Gender Differences in Importance of Stroke Health Beliefs in Timing of Seeking Treatment for Acute Stroke Symptoms

Brenda S. Nyenhuis
Grand Valley State University

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GENDER DIFFERENCES IN IMPORTANCE OF STROKE HEALTH BELIEFS IN TIMING OF SEEKING TREATMENT FOR ACUTE STROKE SYMPTOMS

By

Brenda S. Nyenhuis

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Thesis Committee Members:
Phyllis Gendler, PhD, RN, CS, FNP, GNP
Louise O'Donnell, MS, CNS, RN, ANP
Lawrence J. Baer, PhD
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ABSTRACT

GENDER DIFFERENCES IN IMPORTANCE OF STROKE HEALTH BELIEFS IN TIMING OF SEEKING TREATMENT FOR ACUTE STROKE SYMPTOMS

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The purpose of this study was to describe gender differences in importance of stroke health beliefs in timing of seeking treatment for acute stroke symptoms. The data came from a larger study titled "Discovering Factors Related to the Timing of Seeking Health Care for Acute Stroke Symptoms" (O'Donnell, Roberts, Ruhlandt, & Baer, 1999). The current study included 51 subjects who were asked to rate the importance of 13 belief statements on their decision to seek treatment. The Health Belief Model (HBM) was the conceptual framework for this study.

Data were analyzed using frequencies, percentages and Mann-Whitney U. There were no significant differences between gender and importance of perceived susceptibility, perceived seriousness, perceived barriers, or knowledge, in the stroke victim’s timing to seek treatment. Although females have higher morbidity and mortality rates, no statistical difference was found between beliefs and timing to seek treatment.
Dedication

I want to thank my family and friends for all their love and support as I reached for my goal. A special thank you to Denise, Karen, Mary, and Nadine for their daily words of encouragement and to my husband Jeff for being there for me through three years of school.
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CHAPTER ONE
INTRODUCTION

Stroke continues to be a devastating disease in our country today. Half a million people experience a stroke each year and approximately 150,000 stroke victims survive. Stroke is ranked as the third leading cause of death and a major cause of disability (American Heart Association, 1995). Adams et al. (1994) state that stroke leaves thousands of victims with permanent disabilities that require much emotional as well as financial assistance. It is estimated that up to $20 billion annually is spent in relation to stroke (Adams et al.). Unfortunately, stroke can impact not only the patient and family but also the entire community.

Despite these statistics, stroke victims continue to delay in seeking treatment at the onset of stroke symptoms. Some variables that contribute to this delay include stroke symptoms perceived as not serious enough for treatment, patients uneducated about signs and symptoms of stroke, and inability to call for help at onset of symptoms (Feldman et al., 1993; Williams, Bruno, Rouch, & Marriott, 1997).

Studies have shown that early treatment for ischemic stroke is more effective than delayed treatment. The use of tissue plasminogen activator (t-PA) within six hours or less of onset of ischemic stroke has been shown to be an effective treatment in patients who qualify and seek treatment early (Macabasco & Hickman, 1995; Azzimondi, et al., 1997; Davalos, Castillo, & Martinez-Villa, 1995). Since the majority of ischemic strokes
are related to decreased cerebral perfusion caused by an occlusion, thrombolytic therapy (t-PA) can help to restore blood flow to surrounding tissues (Macabasco & Hickman, 1995). According to the National Institute of Neurological Disorders and Stroke t-PA study group (1995), treatment with intravenous t-PA within three hours of onset of ischemic stroke improved clinical outcomes at three months. With progress in the treatment of stroke, it is becoming imperative that stroke victims seek medical assistance immediately at the onset of stroke symptoms.

Treatment for Stroke

Successful treatment for ischemic stroke patients is dependent on early arrival to the hospital where medications such as tissue plasminogen activator (t-PA) can be administered. In June of 1996, the U.S. Food and Drug Administration approved the use of t-PA within three hours of onset of ischemic stroke symptoms (Broderick, 1998). Also, new medications called neuroprotectants are in the advanced stages of development and it is hoped they will make recovery from stroke possible since t-PA cannot treat every patient with ischemic stroke (Dyker & Lees, 1998). With the onset of new therapies, it is important for patients to seek treatment early.

Delay in Seeking Treatment for Myocardial Infarction

Delay in seeking treatment has been addressed mostly in the literature on myocardial infarctions (MI) (Dracup & Moser, 1991; Moser & Dracup, 1993; Reilly, Dracup, & Dattolo, 1994). In the past, many persons experiencing an MI delayed seeking treatment. Some of the variables associated with delay include hypertension, diabetes, being of African-American descent, consulting with family and/or physician, advanced age, self-treatment and the presence of a family member (Dracup & Moser, 1991; Reilly,
et al., 1994). Even with the development of new treatments to decrease mortality from MI, many patients continued to delay in seeking treatment. Only after increased public education and awareness of the signs and symptoms of MI did patients start to seek treatment earlier (Alberts, Perry, Dawson, & Bertels, 1992).

