) had an intracerebral and or subarachnoid hemorrhage. The most common risk factor found was hypertension. Sixty-four percent of the patients had an ECG showing concentric left ventricular hypertrophy and diastolic dysfunction. Of the 40 patients receiving cerebral angiography, the findings were abnormal in 32 (80%) (Reyes-Iglesias et al., 1999). Twenty-five of 36 patients with posterior circulation stroke or TIA had a normal finding on extracranial sonographic studies. According to the Glasgow Outcome Scale, Reyes-Iglesias et al. (1999) found that, of 118 patients, 27 (23%) had total recovery, 76 (64%) had mild to moderate disability, and 15 (13%) had severe disability.

In conclusion, Reyes-Iglesias et al. (1999) provided a large descriptive study of Hispanic male veterans with
stroke syndrome admitted to the SUNS unit of the San Juan Veterans Administration Hospital. The researchers discovered that hypertension was the most common risk factor as did Tanne et al. (1999). Angiographic studies revealed an almost equal frequency or extracranial and intracranial atherosclerotic disease. In addition, only 13% of the studied population were found to have severe disability due to the stroke or TIA. This study lacks a control group for comparison but provided baseline data to serve as a comparison group for future studies. The current research endeavor also looked at pre- and post-mean arterial pressure in the post-stroke patient; therefore, this literature supports that study.

In a similar study, the Eastern Stroke and Coronary Heart Disease Collaborative Research Group (1998) assessed the contributions of blood pressure and blood cholesterol concentrations to stroke risk in populations from eastern Asia, because stroke is the major cause of death and disability in most populations of eastern Asia. Of particular interest was hemorrhagic stroke due to a higher incidence than in western populations. Stroke in eastern Asian countries was predicted to increase in absolute terms as well as a proportion of total disease burden, but
reasons for the greater burden of stroke remain unclear (Eastern Stroke and Coronary Heart Disease Collaborative Research Group, 1998).

The Eastern Stroke and Coronary Heart Disease Collaborative Research Group (1998) studied 13 cohorts from the People's Republic of China and 5 from Japan (124,774 participants, 837,214 person-years of observation) meeting the criteria of a prospective observational study of more than 500 individuals, a study population resident in eastern Asia, measurement of diastolic blood pressure at entry, and follow-up data on stroke deaths. Information from collaborators of the study was provided about mean diastolic and systolic blood pressure and total cholesterol concentration at baseline and follow-up.

Utilizing non-parametric analyses, the collaborative group divided each cohort into five groups according to baseline diastolic blood pressure (< 79 mmHg, 80-89 mmHg, 90-99 mmHg, 100-109 mmHg, and > 110 mmHg) or baseline cholesterol concentration (< 3.8 mmol/L, 3.9-4.5 mmol/L, 4.6/5.1 mmol/L, 5.2-5.7 mmol/L, and > 5.8 mmol/L). For each category of baseline diastolic blood pressure or cholesterol concentration, the odds ratio for a given
outcome was calculated separately with the overall odds ratio for all groups combined taken as 1.0 [8]. Utilizing parametric analyses, logistic regression was used to estimate the gradient of baseline diastolic blood pressure to cholesterol concentration against disease risk in each cohort, with adjustment made for age and sex. In addition, Cox proportional-hazards analyses were used to regress total stroke against baseline diastolic blood pressure, cholesterol concentration, age, sex, and smoking status in each cohort when such data were available (Eastern Stroke and Coronary Heart Disease Collaborative Research Group, 1998).

Relative risks were plotted against mean follow-up diastolic blood pressure to cholesterol concentration in the non-parametric analyses, and regression coefficients were multiplied by an attenuation factor equal to the inverse slope of a linear regression of follow-up blood pressure or cholesterol values against baseline values (with the inclusion of age, sex, smoking status, and cholesterol concentrations, when available, as covariates) in the parametric analyses (Eastern Stroke and Coronary Heart Disease Research Group, 1998).
The Eastern Stroke and Coronary Disease Collaborative Research Group (1998) determined the overall mean blood pressure of the participants was 124/78 mmHg, and the mean cholesterol concentration was 4.5 mmol/L. There were 1,798 strokes that occurred and 751 (42%) were hemorrhagic. Seven hundred seven (39%) were confirmed by CT or necropsy. As there was a 5 mmHg lower than usual diastolic blood pressure, there was a lower risk of non-hemorrhagic stroke (odds ratio 0.61 [95% CI 0.57-0.66] as well as a lower risk of hemorrhagic stroke (0.54[0.50 -0.58]) (Eastern Stroke and Coronary Heart Disease Collaborative Research Group, 1998). As cholesterol concentrations decreased, there was a decrease in risk of non-hemorrhagic stroke (odds ratio for 0.6 mmol/L decrease, 0.77[0.57-1.06]) and an increase in risk of hemorrhagic stroke (1.27 [0.84-191]) (Eastern Stroke and Coronary Heart Disease Collaborative Research Group, 1998).

In addition, of 1,798 strokes that did occur, 995 (55%) were fatal. Fourteen cohorts reported both non-fatal (25% hemorrhagic) and fatal strokes (67% hemorrhagic). There was evidence of a positive relation between usual diastolic blood pressure and the relative risk of any type of stroke in most individual cohorts. Within the cohorts,
individuals in the group with highest baseline diastolic blood pressure had a risk of stroke 13 times greater than those in the group with the lowest baseline diastolic blood pressure (Eastern Stroke and Coronary Disease Collaborative Research Group, 1998).

To conclude, strong associations between usual diastolic blood pressure and the risks of both hemorrhagic and non-hemorrhagic stroke in the populations from eastern Asia were found which further support the need to decrease blood pressure. In addition, there was a strong positive association of cholesterol with non-hemorrhagic stroke and a negative association with hemorrhagic stroke. Also, with population-wide lowering of blood pressure, there is potential for enormous declines in stroke in eastern Asia. The researchers supported the assumed hypothesis that blood pressure is an important determinant of stroke risk in eastern Asian populations, particularly hemorrhagic stroke.

This research study was relevant to the current research endeavor because the current research studied the mean arterial blood pressure and cholesterol in a small sample of post-stroke patients to determine if there would
be a significant difference after post-stroke patients attended a researcher-designed educational program.

The Prospective Studies Collaboration (1995) examined two questions: Is there any relation between total blood cholesterol and stroke? And how strong does the relation between diastolic blood pressure and stroke vary with age? The aim of the study was to gather as much evidence as possible from prospective studies to determine the relationship of the above questions.