Little research has been conducted on the delay in seeking treatment for stroke symptoms. Azzimondi et al. (1997) looked at variables related to hospital time on admission after stroke and discovered that subjects with milder stroke symptoms were delaying seeking treatment. Other studies have discovered that living alone, occurrence of symptoms at night, referral patterns, and retired working status have contributed to the delay in seeking treatment for onset of acute stroke symptoms (Harper, Haigh, Potter, & Castleden, 1992; Fogelholm, Murros, Rissanen, & Ilmavirta, 1996; Jorgensen, Nakayama, Reith, Raaschou, & Olsen, 1996).

Although some research has been conducted on delay in treatment of stroke victims, little is known about the reasons why victims wait to seek medical care. Nurses caring for stroke patients may struggle with those who have waited too long to come in and now are permanently disabled. In order for nurses to promote early treatment for stroke symptoms, it is necessary to know the factors that influence a victim’s decision to seek treatment. If factors related to delay in treatment can be identified, action plans can be put into place to promote early presentation for treatment with onset of stroke symptoms. Nursing can have an impact in this area by educating patients on stroke and emphasizing the importance of seeking early treatment.
Gender Differences

Gender differences in seeking care for symptoms can be traced back in history to the mid 19th century, where it was common for women to “react to difficult situations” by becoming sick. The culture of the times bred these feelings since women were viewed as fragile and more prone to ailments due to their reproductive systems (Ehrenreich & English, 1978). At the turn of the 20th century, the theory was that a woman’s uterus and ovaries dictated all diseases in a woman’s body, and therefore were the reason for all female complaints. Women were often viewed to be hysterical and were labeled as having a “disease of the uterus”, when seeking treatment instead of having a valid illness (Ehrenreich & English, 1978).

Women’s health care has evolved over the years to include holistic, preventive care with an emphasis on health promotion and wellness orientation. Although these changes have occurred, women’s symptoms are often discounted or not taken seriously, which may delay treatment (Collins, 1994). A study by Penque et al. (1998) looked at diagnosis and treatment between men and women for coronary heart disease. Overall, women were not taken as seriously as the men and therefore did not receive as much treatment as the men. Moreover, women and men have been found to experience symptoms differently, such as with the chest pain of MI (Meischke, Larsen, & Eisenberg, 1998).

Purpose of the Study

Based on the fact that women’s mortality rate for stroke is greater than men, that women tend to delay in seeking treatment for MI and have their symptoms minimized, it is important that we understand gender differences in seeking treatment for stroke.
symptoms. In order to improve the delay in seeking treatment for acute stroke symptoms, the variables associated with timing of entry into the health care system need to be identified. The purpose of this study is to describe gender differences related to the importance of stroke health beliefs in timing of seeking treatment for acute stroke symptoms.
Conceptual Framework

The Health Belief Model (HBM) provided the conceptual framework for this study. The HBM was developed in the 1950s by a group of social psychologists at the U.S. Public Health Service to try to explain preventive health behavior. Later, the model was expanded to include illness and sick role behaviors. The HBM is a psychosocial model that provides a framework for understanding behaviors that are related to a person's attitudes or beliefs (Rosenstock, 1974).

The variables of the HBM include:

**Perceived susceptibility.** The individual's own subjective risks of contracting a condition (Rosenstock, 1974).

**Perceived seriousness.** The individual's perception of the outcome of contracting a disease. The degree of perceived seriousness is dependent on the degree of emotion created when thinking about the disease or by the difficulties the individual believes the disease would generate (Rosenstock, 1974).

**Perceived threat.** The combination of perceived susceptibility and perceived seriousness (Rosenstock, 1974).

**Perceived benefits.** Beliefs regarding the effectiveness of a particular action or health behavior. The likelihood of an individual following a recommended health
behavior increases if the individual sees the action as feasible or efficacious (Rosenstock, 1990).

**Perceived barriers.** Perceived or actual factors such as pain, cost, or inconvenience, that prevent an individual from taking action (Rosenstock, 1974).

**Knowledge.** Information an individual possesses about a particular condition or disease that has an indirect effect on health beliefs and behavior. Rosenstock (1974) states that “perceived susceptibility and severity have a strong cognitive component and are at least partly dependent on knowledge” (p. 331).

**Likelihood of action.** The perceived benefits minus the perceived barriers. The likelihood of following a recommended health behavior depends in part on how the individual weighs the perceived benefits against the perceived barriers (Becker, Drachman, & Kirscht, 1974).

**Health motivation.** An individual’s general concerns for health that influence the tendency to seek health-related information and participate in health-related behaviors (Becker, et al., 1974).

**Modifying factors.** Demographic, sociopsychological, and structural factors that “may affect the individual’s perception and thus indirectly influence health-related behavior” (Rosenstock, 1990, p. 44). Examples of demographic variables include age, gender, income, and education. Sociopsychological variables may include personality, social class, or peer pressure. Structural variables include prior experiences or knowledge about the disease or condition.
Cues to action. Factors that act as stimuli or cues for the recommended action or health behavior change. Cues may be internal, such as personal beliefs, or external, such as media influence or personal advice (Rosenstock, 1974).

Self-efficacy. Rosenstock, Stretcher, & Becker (1988) recommended adding self-efficacy as a variable for further explaining health behavior. Self-efficacy is the individuals' beliefs about their capability of following the recommended action. For a change in behavior to succeed, the individual must feel competent or self-effacious to create a health behavior change (Rosenstock, et al., 1988).

The model as described by Rosenstock (1974) hypothesizes that for an individual to follow a certain health behavior, the individual perceives susceptibility to a disease, views the disease as threatening or severe, sees benefit in taking action, and perceives few barriers to performing the action (See Figure 1). In summary, the HBM, a psychosocial model, can be utilized to explain and predict health behaviors in relation to attitudes and beliefs (Janz & Becker, 1984)

For the purposes of this study, the preventive health behavior or recommended health-related behavior is seeking early treatment for acute stroke symptoms. In order for this action to occur, the stroke victim must feel susceptible to a stroke, believe that stroke is a serious disease, view the symptoms as threatening while realizing that seeking early treatment would be beneficial, and perceive few barriers to seeking treatment (Rosenstock, 1974; Janz & Becker, 1984). (See Figure 2).

Beliefs and attitudes of the individual experiencing the symptoms will likely affect timing of seeking treatment for acute stroke symptoms. The decision to seek treatment early or to delay at the onset of stroke symptoms may be influenced by: age,
Figure 1: THE HEALTH BELIEF MODEL

Demographic variables (age, gender, race, ethnicity, etc.)

Sociopsychological variables (personality, social class, peer and reference group pressure)

Structural variables (knowledge about the disease, prior contact with the disease, etc.)

Perceived Benefits to Preventive Action minus Perceived Barriers to Preventive Action

Perceived Threat of disease "X"

(Perceived Susceptibility + Perceived Seriousness)

Likelihood of Taking Recommended Preventive Health Action

Cues to Action
- Mass media campaigns
- Advice from others
- Health care provider reminder postcards
- Illness of family member or friend
- Newspaper or magazine article

(Adapted from Becker, Drachman, and Kirscht, 1974)
Figure 2: THE HEALTH BELIEF MODEL AND SEEKING TREATMENT FOR ACUTE STROKE SYMPTOMS

**Individual Perceptions**

- Perceived Susceptibility to Stroke
- Perceived Seriousness of Stroke

**Modifying Factors**

- Demographics: age, gender, race, income, education, insurance, work status
- Structural Variables: knowledge of stroke, previous experience with stroke

**Likelihood of Action**

- Perceived Threat
- Cues to Action: Mass media campaigns, advice from others, health care provider reminder cards, illness of family member or friend, newspaper or magazine article

(Adapted from Becker, Drachman, and Kirscht, 1974)
race, gender, past history and knowledge of stroke, or if the victim were alone at the time of the symptoms. This study will focus on gender in the importance of perceived susceptibility to stroke, perceived seriousness of stroke, perceived barriers, and knowledge of stroke in timing of seeking treatment for acute stroke symptoms.

Literature Review

Although research utilizing the HBM is varied and broad, no studies exist that examine gender differences in relationship to stroke health beliefs and timing of seeking treatment for acute stroke symptoms. The literature review focuses on stroke, general information on the HBM including knowledge, delay in seeking treatment, and gender differences in seeking and receiving treatment.

Stroke. Stroke is the third leading cause of death for all ages in the United States. According to the National Data Book of the U.S. Department of Commerce and Bureau of the Census, in 1995, 60.2 persons per 100,000 experienced a stroke (Daley, Price, & Riche, 1997). According to the statistics in 1994, out of 153.0 persons per million whom experienced a stroke, 132.5 persons were Caucasian and 18.0 were of African-American descent. In 1994, the number of deaths attributed to stroke was 153,306 in which 39% were male and 61% female (Daley et al).

When a person experiences stroke symptoms, the brain undergoes ischemia or absence of oxygen to the cells. The death of brain cells begins about 4 minutes from the deprivation of oxygen. The core of cells experiencing an ischemic stroke contains neurons that will die if bloodflow is not restored quickly, but a core adjacent to the ischemia, called the penumbral region, may be salvageable (Alberts, Barsan, Brass, & Starkman, 1994). This makes time to treatment important since the victim may receive
medications that may salvage some of these neurons. In other words, a stroke is a “brain attack” and is similar to a heart attack in that prompt treatment is imperative.