The Prospective Studies Collaboration (comprised of investigators from Asia, Australia, Europe, Hawaii, the Middle East, and North America) (1995) investigated the associations between blood cholesterol and diastolic blood pressure with subsequent stroke rates by review of 45 prospective observational cohorts involving 450,000 individuals with 5 to 30 years of follow-up (M = 16 years, total 7.3 million person-years of observation). Thirteen thousand three hundred ninety-seven participants were found to experience stroke, most of which were fatal. Only approximately 50% of individuals were from the relevant studies, but these accounted for almost 90% of all strokes (Prospective Studies Collaboration, 1995).
Baseline diastolic blood pressure was measured as well as diagnosis of coronary heart disease. Coronary heart disease was considered diagnosed if it was found on electrocardiographic findings, doctor diagnosis, remembered diagnosis, or a Rose angina questionnaire. In addition, total cholesterol, sex, and age were also tabulated.

Poisson regression (the relative risk of stroke per 1 mmol/L increase in the usual blood cholesterol, or per 10 mmHg increase in the usual diastolic blood pressure) was used for statistical analysis. After adjustment for age, no association between blood cholesterol and stroke was found in participants screened (Prospective Studies Collaboration, 1995). In addition, the researchers used multi-group Poisson regression stratified for the study to simultaneously estimate the relative risks of stroke at each level of usual blood cholesterol or of usual diastolic blood pressure.

The Prospective Studies Collaboration (1995) determined that there was no significant association between total cholesterol and risk of stroke (overall increase of 1 mmol/L in blood cholesterol multiples the stroke rate by 0.98 [95% confidence interval 0.94-1.01,
not significant]) after adjustment for study, diastolic blood pressure, history of heart disease, sex, age at baseline and ethnicity (when pertinent) and a significant (p < .001) increase in risk of stroke with increasing total cholesterol in those under 45 years of aged. After adjustment for study, total cholesterol, history of coronary heart disease, sex, age at baseline, and ethnicity (when pertinent), the researchers discovered an 80% increase in stroke risk with every 10 mmHg increase in the usual diastolic blood pressure. Since the relevance of diastolic blood pressure to stroke varied with age at baseline, the researchers developed six categories but only two were discussed: the highest and lowest. Among the highest and lowest of the six categories, the difference in usual diastolic blood pressure was 27 mmHg (102 versus 75 mmHg), and there was a fivefold difference in stroke risk (seen in those with a preexisting history of coronary heart disease and those without a preexisting history of CAD) (Prospective Studies Collaboration, 1998). Analyses by the researchers indicated that each 10 mmHg increase in diastolic blood pressure multiplied the stroke risk by 1.84 (95% CI 1.80-1.90).
In conclusion, this study was unable to demonstrate an independent association between baseline blood total cholesterol and the risk of stroke. However, the researchers were able to suggest a strong risk of stroke associated to diastolic blood pressure in those with and without preexisting coronary heart disease at baseline. In addition, the researchers were able to indicate that age affects the relative risks when associated with diastolic blood pressure. Although the study was unable to demonstrate an association between cholesterol and stroke, it did provide an association between blood pressure and stroke. The current research endeavor explored the association of cholesterol before and after post-stroke patients attended a researcher-designed educational program. Therefore, this study supports the current research endeavor.

Rodgers, Atkinson, Bond, Suddes, Dobson, and Curless (1999) suggested that many patients and their informal care person (next of kin or the person providing most day-to-day support) lack understanding of causes associated with stroke and preventative measures for stroke. The purpose of the study by the researchers was to determine the effectiveness of a multidisciplinary Stroke Education
Program (SEP) utilizing a randomized cohort of acute stroke patients and their informal care persons.

Rodgers et al. (1999) approached all acute stroke patients and their informal care person admitted to North Tyneside General Hospital between January 1, 1998, and December 1, 1998, between 5 and 9 days after stroke. During the initial assessment, the researchers obtained demographic data, educational level, comorbidity, cognitive impairment, pre-stroke function, support and services, and stroke subtype from either the stroke patient or informal care person. Demographic data, background, and prior experience were obtained from the informal care persons. Seven days after stroke the Barthel Activities of Daily Living (ADL) Index was recorded.

According to Rodgers et al. (1999), randomization of the stroke patients and their informal care persons was obtained through a central telephone service in which they either received an invitation to attend the SEP or conventional stroke unit care. The patient and informal care person were randomized as a pair. In addition, randomization was done in blocks of 9, and patients were randomized in a ratio of two SEP to one conventional unit care.
The Stroke Education Program, a program of one-hour small group educational sessions for inpatients and their informal care persons followed by six one-hour educational sessions after discharge from the hospital, aimed to improve knowledge on the nature of stroke, treatment, and therapeutic interventions (Rodgers et al., 1999). The SEP group sessions were held one morning each week, and transportation to the group session was provided if needed. Attendance at the SEP was defined as those who attended > 3 outpatient group sessions. The stroke patients were also provided with leaflets on admission about the stroke service.

Six months after a stroke, a researcher, blinded to the randomization group, was sent to the homes of the patients and informal care persons for an interview (Rodgers et al., 1999). Two types of outcomes were measured, primary and secondary. Primary outcomes were patients' and informal care persons' perceived health status as assessed by the Short Form 36 (SF-36) Healthy Survey Questionnaire. Secondary outcomes were knowledge of stroke, satisfaction with services, and emotional outcome, as assessed by the Hospital Anxiety and Depression Scale for patients and General Health Questionnaire 30 for
informal care persons, disability, and handicap, as assessed by the Nottingham E-ADL and Oxford Handicap Scale (Rodgers et al., 1999).

Rodgers et al. (1999) utilized a one-tailed test for independent samples with a power of 80% and a significance level of 5%. In addition, data were analyzed on an intention-to-treat basis with nonparametric techniques. Comparative analyses were made utilizing the Mann Whitney U test. To analyze responses to questions about satisfaction, the researchers used odds ratios and 95% confidence intervals (Rodgers et al., 1999).

The researchers discovered that only 51 of 204 stroke patients and 20 of 176 informal care persons attended > 3 outpatient sessions, and only 55 (77%) returned the evaluation questionnaire. In addition, 44 (80%) felt that the SEP was beneficial, 47 (85%) felt it had been helpful to talk to other people who had had a stroke and their relatives, and 39 (71%) felt they had been able to use the information gained from the SEP in their everyday lives. Only 18 patients and 33 carers who did not attend the SEP returned the questionnaires.

Rodgers et al. (1999) did not find a significant difference in SF-36 scores when the patient and informal
care person were analyzed together, but separate analyses of patient and informal care person scores showed that informal care person randomized to the SEP had lower social-functioning subscale scores compared to controls \( (p = .04) \). In addition, both patients and informal care persons randomized to the SEP had higher scores on the knowledge of stroke scale than controls \( (p = .02 \text{ and } p = .01) \), and both groups had high scores on the Hospital Anxiety and Depression (HAD) Scale but did not differ. Patients who were randomized to SEP were more satisfied with the information they received about stroke than the controls, but the informal care persons were not.

To conclude, the SEP improved patient and informal care person knowledge about stroke and increased some satisfaction with services. However, the researchers did not validate improvement in patients' perceived health status. Because the current research endeavor sought to determine the effectiveness of teaching health-promotion knowledge to post-stroke patients, this study was selected to add value and support.

Similarly, Stern, Berman, Thomas, and Klassen (1999) examined the effectiveness of a slide/audio community education program (Stroke: It Could Be You) aimed at
increasing knowledge of stroke risk factors, stroke warning signs, and action needed when stroke warning signs occur. The researchers targeted their program to audiences at higher risk for stroke, especially those who were black or older than 50 years of age.

Six hundred and fifty-seven adult volunteers living in the community or in senior independent living settings attended the educational presentation. The slide/audio program (Stroke: It Could Be You) was a 12-minute program which defined stroke, including the differences in thrombolic, embolic, and hemorrhagic, discussed risk factors and warnings signs of stroke, and encouraged immediate response to the warning signs of stroke.

The subjects were divided into four groups, each of which was facilitated by trained volunteer health professionals. Groups 1 and 2 were presented with a pretest followed by open discussion and then the audio/slide program. Following the program, the participants completed a posttest. Groups 3 and 4 reviewed content covered in the program, and the facilitators related content of Groups 1 and 2's questions during the discussion. The groups then completed the posttest.
Stern et al. (1999) measured the participants' pretest and posttest knowledge of stroke risk factors and warning signs before and after the educational program. Data were coded and reviewed for out-of-range values (Stern et al., 1999). The four participant groups were compared on demographic variables. After comparison there was no significant difference in racial makeup, but the groups did significantly differ in sex, age, and educational level. There were statistical significant differences in correlations between the variables of age, education, and posttest knowledge scores at the .01 level (age, r = .423; education, r = .364) but not for race, r = .078, and sex, r = .066 (Stern et al., 1999). The researchers used ANCOVA to test the effects that pretest or facilitator had on posttest scores, with race age, and education as covariates. Stern et al. found that neither pretest effects nor facilitator effects were statistically significant.

Stern et al. (1999) found that the covariates did show statistical significance (p < .001) which indicated that posttest scores were more closely related to demographic differences across the four groups. In addition, Tamhane post hoc comparison showed that the
participants who were < 64 years and those with education beyond high school scored significantly better (p < .01) on posttest. The researchers also used ANCOVA of knowledge gain scores to isolate the effects of the slide/audio program in only Groups 1 and 3. There were no significant effects in relation to demographic factors. However, paired t tests demonstrated a 10.87% difference (p < .001) between pretest and posttest scores (Stern et al., 1999).

To conclude, the researchers indicated that their educational program increased knowledge of stroke risk factors, warning signs, and action to take when warning signs are present. In addition, the results by Stern et al. (1999) suggested that an educational program may be successful when used as a stand alone education tool or when accompanied by content discussion led by a trained facilitator. Because the current researcher was testing pre- and post-knowledge with a researcher-designed educational intervention, this study gave significant support to the current research endeavor.

In another study, Lorig et al. (1999) evaluated the effectiveness of a self-management program for chronic disease. The program was designed for use with a heterogenous group of chronic disease patients as measured
by changes in health behaviors, health status, and health service utilization. In addition, the study explored the effectiveness of the intervention over 6 months for 952 patients with the specific diseases and comorbidities of lung disease, heart disease, stroke, and arthritis.

Lorig et al. (1999) developed the Chronic Disease Self-Management Program, which was a community-based patient self-management education course that included exercise, use of cognitive symptom management techniques, nutrition, fatigue and sleep management, use of community resources, use of medications, dealing with emotions of fear, anger and depression, communication with others including health care professionals, problem-solving, and decision-making. To be included in the study, participants had to be 40 years of age or older, with a physician-confirmed diagnosis of heart disease (coronary heart disease or congestive heart failure), lung disease (asthma, chronic bronchitis, or emphysema), stroke (completed cerebrovascular accident with neurologic handicap and normal mentation), or chronic arthritis (Lorig et al., 1999).

Participants were told prior to filling out the initial questionnaire that they would either receive the
course immediately or after serving as a control for 6 months. The program was held in various areas of the community in four counties at varied times during the day to provide easier accessibility for participants. The participants were then randomized and assigned to specific course sites.

Health behaviors, health status, and health service utilization were the three primary outcome variables (Lorig et al., 1999). In addition, the researchers assessed three types of health utilization: visits to physicians, including visits to the emergency room (ER), visits to hospitals during the past 6 months, and the number of nights spent in a hospital. The participants reported for each category how often they used these health services. Two hundred subjects who were health maintenance organization members were validated against automated medical records. Lorig et al. (1999) indicated that overall the self-reported data for outpatient visits correlated, $r = .70$, with medical records. In relation to the days spent in the hospital, the medical records correlated with patient self-report, $r = .83$.

Lorig et al. (1999) utilized various methods of data analysis. Analysis of covariance was used to compare
6-month outcomes between the treatment and control groups on each outcome variable, controlling for baseline value of the study variable. The researchers used two-analysis of variance to determine if the intervention had different outcomes for those with different diseases.

Lorig et al. (1999) discovered that only 952 (83%) of 1,140 participants who entered the study completed the 6-month study. Eighty-four percent of the treatment subjects completed the course whereas only 82% of the control subjects completed the course. A comparison of baseline data for participants who completed the study to those who did not showed that noncompleters had significantly fewer minutes of aerobic exercise per week and higher levels of activity limitation, pain/physical discomfort, fatigue, and health distress than those who were completers (p < .05) (Lorig et al., 1999). Regarding demographic and disease characteristics of study participants, only marital status was significantly different (p < .05) (Lorig et al., 1999). The Chronic Disease Self-Management Program treatment group demonstrated a significantly greater improvement (p < .01) in all four health behavior variables, number of minutes per week of stretching/strengthening and aerobic exercise, increased
practice of cognitive symptom management, and improved communication with their physician, and also demonstrated significant improvement in five of the health status variables (self-rated health, disability, social/role activities limitation, energy/fatigue, and health distress) \( (p < .02) \) (Lorig et al., 1999). The treatment group showed no significant difference in pain and physical discomfort, shortness of breath, or psychological well-being but did show fewer hospitalizations \( (p < .05) \) and fewer nights in the hospital \( (p = .01) \) than the control group. Between the two groups, there was no significant difference in visits to physicians \( (p = .11) \) (Lorig et al., 1999).