**HBM.** The HBM provides a framework for looking at the relationship between gender differences and timing to seek treatment for acute stroke symptoms. The structure of the model suggests that if one is to seek immediate treatment for stroke symptoms one must perceive susceptibility to a stroke, view a stroke as severe or threatening, see benefit in seeking treatment early, and perceive few barriers to that action.

Janz and Becker (1984) conducted a review of 29 HBM related studies that were published between 1974 and 1984, with a formulation of 17 studies conducted before 1974 and a summary of all 46 studies. The HBM variables that were examined in each study included perceived susceptibility, severity, benefits, and barriers. The variables were examined in each study in relation to the specific health-related behavior that was being studied. The significance of the variables, in relation to behaviors, with all of the studies combined ranked in order with barriers at 89%, susceptibility 81%, benefits 78%, and severity 65%. Overall, Janz and Becker (1984) stated that substantial empirical evidence supports HBM variables in explaining and predicting an individual’s health-related behaviors.

Hochbaum (1956) conducted a study to determine why people do not obtain diagnostic x-rays for tuberculosis (TB) when they are made available. A sample of 1200 persons was randomly selected for interviews. Overall, the results of the study showed that perceived susceptibility was the most powerful variable in determining the use of x-rays. Of those who perceived susceptibility to TB and believed in early detection of TB, 82% had one voluntary x-ray. Of those who did not perceive susceptibility to TB nor
believe in early detection of TB, only 21% obtained a voluntary x-ray. One limitation of the study by Hochbaum (1956) was that he did not look at the role of empirical forces such as the media on an individual’s decision to seek an x-ray.

Champion (1987) examined the relationship of breast self-examination (BSE) to HBM variables. Overall, the concepts of susceptibility, seriousness, barriers, health motivation, and knowledge of breast cancer and BSE were hypothesized to be related to frequency of BSE. After using a stepwise multiple regression, the barriers concept accounted for 22% of the variance, knowledge accounted for 4% of the variance, and the other HBM concepts added insignificant amounts to the variance. Therefore, the concepts of knowledge and barriers were significant in predicting the frequency of BSE.

**Knowledge.** Williams et al. (1997) examined stroke patient’s knowledge of stroke and the influence it may have on time to presentation. A sample of 67 stroke patients completed a questionnaire that included demographics, transportation, symptoms, history of stroke, and knowledge of stroke warning signs. Early arrival time was considered to be 3 hours or less. Statistical analyses in the study included chi-square and two-tailed Fisher’s exact test. A two-tailed students t-test was utilized to compare continuous variables and forward logistic regression was used to assess variables associated with early presentation.

The conclusions of the study showed that 25% of the victims correctly interpreted the symptoms as being a stroke but that this knowledge was not related to early arrival time. Ambulance transport was related to early arrival time and most victims that presented late did not perceive their symptoms as serious. Limitations of the study include the fact that they did not interview the person who was with the victim at the time.
of symptom onset, and the study had a relatively small sample size. An important aspect of the study is that it did draw from three different hospitals in a large metropolitan area. The hospitals included a large tertiary hospital, a county hospital, and a Veterans Affairs hospital that may help to make the results more applicable to other populations (Williams, et al. 1997).

Feldman et al. (1993) examined factors associated with early presentation in 100 acute stroke patients. Knowledge of stroke, risk factors, clinical features of stroke, and timing to seeking treatment were considered. An interview was conducted with the patient, family, and physician to obtain data on type of stroke, demographics, and symptoms. To analyze the data, standard chi-square tests were used along with two-tailed Fisher’s exact test, t-test, analysis of variance, correlation coefficients, and stepwise linear regression analyses.

Results of the study determined that early arrival time was related to increased age, sudden onset, and recognizing that the symptoms were a stroke. They also determined that only 8% of the patients had been previously formally educated about stroke. Out of the 100 patients in the study, 50% presented for treatment in four hours or less. The conclusion of the study was that patients are not knowledgeable about stroke and that more education is needed to improve the time to seeking treatment. However, the study did not include variables such as distance from hospital, whether the patient was alone at the time of symptom awareness, severity of stroke symptoms, or type of transportation. Also, the study did not include stroke patients who could not communicate.
A study by Samsa et al. (1997) examined knowledge of risk of stroke of patients who were already at risk for stroke. Interviews of 1261 stroke patients assessed perceived risk of stroke. Analysis of the results included frequencies and cross-tabulations. Chi-square was used to measure the relationship between the variables of age, race, sex, income, education, marital status, symptoms, physical function, disability, and depression to knowledge of stroke risk. A multivariate logistic regression model was also used. Overall, 41% were aware of the risks, 74% recalled being told by their physician about the risk of stroke, and 28% did not recall being informed by a physician. The study concluded that over 50% of patients who are at risk for stroke are unaware of the risk and that education is needed to inform these patients of stroke, since it is more likely that patients who recognize their risk will engage in prevention strategies (Samsa et al., 1997).