Lorig et al. (1999) discovered that of the control group which took the Chronic Disease Self-Management Program after 6 months, there was an increase in aerobic exercise and use of coping strategies \( (p < .05) \) (Lorig et al., 1999). In addition, the control group decreased their disability and health distress, while increasing their social and role activities \( (p < .05) \) and decreased their visits to physicians \( (p < .05) \). The groups also had fewer visits to hospitals and fewer days in hospital \( (p < .05) \). Lorig et al. (1999) discovered that there was a tendency
for the change scores to reflect program effects similarly across all four diagnostic subgroups. Stroke was not included due to the small number. Lorig et al. (1999) indicated that the decrease in number of hospitalizations and in the number of nights of hospitalization were significant (p < .05) with health care expenditure savings of more than 10 times the cost of the intervention.

To conclude, the intervention was successful in increasing healthful behaviors, maintaining or improving health status, and decreasing rates of hospitalization. In addition, the results indicated that it is possible to educate patients with different chronic diseases successfully in the same intervention at the same time. This study supports an educational intervention as a productive means to improve health promotion to prevent a second stroke.

In summary, Chapter II provided an overview of current studies that support the research endeavor. A brief overview of the effects of high blood pressure and diet including cholesterol on stroke was analyzed. A majority of the studies suggested that high blood pressure and cholesterol increased the risk of stroke. Data on the use of educational programs were also reviewed. This
researcher determined that many lifestyle behaviors were associated with a higher risk for stroke; therefore, because the educational programs had an effect, this would support this researcher’s current study on a stroke educational program.
Chapter III

The Method

Stroke is the third leading cause of death associated with multiple risk factors, such as hypertension, fat intake, and cholesterol level. Although many researchers studied risk factors and prevention of stroke, little research explored the effectiveness of teaching health-promotion knowledge to post-stroke patients for the prevention of recurrent strokes. The purpose of this study was to evaluate the effectiveness of teaching health-promotion knowledge to post-stroke patients.

Design of the Study

The researcher utilized a quasi-experimental, one-group test-retest design to examine the effectiveness of teaching health-promotion knowledge to post-stroke patients who attended a researcher-designed educational program. Polit and Hungler (1999) define a quasi-experiment as "a study in which subjects are not randomly assigned to treatment conditions, but the researcher does
manipulate the independent variable and exercises certain controls to enhance the internal validity of the results" (p. 712). Since the researcher sought to determine the impact of teaching an educational program on health-promotion knowledge to post-stroke patients, this design was deemed appropriate.

Variables

The independent variable of this study was the researcher-designed educational program. Dependent variables of the study were pre- and post-mean arterial blood pressure, pre- and post-cholesterol levels, and knowledge of the participants. Patients were the controls in this study.

Setting, Population, and Sample

Data collection took place at a neurology physicians' office in a southeastern state. A quiet examination room with no music overhead was provided by the physicians. In addition, there were no interruptions by physicians or other staff.

The population was all post-stroke patients who presented to the physicians' office (N = 20). The convenience sample (N = 16) was all post-stroke patients
who met the criteria of experiencing a stroke, between the age of 30 and 90 years, presented to the physicians' office, agreed to participate, understood the spoken and written word, and were able to respond to the spoken and written word.

Methods of Data Collection

Data collection was obtained through a researcher-developed questionnaire consisting of 15 multiple-choice questions assembled to maintain objectivity (see Appendix A). The Stroke Knowledge Questionnaire was scored on a 15-point scale. Each question was assigned one point. A score of 0 to 5 points was gauged as high risk for recurrent stroke, 6 to 10 as moderate risk for recurrent stroke, and 11 to 15 as minimal risk for recurrent stroke. Validity of the questionnaire was obtained through a pilot study at a small factory in central Mississippi using a small convenience sample of workers. The questionnaire was designed to elicit information on the knowledge base of risk factors and lifestyle modifications associated with stroke from the study participants. A Cronbach alpha (coefficient alpha) was utilized to determine validity, and it was shown to be 0.9827. In addition, biophysiologic measurements of mean arterial pressure and cholesterol
level were obtained during the first and last office visits utilizing manual blood pressure equipment and serum blood drawn by lab personnel.

Permission from the Mississippi University for Women’s Committee on the Use of Human Subjects in Experimentation (IRB) (see Appendix B) was obtained. Next, consent was obtained from the neurology physicians whose office was used for data collection (see Appendix C). Collection of data began in April of 2000 and consisted of one day per week for 4 weeks. Mean arterial pressure was measured by the researcher. Participants were given a verbal explanation of the research endeavor and were asked to sign a consent form (see Appendix D). Mean arterial pressure was measured by the researcher on each participant. The participants were asked to complete the researcher-developed questionnaire and were then educated on risk factors and lifestyle modifications associated with stroke (see Appendix E). Education to participants lasted no longer than 10 minutes. Finally, cholesterol was obtained by the licensed phlebotomist.

The participants returned on July 13 and July 20, 2000, respectively, at which time the researcher measured mean arterial blood pressure and the licensed phlebotomist
obtained blood for a cholesterol level. In addition, the participants completed the researcher-developed questionnaire once again.

Pilot Study

A trial run was performed using the researcher-developed tool to determine the validity of the tool. The researcher used a small convenience random sample (N = 20) of participants from a factory in rural Mississippi. Results from the study included 70% (n = 14) at low risk, 30% (n = 6) as moderate risk, 35% (n = 7) of the 20 participants chose more than one answer for at least one question, and 6 of 7 chose more than one answer on question 3. The results led the researcher to reevaluate question 3 and redefine the directions so that they would be clearer for the reader. The initial question 3 asked the following: Which of the following symptoms is the most important to report to a health care professional? The new question asks the following: Which of the following symptoms should not be reported to a health care professional immediately? In addition, the researcher added gender to the demographic area of the tool because the researcher was unable to determine gender-related
scores. A Cronbach alpha score of validity was 0.9827 for the questionnaire.

Methods of Data Analysis

Descriptive analysis utilized in this study included the paired t test, means, and percentages, which examined data results from pre- and post-data collection. Polit and Hungler (1999) define descriptive statistics as those that are used to describe and summarize data. The paired t test determined the differences between the pre-mean arterial blood pressure and cholesterol level and post-mean arterial blood pressure and cholesterol level. In addition, the paired t test evaluated the outcome in relation to the intervention. Means and percentages examined resulting data from pre- and post-data collection with regard to demographics and the researcher-developed questionnaire.
physicians' office, agreed to participate, understood the spoken and written word, and were able to respond to the spoken and written word.

There were 8 male participants (50%) and 8 female participants (50%). The majority were Caucasian (n = 15, 93.75%), and African American accounted for 6.25% (n = 1). Fifty percent (n = 8) were over the age of 65, and 50% (n = 8) were under the age of 65 years. Age distribution is depicted in Table 1.

Table 1

Age Distribution of Sample by Frequency and Percentage

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>45 to 55</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td>56 to 65</td>
<td>7</td>
<td>43.75</td>
</tr>
<tr>
<td>66 to 70</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td>71 to 75</td>
<td>4</td>
<td>25.00</td>
</tr>
<tr>
<td>76 to 80</td>
<td>2</td>
<td>12.50</td>
</tr>
<tr>
<td>81 to 85</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>86 to 90</td>
<td>1</td>
<td>6.25</td>
</tr>
</tbody>
</table>

Note. N = 16. Percentages rounded to the nearest 10th place.
Results of Data Analysis

The first null hypothesis stated in this study was that there will be no significant difference in pretest versus posttest health-promotion knowledge in post-stroke patients who attend a researcher-designed educational program on risk factor modification. The participants, both pretest and posttest, were among the minimal risk for recurrent stroke group (0-5 = high risk; 6-10 = moderate risk, and 11-15 = minimal risk) (see Table 2).

Table 2
Paired t-Test Analysis of Pre- and Post-Knowledge Scores

<table>
<thead>
<tr>
<th>Score</th>
<th>df</th>
<th>M</th>
<th>SD</th>
<th>t</th>
<th>p*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-knowledge</td>
<td>14</td>
<td>11.187</td>
<td>1.60</td>
<td>-2.953</td>
<td>.009</td>
</tr>
<tr>
<td>Post-knowledge</td>
<td>14</td>
<td>12.437</td>
<td>1.31</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. N = 16.
*p < .05.

The second null hypothesis of the current study stated there will be no statistical difference in the pre-mean arterial pressure to post-mean arterial pressure in post-stroke patients who attend a researcher-designed educational program on risk factor modification. There was
a significant increase (p < .001) after analysis of paired t test (see Table 3).

Table 3
Paired t-Test Analysis of Pre- and Post-Mean Arterial Pressure

<table>
<thead>
<tr>
<th>Arterial pressure</th>
<th>df</th>
<th>M</th>
<th>SD</th>
<th>t</th>
<th>p*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-mean</td>
<td>14</td>
<td>99.500</td>
<td>7.607</td>
<td>-6.297</td>
<td>.001</td>
</tr>
<tr>
<td>Post-mean</td>
<td>14</td>
<td>114.187</td>
<td>11.010</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. N = 16. Percentages rounded to the nearest 10\textsuperscript{th} place.

*p < .05.

The final null hypothesis of the current research stated there will be no statistical difference in the pre-cholesterol level and post-mean post-cholesterol level in post-stroke patients who attend a researcher-designed educational program on risk factor modification. Paired t test analysis revealed a mean cholesterol difference of 10.500 (SD = 19.929) indicating no significant difference (p = .0523). The mean pre-cholesterol of the 16 participants was 208.187 (SD = 45.563). The mean-post cholesterol was 197.687 (SD = 45.294).
Adjustment was not made for age or race due to the small sample size. After adjustment for gender, there was no significant difference. Therefore, gender-related data were not discussed.

In summary, a brief overview of results was discussed. There was a significant increase in scores in regard to mean arterial pressure and knowledge. There was no significant difference discovered regarding cholesterol level. No significant differences were identified by gender. Age and race were not analyzed due to the small sample size.
Chapter V

The Outcomes

Stroke is the third leading cause of death which can be mediated through health knowledge of multiple-risk factors, such as hypertension, fat intake, and cholesterol level. The purpose of this quasi-experimental, one-group test-retest study was to evaluate the effectiveness of teaching health-promotion knowledge to post-stroke patients guided by Pender’s Health Promotion Model.

A pilot study was performed using the researcher-developed stroke questionnaire with Cronbach alpha of 0.9827. The tool was modified according to feedback. Participants at a neurology physicians’ office were provided a verbal explanation of the research endeavor and asked to sign a consent form. Mean arterial pressure and cholesterol level were recorded by the researcher. The participants were asked to complete the provided researcher-developed questionnaire. Paired t test revealed there was a significant increase (p = .009) in mean scores on the questionnaire. There was a significant increase
(p < .001) in mean arterial pressure after analysis of paired t test but no significant difference (p = .0523) in mean cholesterol.

Summary of Findings

For the purpose of this study, three research hypotheses were developed and analyzed by paired t test, means, and percentages. The first null hypothesis stated in this study was there will be no significant difference in pretest versus posttest health-promotion knowledge in post-stroke patients who attend a researcher-designed educational program on risk factor modification. After data analysis, paired t test revealed there was a significant increase (p = .009); therefore, the null hypothesis was rejected. There was an increase in health-promotion knowledge following the educational program.

The second null hypothesis stated there will be no statistical difference in the pre-mean arterial pressure to post-mean arterial pressure in post-stroke patients who attend a researcher-designed educational program on risk factor modification. Analysis of paired t test demonstrated a significant increase (p < .001). The second null hypothesis was rejected. There was a significant difference in the pre- to post-mean arterial pressure.
(p < .001) in this sample, however, not in the desired direction. The mean arterial pressure actually increased rather than decreased which was unexpected.

Null hypothesis three stated there would be no statistical difference in pre-cholesterol level to post-cholesterol level in post-stroke patients who attend a researcher-designed educational program. This hypothesis was accepted because no significant difference (p = .0523) in the paired t test was discovered.

The current research study sought to examine the effectiveness of teaching health-promotion knowledge to post-stroke patients. By increasing the knowledge base of participants, the researcher was able to demonstrate a significant increase in knowledge among post-stroke patients who attended a researcher-designed educational program on risk factors associated with stroke.

Discussion

According to the first null hypothesis utilized in this research endeavor, there would be no difference in pre- and post-knowledge in post-stroke patients who attended an educational program on risk factors and dietary modifications associated with stroke. However, there was a significant increase in knowledge of risk
factors and lifestyle modifications of stroke after attending the researcher-designed stroke educational program. This finding was similar to Rodgers et al. (1999) who suggested that patients attending a stroke education program have higher scores on knowledge of stroke than control groups, suggesting there was improved patient knowledge about stroke.

Similarly, Stern et al. (1999) indicated that an educational program, Stroke: It Could Be You, increased knowledge of stroke risk factors, warning signs, and action to take when warning signs are present, all of which were included in the current researcher-designed educational program. These results indicated that a disease specific educational program may enhance the client’s knowledge base.