In conclusion, the HBM provides a structure for assessing the effect of knowledge on health behavior. Knowledge has been shown to have an effect in HBM related studies but overall the effect is indirect through perceived susceptibility and perceived seriousness. Many stroke patients are unaware of the risk of stroke as well as the warning signs of stroke and thus they may delay in seeking treatment. Although knowledge has not been shown to be significantly correlated with timing to seeking treatment, the overall indirect effect it has on the decision process is important (Feldman et al., 1997; Samsa et al., 1997).

Delay in seeking treatment for MI. There is extensive research on delay in seeking treatment for an acute MI. Kenyon, Ketterer, Gheorghiade, and Goldstein (1991) looked at the psychological factors related to delay in treatment for an acute MI. The
variables in the study of 103 participants included sociodemographic, medical history, and psychological aspects of somatic and emotional awareness. Subjects admitted with acute myocardial infarction (AMI) were interviewed at the bedside after obtaining informed consent. Somatic awareness, defined as awareness of bodily processes, was measured using the Modified Somatic Perception Questionnaire (MSPQ) (Main, 1983). The questionnaire is scored from 0-39 with higher scores indicating higher levels of somatic awareness. Emotional awareness or inner feelings was measured using the Toronto Alexithymia Scale (TAS) (Taylor, Ryan, & Bagby, 1985). The scale is a self-report list that is scored from 26-130, with higher scores indicating greater difficulty describing or separating emotions from bodily sensations. Analysis included mean and median delay times for MI care, t-tests for dichotomous variables, and ANOVA F tests when several categories were compared.

The results of the study showed that the characteristics of somatic and emotional awareness were the only variables that were predictive of delay time to treatment for MI. Those subjects with high emotional and somatic awareness delayed approximately 4 hours while those with low emotional and somatic awareness delayed up to 29 hours. The results of the study, "suggest that if patients believed that they were experiencing a heart attack (MSPQ score) and if they perceived their symptoms as severe (TAS score), they delayed less in seeking medical treatment" (Kenyon et al., 1991, p. 1974).

Dracup and Moser (1991) conducted a meta-analysis to review research from the past two decades that related to delay in treatment-seeking behavior of patients with symptoms of a MI. The purpose of the study was to identify variables related to prolonged response time. Limitations of the study included problems with different tools
that were used in the various studies and that each research study was conducted in a
different region. In all the studies, mean and median delay times were measured and
reported in the meta-analysis but further statistical analysis was not reported.

The results showed that variables that were associated with delayed time to
treatment included hypertension, diabetes, being of African-American descent, consulting
with family and/or physician, and self-treatment done first. One variable that decreased
response time was the fact that the victim recognized the pain as being cardiac in origin.
The results of this review provided recommendations to target individuals at high risk for
delay, promote educational campaigns, and focus on family members as potential
witnesses (Dracup & Moser, 1991).

A study by Reilly et al. (1994) found similar results when looking at factors that
influence delay time in seeking treatment for chest pain. A Response to Symptoms
(RTS) questionnaire, developed by the Thrombolysis in Acute Myocardial Infarction
Trial investigators (Mantell, Berrios, & Flanagan, 1989) was given to a convenience
sample of 77 patients who came into an emergency room with chest pain. The
questionnaire asked 18 questions related to chest pain including time, location and
severity, as well as anxiety and stress levels.

Analysis of the results of the study included using frequencies, percentages,
means, and medians to summarize the demographic data and delay times. Chi-square and
t-tests were utilized in comparing those who delayed to those who did not delay. The
results of the study showed that out of the 77 patients, 31 patients (40%) sought treatment
in 3 hours or less and that 46 patients (60%) delayed in seeking treatment 3 hours or
more. The authors concluded that if a patient thought that the chest pain was less serious, there was more of a delay in seeking treatment (Reilly, et al., 1994).

Johnson and King (1995) conducted a retrospective, descriptive study to investigate the influence of expectations about symptoms of an MI on delay in seeking treatment. A Symptom Representation Questionnaire was developed for this study that assessed expectations about heart disease. The questionnaire included open-ended questions as well as questions assessing a subject’s experience with symptoms. The questionnaire was completed by a convenience sample of 59 patients who had experienced their first MI. Symptom expectations related to heart disease were measured by subjects’ responses to open-ended questions and then grouped into four themes: location, intensity, associated symptoms, and quality of pain.