Lorig et al. (1999) evaluated the effectiveness of a self-management program for chronic disease, such as stroke, as measured by changes in health behaviors, health status, and health service utilization. Although the current research was not measuring those variables specifically, this study was guided by Pender’s Health Promotion Model, which is based on the premises of health promotion and disease prevention and outlines variables
such as perceived benefits of behaviors and health status. Lorig et al. (1999) concluded that the Chronic Disease Self-Management Program was a successful intervention in increasing healthful behaviors, maintaining, or improving health status, and decreasing rates of hospitalization. The current researcher’s outcomes lend support to an educational intervention as a productive means to improve health promotion to prevent recurrent stroke.

Participant results of improved knowledge may be attributed to a number of factors. There may have been a greater awareness of risk factors associated with stroke and recurrent stroke due to knowledge gained after attending the researcher-designed educational program. In addition, the cue to action of a previous stroke may have mobilized participants during the course of the study to learn more health-promoting behaviors.

In the current research there was a significant increase (p < .001) in post-mean arterial pressure results. Therefore, the researcher failed to accept the second null hypothesis, which stated there would be no significant difference in pre- and post-mean arterial pressure in post-stroke patients who attend a researcher-designed educational program. The researcher was unable to
show a decrease in mean arterial blood pressure after attendance of a researcher-designed educational program emphasizing modifiable risk factors associated with stroke.

Warkentin (1998) defined hypertension as a term for blood pressure that is consistently higher than 140/90. Hypertension remains a significant risk factor for recurrent stroke as explained by Tanne et al. (1999). Tanne et al. (1999) provided information supporting fatal stroke increased directly with increasing systolic and diastolic pressure. Likewise, Reyes-Iglesias et al. (1999) postulated that hypertension was the most common risk factor associated with stroke.

The Eastern Stroke and Coronary Heart Disease Collaborative Research Group (1998) also provided evidence of a positive association between diastolic blood pressure and stroke. Similarly, the Prospective Studies Collaboration (1995) also demonstrated an independent association between diastolic blood pressure and stroke. Both of these studies were basis for measuring mean arterial pressure which was representative for the current study indicating that hypertension is a relatively high-risk factor for stroke.
Ascherio et al. (1998) directly related various dietary factors that were associated with hypertension. Ascherio et al. (1998) provided strong support for a preventative effect of a diet rich in potassium, magnesium, and cereal fiber on stroke. The authors suggested that there was a strong and significant finding of reduced risk of stroke among men with diagnosed hypertension in relation to diets with high potassium, cereal fiber, and magnesium. This study was a guideline for the teaching of lifestyle modification and also measured blood pressure as well as educated participants on dietary modifications.

Because two of the three hypotheses were not significant or were not significant in the desired direction, the author offers the following potential reasons: faulty methodology when mean arterial pressures were assigned at too varied a time from patient arrival, small sample size, and insufficient interval between pretest and posttest time involved in data collection. However, the environment and health status of the participants may also have contributed to present results. Time spent in the waiting area, exhaustion from the travel to the office, and stress may have affected the mean
arterial pressure of the participants. One would expect someone who had been at rest to have a lower mean arterial blood pressure than one who had physical exertion from the walk to the office from the parking lot. During pre-mean arterial pressure collection, patients were filling out forms, which necessitated a longer wait time in the office. When patients returned for posttest mean arterial pressure collection, there usually was a shorter interim in the office.

Participants who were in an improved state of health may have experienced lower blood pressure than those who were in a declining state of health. Additionally, no attempt was made in the study to control the level of health of the participants. Hypertensive medication compliance was not controlled in this research. Those participants who were more compliant with their medication regimen were more likely to experience lower blood pressures than those participants who were noncompliant. Knowledge about the risk of stroke does not always prompt compliance with all avenues of health promotion.

According to Tong (1999), consumption of foods high in fat, cholesterol, and salt increases the risk of stroke. The third null hypothesis of the current research
stated there would be no difference in pre- and post-cholesterol levels of post-stroke patients who attended a researcher-designed educational program on risk factors associated with stroke. The post-cholesterol level measured in this study did not significantly decrease; however, there was a downward trend; therefore, high cholesterol remains a significant risk factor. Tanne et al. (1999) determined that stroke increased directly with low HDL cholesterol. Similarly, the Eastern Stroke and Coronary Disease Collaborative Research Group (1998) discovered a positive association of cholesterol with stroke, particularly non-hemorrhagic.

Of particular interest with the results of post-cholesterol level was the number of participants whose cholesterol level did demonstrate a decrease. While not at a level of significance, there was an overall decrease in the cholesterol level of the sample. One factor that may be attributed to the lack of significance in the cholesterol level was the small sample size. Perhaps, with a larger sample size, greater statistical power may have been demonstrated. Because of the limited amount of time from initiation to the conclusion of the study,
cholesterol levels could not have demonstrated a significant change.

Conclusions

Pender’s Health Promotion Model contains many variables that contribute to a patient’s willingness to participate in health-promoting behaviors: perceived health status, perceived benefits of behaviors, perceived barrier to health-promoting behaviors, and prior related behavior. Because there was a significant increase in knowledge of stroke risk factors and lifestyle modifications, the researcher suggested that the patients perceived the educational tool as a benefit and source for health-promoting behavior. Based on the data analysis inferred, the researcher suggested that the patients’ perceived health status was a cue to action to pay attention and learn material taught during the education session.

In this study there was a significant increase in post-mean arterial pressure. The researcher recognized that, although many patients were more knowledgeable about risk factors and lifestyle modifications, the patients may not have implemented a change of lifestyle because of longstanding previous behavior and habits of a lifetime.
In addition, there may have been a methodological weakness that led to the increase in mean arterial pressure. There was increased physical exertion for the older adults when walking from the parking lot to the physicians' office. Because the patients had previously completed their paperwork, when a patient arrived the researcher measured the mean arterial pressure. As a result, the pressure may have been higher than the previous pressure because the patient did not have as long of a resting state prior to measurement of the mean arterial pressure. In addition, some older patients experienced anxiety when coming to a physician's office which could have had an influence on mean arterial pressure. One factor that may have contributed to anxiety was the white coat worn by the researcher.

Changes in the procedure that would have been beneficial to the researcher was allowing time for rest during post-measurements and more time allotted for conversation prior to data collection. Rest would be important if timed appropriately during pre- and post-data collection. By allowing more time to interact with patients, a resting state would be achieved, which would possibly decrease anxiety in the patient.
The researcher accepted the null hypothesis that there was no significant difference in post-cholesterol level. This outcome may have been due to perceived barriers to health-promoting behaviors, small sample size, or limited time for data collection. Changing the past dietary habits is not a simple achievement and takes enormous effort. However, if the patient views change as too difficult, he or she may not choose to change past behavior. Additionally, there could have been a significant difference demonstrated with a larger sample measured over 6 months. Researchers agree that, in order for a significant change to be demonstrated in patients with high cholesterol who are implementing dietary changes into their life, the normal time for that difference to appear is at least 6 months.

Therefore, the researcher concluded that results might vary significantly in a study with an extended collection period and a larger sample size. Because the researcher demonstrated an increase in knowledge in patients who attended the educational program, the current study suggests the need for further studies about the need for prevention through education in the nurse practitioner clinic and community.
Implications for Nursing

Several implications for the nurse practitioner were developed from this research endeavor. These implications concentrated on the areas of theory, practice, research, and education.

Theory. Pender’s Health Promotion Model presents nursing as a practice that assists the patient in health promotion and modification of past behaviors. In order to assist patients, nurse practitioners must understand factors that influence a patient’s decision making about change, such as education and personal knowledge. The gradual repetition of lifestyle changes needed to decrease the risk of recurrent stroke is where the nurse practitioner can have a significant impact.

Practice. Identification of the effectiveness of teaching health-promotion knowledge has significance for the nurse practitioner in the primary care setting. A primary role of the nurse practitioner in relation to stroke is prevention, education, and evaluation of modifiable risk factor knowledge. According to Zimmerman (1996), one third of all stroke survivors experience some form of disability. Because of an increase in disability among stroke patients, demands on health care and other
support systems continue to rise. If the nurse practitioner can modify even some patients' behaviors, patients' lives can be enriched and thousands of health care dollars can be conserved.

Tong (1999) concluded that consumption of foods high in fat, cholesterol, and salt increases the risk of stroke, and Warkentin (1998) suggested that essential hypertension may be worsened by eating a diet high in fat and salt. As a primary care provider, it remains very important that the nurse practitioner in the primary care setting teach patients health-promotion knowledge which may decrease the chance of stroke and recurrent stroke.

Research. Since there was no significant difference concerning knowledge of health modification in stroke patients by nurse practitioners, more research should be conducted by nurse practitioners in this area. Much is known regarding risk factors associated with stroke and recurrent stroke. Further research is needed to allow the nurse practitioner to assess the stroke patient thoroughly as well as determine the knowledge base of the patient on risk factors and modification of lifestyle in the prevention of recurrent stroke.
In addition, nurse practitioner research adds to the current body of research allowing nurse practitioners to expand their knowledge base, as well as assure their place in the health care realm. Nurse practitioners, through research, may add value to the health care system by providing current patient care. The nurse practitioner may use research to develop preventive education in the community, develop screening systems, and improve standards of care for patients abroad.

Education. Due to increasing occurrence of recurrent stroke and an aging population, there is a tremendous need for nurse practitioner education in the primary care setting. This education should focus on teaching health promotion of lifestyle modification in disease prevention. Although risk factors are taught by some nurse practitioners, little time is spent by nurse practitioners and other health care providers on teaching the stroke patient lifestyle modifications. It remains the nurse practitioner’s responsibility to ascertain the base of knowledge for each stroke patient on risk factors and lifestyle modifications in the prevention of recurrent stroke through health-promoting behaviors.
Limitations of the Study

Limitations of the study included size, homogeneity of the sample, and limited time for collection of data. This study was limited to a sample size of 16 participants, and 15 of those participants were Caucasian, thus ethnic focus was limited. Only one participant was African American who, as a group, are a high-risk group for recurrent stroke.

In addition, data collection was limited to a 2-month time frame. Had more time been allotted for data collection, there potentially could have been different outcomes in cholesterol level.

Recommendations

Because of certain limitations acknowledged by the researcher, recommendations include, but are not limited to, the following:

1. Replication of the current research endeavor utilizing a larger sample size.

2. Conduction of a longitudinal study to determine the effectiveness of teaching health-promotion knowledge to post-stroke patients.

3. Replication of the current research endeavor utilizing multiple sites for data collection.
4. Conduction of a study comparing the effectiveness of teaching health-promotion knowledge to participants of varying races.

5. Conduction of a study where participants are required to keep a diary of daily dietary intake.
References


APPENDIX A

STROKE KNOWLEDGE QUESTIONNAIRE
Stroke Knowledge Questionnaire

<table>
<thead>
<tr>
<th>Date:</th>
<th>MAP:</th>
<th>Cholesterol Level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(This area to be filled out by office personnel or researcher.)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Identification (initials plus last 4 digits of Social Security number):

Age: ________

Gender:
- [ ] a. Male
- [ ] b. Female

Race: Check (✓) one.
- [ ] a. Caucasian
- [ ] b. African American
- [ ] c. Hispanic
- [ ] d. Other. Please identify: ________

Other illnesses: Check (✓) all that apply.
- [ ] a. Diabetes
- [ ] b. High blood pressure
- [ ] c. Arthritis
- [ ] d. Blood clots
- [ ] e. Heart problems
- [ ] f. Other. Please describe: ________

Please check (✓) the letter of the correct answer. Note: There is only one correct answer for each question.

1. Which of the following food is lowest in fat?
- [ ] a. Broccoli
- [ ] b. Potato chips
- [ ] c. Ice cream
- [ ] d. Bread
2. Which of the following is a BIG risk factor for having a stroke?
   - a. High blood pressure
   - b. Tension
   - c. Allergies
   - d. Obesity

3. Which of the following symptoms should not be reported to a health care professional immediately?
   - a. Problem hearing
   - b. Blurred vision
   - c. Unsteadiness while standing
   - d. Sudden severe headache
   - e. All of the above should be reported.