Measurements in the study included a one-way ANOVA to compare delay times among three groups. The three groups consisted of those who matched symptom expectations with experience, those who did not match symptom expectations with experience but considered it an MI, and those who did not match symptom expectations with experience and did not consider their symptoms to be an MI. A chi-square analysis and t-tests were utilized to measure symptom expectations and actual experience (Johnson & King, 1995).

The results indicated that the symptom expectations did not match the symptom experience in 74%, while 26% of the patients did match their symptom expectations and experience. Therefore, patients sought treatment in a timely manner if their expectations of the symptoms of MI matched their actual experience of MI symptoms. The conclusion of the authors stated that “patients have expectations about symptoms of heart disease
that may influence their behavior during a myocardial infarction” (Johnson & King, 1995, p. 29).

In summary, the review of literature shows that many people continue to delay in seeking treatment for MI based on a variety of factors. Delay in seeking treatment is a vast problem and is a variable in mortality in conditions such as MI and stroke.

**Delay in Seeking Treatment for Stroke.** Research on factors that may contribute to the delay in seeking treatment for acute stroke symptoms is available but limited. A study by Alberts et al. (1992) was conducted to determine if an educational program would reduce the delay in seeking treatment for stroke symptoms. The educational methods that were utilized included interviews on television and radio, newspapers, lectures, and mailings to physicians in the area. Time of presentation of educational programs from November 1985 to January 1987 was compared with time of presentation for stroke symptoms from December 1988 to December 1989. To analyze the results, two-tailed Fisher’s exact tests were used for comparing the 24-hour status of the groups.

The results showed that following the educational program 139 out of 159 patients (86%) with cerebral infarction sought treatment at the hospital within 24 hours of symptom onset compared to 70 out of 187 (37%) before the educational program was started. The findings suggest that educational programs may be beneficial in decreasing the time to seeking treatment. However, the education was mostly geared toward referring physicians who can decrease delay in consultation times but not necessarily influence a decrease in the delay in a stroke patient’s decision to seek treatment (Alberts, et al., 1992).
A limitation of the study was that the authors did not determine if the patients who sought treatment in less than 24 hours of onset of symptoms had seen the educational offerings. Also, there was no random assignment of groups to view the educational offerings; the offerings were just put out in the community. Lastly, the cut-off of 24 hours to seek treatment for stroke symptoms is not clinically relevant (Alberts et al., 1992).

A study by Azzimondi et al. (1997) examined factors related to hospital arrival time after stroke. A sample of 185 patients, who delayed at least 2 to 5 hours in seeking treatment, was interviewed. The variables that were studied included age, sex, symptoms on awakening, day of the week, hour of the day, and area of residence. Two groups were created. One group included those who did not make the window of treatment time (2-5 hours) as chosen by the researchers, and the second group included patients who arrived at the hospital early enough to receive treatment.

A univariate analysis measured the effect of the previously listed variables on the delay. Variables that were associated with a delay were placed in a stepwise fashion as covariates in an exact multiple logistic regression analysis. The results of the study showed that patients with milder symptoms, for whom treatment most likely would be effective, were delaying in seeking treatment. The recommendations included targeting education focusing on knowledge about symptoms to those who are delaying in seeking treatment (Azzimondi et al., 1997).

Other studies have found similar factors that contribute to delay in seeking treatment for stroke. Some of the factors include occurrence at night, referral patterns,
living alone, retired working status, milder symptoms, and ischemic stroke versus hemorrhagic stroke (Harper et al., 1992; Fogelholm et al., 1996; Jorgensen et al., 1996).

Overall, delay in seeking treatment for stroke symptoms continues to be a problem. Current research on the subject does not clarify why patients do not exhibit the preventive seeking behaviors necessary to receive prompt medical treatment. As previously discussed, many patients with mild symptoms are not seeking treatment and these are the patients that treatment has the greatest chance of helping.

**Gender Differences in Seeking and Receiving Treatment.** Research on gender and seeking treatment for stroke is minimal. The variable of gender has been included in studies as part of the demographics, but trying to understand the reasons behind the difference in health behaviors between male and female has not been fully addressed. If nurses identified the reasons why males or females delay in seeking treatment, tailored education targeted at these individuals may improve the time to treatment.

A study by Dempsey, Dracup, and Moser (1995) examined the psychosocial processes that women utilize in deciding to seek treatment for MI. A qualitative method was used to interview 16 women between the ages of 42-82 on a coronary care unit. Analysis of the results included calculating mean and median delay times and sorting the interview answers into categories for coding. Intercoder reliability was established and the mean intercoder agreement level was 0.97. Overall, the women delayed 5.4 hours to seek treatment. The two main categories of psychosocial processes that affected their decision making were maintaining control and relinquishing control.