4. Choose the BEST exercise plan.
   - a. Fast pace walking 30 minutes a day, 3 days a week
   - b. Running for one hour once a week
   - c. Sex once a week
   - d. Lifting weights for 15 minutes weekly

5. Which of the following foods contain the LEAST amount of sugar?
   - a. Donut
   - b. Banana
   - c. Pudding
   - d. Candy bar

6. Which of the following decreases high blood pressure BEST?
   - a. Stress
   - b. Medication
   - c. Relaxation
   - d. Exercise

7. You should eat at least 6 to 8 servings of what each day?
   - a. Fruit
   - b. Bread
   - c. Fat
   - d. Meat
8. A healthy snack would include which of the following?
   - a. Potato chips
   - b. Candy bar
   - c. Apple
   - d. Ice cream bar

9. Which of the following would mean a person has high blood pressure?
   - a. 120/80
   - b. 110/76
   - c. 80/50
   - d. 140/90

10. Which of the following should you eat 2 to 3 servings of each day?
    - a. Meat
    - b. Fruit
    - c. Eggs
    - d. Fat

11. Which of the following makes the blood vessels in the body get smaller?
    - a. Weight lifting
    - b. Smoking
    - c. Roller blading
    - d. Riding a bicycle

12. Which of the following would greatly decrease the risk of stroke?
    - a. Decrease fat in diet
    - b. Decrease cholesterol
    - c. Control high blood pressure
    - d. Stop smoking
    - e. All of the above

13. A person should eat how many servings of milk, yogurt, or cheese each day?
    - a. 1 to 2
    - b. 2 to 3
    - c. 4 to 6
    - d. 7 to 9
14. Which of the following is MOST important in controlling high blood pressure if you have it?
   - a. Exercise
   - b. Smoking
   - c. Take your prescribed medicine
   - d. Decrease your amount of rest

15. When reading food labels, what information is MOST important for preventing a stroke?
   - a. Fats and sodium
   - b. Vitamins and minerals
   - c. Food colors and types
   - d. Calories and water content
APPENDIX B

APPROVAL OF MISSISSIPPI UNIVERSITY FOR WOMEN'S COMMITTEE ON THE USE OF HUMAN SUBJECTS IN EXPERIMENTATION
April 26, 2000

Ms. Angela Atkinson
P. O. Box W-910
Campus

Dear Ms. Atkinson:

I am pleased to inform you that the members of the Committee on Human Subjects in Experimentation have approved your proposed research as submitted.

I wish you much success in your research.

Sincerely,

Sheila V. Adams, Ed.D.
Interim Vice President for Academic Affairs

SA:wr

cc: Mr. Jim Davidson
    Dr. Patsy Smyth
APPENDIX C

PERMISSION OF PHYSICIANS TO CONDUCT STUDY
June 11, 2000

Dr. Ruth Fredericks  
Dr. Adele Thiel  
1020 River Oaks Drive  
Flowood, MS 39208

Dear Drs. Fredericks and Thiel:

I am a graduate student at Mississippi University for Women. I recently spoke with you both in regards to my required thesis proposal. We discussed using your office and patients to obtain needed research on post stroke patients. A stroke knowledge questionnaire will be given to each patient on the first office visit and on the second visit which will be one month later. In addition there will be an intervention in the middle consisting of teaching health promotion knowledge. I would also like to use mean arterial pressure and lipid panel results obtained by your trained lab personnel on each visit. I assure you both consent from each patient will be obtained prior to the initial pre test. If there are any questions please contact me at 601-829-9107. If you both are in agreement with the above please sign below. Thank you for your time and cooperation.

Sincerely,

Angela T. Atkinson

I hereby grant permission for Angela Atkinson to conduct the study.

Angela T. Atkinson

Dr. Ruth Fredericks  
Dr. Adele Thiel
APPENDIX D

PARTICIPANT CONSENT FORM
Participant Consent Form

Title of Study:
Teaching Health-Promotion Knowledge to Post-Stroke Patients

My name is Angela Atkinson, and I am a registered nurse currently enrolled in the graduate nursing program at Mississippi University for Women. As part of requirement for graduation, I am conducting a research study on the effects of teaching post-stroke patients knowledge to prevent future strokes. The results of the study will provide information to health care providers for future teaching.

If you agree to participate in this study, you will be asked to complete a 15-item Stroke Knowledge Questionnaire and attend a researcher-designed educational program which lasts no longer than 10 minutes. In addition, blood pressure and cholesterol level measured by the physicians will be used in the study. The information that you give will be strictly confidential and will be used only for the purpose of this study. The decision to participate or not participate will in no way affect the type of care you receive from your physician. Your name will not be used within the study. Your participation is strictly voluntary and you may withdraw at any time. For the purpose of coding the questionnaire and keeping confidentiality, your initials and last four digits of your Social Security number will be used.

Please try to answer questions to the best of your knowledge. Thank you for your consideration to participate in this study.

Angela Atkinson

I have read the above information. I understand the meaning and the purpose of this study and understand that by my signature I agree to participate in the study.

Signature of Participant

Date
APPENDIX E

TEACHING OUTLINE:
STROKE EDUCATION
Stroke Education

What is a stroke?

A stroke is where blood vessels carrying oxygen and other nutrients to a specific part of the brain suddenly burst or become blocked. This results in brain cell death. In other words, the part of the brain which did not get oxygen dies.

What are the risk factors associated with stroke?

There are two types of risk factors: Non-modifiable and modifiable. Non-modifiable risk factors are those which cannot be changed, such as race, gender, and age. Stroke occurs more in African Americans and more in men than women. Most people who die from strokes are over the age of 65 years.

Modifiable risk factors are those that can be changed to decrease the chance of recurrent stroke. Those include high blood pressure (blood pressure greater than 140/90), smoking, diet, and high cholesterol.

How can I help prevent another stroke?

Lifestyle can be changed which will help to prevent another stroke.

1. Take high blood pressure medicine every day as directed. Do not skip medicine. This is the most important way to control your blood pressure which decreases your risk of stroke.

2. Decrease salt (sodium) in your diet. Canned foods are usually high in salt. When you read food labels, make sure the food is low in fat and salt (sodium). If you eat a lot of salt, it can increase your blood pressure which increases your risk of stroke.

3. Eat foods that are baked, broiled, or roasted and not fried. Eat meat that has had the skin trimmed off. You should eat 2-3 servings of lean meat every day. Food that is fried or high in oil can increase your
cholesterol level. Cholesterol is what clogs your arteries and increases your risk of stroke.

4. Eat foods that are low in fat and sugar such as fruits and vegetables. You should eat 6 to 8 servings of fruits every day. This will help you lose weight and help your high blood pressure. Fruits and vegetables have potassium, fiber, and special vitamins that help prevent stroke called antioxidants.

5. You should eat 2-3 servings of milk, yogurt, or low-fat cheese every day to get needed vitamins and minerals. Calcium is connected to blood pressure and diets with 1200 mg calcium help control blood pressure and stroke.

6. Loss weight if you are overweight. This will help decrease your blood pressure which helps decrease your risk of stroke. Ten pounds is better than no pounds.

7. Stay away from alcohol. Alcohol can increase your blood pressure and increase your risk of stroke.

8. Exercise 30 minutes a day for 3 days every week. This can help decrease blood pressure and help you lose weight. Exercise also increases circulation to the heart and brain.


What should I report to my health care provider?

1. Numbness one side of your body

2. Have sudden trouble doing things for yourself that you usually do such as brushing your teeth

3. Sudden change in vision

4. Sudden change in speech or difficulty speaking

5. Sudden severe headache