The subcategories included under maintaining control were symptom awareness, perceived insignificance, and self-treatment. The subcategories under relinquishing
control included perceived threat and lay consultation. Overall, the women acknowledged the symptoms as abnormal but did not perceive them as serious enough for immediate action. The women proceeded to use self-treatment until symptoms worsened to the point where they realized the threat to their well being. This led the women to seek lay consultation and eventually to seek treatment. Denial and coping mechanisms were also important factors in the decision process (Dempsey et al., 1995).

The study had several limitations. First, the sample size was small and only included women who survived an MI and had adequate insurance. Second, the women were not contacted after the interview to validate the data. Third, the women were interviewed 24 hours after admission, which may have changed their view on what really happened. Therefore the results may not be applicable to a wide range of situations (Dempsey et al., 1995).

Meischke et al. (1998) conducted a study to look at gender differences in symptoms of MI and impact on delay to seeking treatment. A convenience sample of 4497 patients with MI was used from a database registry. A chi-square analysis was completed to look at gender versus age, medical history, and symptoms that influenced time to treatment. A logistic regression and multiple linear least-squares regression models were also completed. Results of the study showed that women were less likely to report diaphoresis than men were, but more likely to report shortness of breath and nausea than men when experiencing an MI. There was no statistically significant relationship between gender and delay time and the study demonstrated that gender differences occur in MI symptom experience.
Another study by Lehmann, Wehner, Lehmann, and Savory (1996) looked at gender bias in evaluating chest pain in the emergency department. A retrospective chart review was completed on 311 patients consisting of 145 men and 166 women. A chi-square analysis was conducted. Statistically, women were more likely to present in the emergency department more than 6 hours after onset of symptoms. Women also reported more pleuritic pain and less diaphoresis than the men did. Men were more likely to receive an emergency cardiac consult, nitroglycerin, anticoagulants, and thrombolytic agents while the women received more controlled substances and anxiolytics. The study demonstrated that men are treated more aggressively than women who present with symptoms of chest pain.

Penque et al. (1998) conducted a study to look at relationships between signs and symptoms of coronary disease and diagnosis and treatment between men and women. Interviews were conducted with a convenience sample of 98 AMI patients of whom 51 were women and 47 men. A chi-square analysis was completed to look at the differences between men and women related to demographics, diagnostic tests, and therapeutic interventions. Although the four most common signs and symptoms in men and women were fatigue, pain at rest, shortness of breath, and weakness, women also reported loss of appetite, dizziness, paroxysmal nocturnal dyspnea, and back pain. The women delayed in seeking treatment an average of 5.3 hours and the men 4.2 hours.

Lastly, the study showed that women were less likely to have angiography, intravenous nitroglycerin, or thrombolytic agents compared to the men. A limitation of the study includes a small size, convenience sample (Penque et al., 1998).
Kudenchuk, Maynard, Martin, Wirkus, & Weaver (1996) also found that women with AMI had fewer diagnostic testing such as cardiac catheterization, thrombolytic therapy, and angioplasty compared to the men, even though the men and women in the study had similar presenting symptoms. Another study found that women waited an average 23 minutes longer for thrombolytic therapy in AMI than men did (Jackson et al., 1996).

There are several studies that have determined that gender was not significantly related to time to seek treatment for stroke (Azzimondi et al., 1997; Harper et al., 1992; Jorgensen et al., 1996). Most of these research studies looked at gender differences as an overall variable in the analysis but not the key variable. Gender differences in relationship to delay in seeking treatment for acute stroke symptoms has not been fully addressed in the literature. More research is needed to fill the gap of knowledge of whether gender has an effect on decisions in seeking treatment for stroke symptoms.

Overall, the literature indicated that women and men experience symptoms differently and therefore may be treated differently when seeking treatment. These factors are important in targeting those who may delay in seeking treatment. Gender is an important variable and may be a factor in the decision to seek care. Nurses and health care professionals need to be aware of this possible bias in order to make sure that each patient receives the most appropriate care.

Conclusion and Implications for Study

Early timing to seek treatment is a health action that can help prevent severe complications as well as permanent disabilities from stroke. Seeking treatment early after the onset of stroke symptoms increases the chance that the stroke victim can receive
medication that may reduce the chance of a permanent disability or even death. Nurses can play an important role in influencing individuals about the need to seek treatment for stroke symptoms by identifying variables that are related to delay in seeking treatment. Research has shown that stroke victims continue to delay seeking treatment even though they may have been given information on strokes.

Although research is available on delay in seeking treatment for stroke symptoms, it is limited and does not include a theoretical perspective. More research is needed on the factors that are involved in delays in seeking treatment for stroke symptoms, especially gender differences. Expanded research is needed utilizing the HBM to better understand the relationship of delay in seeking treatment for stroke symptoms and the variables of the model. Results from this study will equip nurses or health care personnel with important information as a basis for implementing strategies that influence people to seek treatment for stroke symptoms on initial onset. Therefore, the following questions are the focus of this thesis.

Research Questions

1. Is there a difference between men and women in timing to seek treatment for stroke symptoms?

2. Is there a gender-related difference in importance of knowledge in the decision to seek treatment for stroke symptoms?

3. Is there a gender-related difference in importance of perceived susceptibility in the decision to seek treatment for stroke symptoms?

4. Is there a gender-related difference in importance of perceived seriousness in the decision to seek treatment for stroke symptoms?
5. Is there a gender-related difference in importance of perceived barriers in the decision to seek treatment for stroke symptoms?

Definition of Terms

Gender. A dichotomous variable: male or female with associated biological, psychological, social, and cultural aspects.

Knowledge. An understanding or awareness of stroke warning signs, realizing that stroke is an emergency, and knowledge of consequences of delay in treatment for stroke symptoms.

Perceived susceptibility. An individual's belief about his/her own risk of experiencing a stroke.

Perceived seriousness. An individual's perception of the possible outcomes of experiencing a stroke, especially the possible difficulties that a stroke may produce.

Perceived barriers. Embarrassment, costs, being afraid and physical barriers to seeking treatment.

Timing to seek treatment. Elapsed time or delay between first reported awareness of onset of stroke symptoms and arrival to the hospital.
CHAPTER THREE

METHODS

Research Design

This study is a descriptive, correlational study. The aim of this type of research is to describe the relationships between variables and not to infer a cause-and-effect relationship. The study examines the relationship between various factors and the timing of seeking treatment for acute stroke symptoms. The use of a nonexperimental design allows the researcher to collect a large amount of data conveniently and efficiently, but generalizability is limited by the representativeness of the sample; and lack of a control group prevents discussion of causation.

Population and Sample

The data used to examine gender differences in relationship to stroke health beliefs in timing of seeking treatment for acute stroke symptoms came from a larger research study titled, "Discovering Factors Related to the Timing of Seeking Health Care for Acute Stroke Symptoms" (O’Donnell, Roberts, Ruhlandt, & Baer, 1999). The objective of the larger research study was to examine the reasons why patients delayed in seeking treatment for acute stroke symptoms. The results of the larger study will be used to develop action plans to improve response time to seeking treatment and therefore reduce the mortality and disability associated with strokes. The current study is a secondary analysis using a subset of the original data from the larger study.
The larger research study’s sample consisted of stroke victims from more than 25 different hospitals around the country. Inclusion criteria for the project were diagnosis of a stroke by a physician, admission to an acute care hospital and interviewed within 72 hours of admission; and identification and availability of a decision partner (person who was with stroke victim at onset of symptoms). Also, both the stroke survivor and decision partner had to be able to read and speak English, and be willing to participate in the study. Subjects were excluded if stroke symptoms resolved independently within 24 hours, a decision partner could not be identified or located, or the stroke survivor’s condition was too critical (either the stroke survivor was unable to participate and/or the decision partner was too distraught to participate). Lastly, an unwillingness of either the stroke survivor or decision partner to participate in the study was cause for exclusion from the larger study (O'Donnell, et al., 1999).

The larger study included stroke survivors who could communicate as well as stroke survivors who could not communicate. The decision partner was interviewed as well as the stroke survivor. The sample for the larger study consisted of a convenience sample of stroke survivors who presented to the hospital and met the inclusion criteria. This type of sample is the most convenient way of sampling but the subjects may be atypical of the general population and therefore one cannot generalize to other populations (O'Donnell, et al., 1999).

The sample for this sub study was limited to stroke victims 18 years and older from an acute care hospital in the Midwest. Inclusion criteria for this study were diagnosis of stroke by a physician, admission to the hospital for and within 72 hours of stroke symptom development, English speaking stroke survivors, and willingness to
participate in the study. Only communicating stroke survivors were included in this study so data from the decision partners were not utilized. Exclusion criteria in this study were identical to the criteria mentioned earlier for the larger study.

**Tool**

The tool “Assessment of Health Care Seeking Behavior Following Stroke” was utilized in this study (see Appendix A). The tool was developed by the researchers of the larger study, “Discovering Factors Related to the Timing of Seeking Health Care for Acute Stroke Symptoms” (O’Donnell et al., 1999). The complete tool was developed after consulting with lay persons, colleagues, and stroke researchers for content.

The development of the tool “Assessment of Health Care Seeking Behavior Following Stroke” started with four researchers who interviewed ten persons each including neuroscience nurses, emergency nurses, critical care nurses, community health nurses, internal medicine physicians, neurologists, and lay persons in the community such as at a grocery store. The interview question the researchers asked was why they thought that people waited so long to seek treatment with onset of stroke symptoms (O’Donnell, et al., 1999)?

After gathering the data, the researchers noticed that many of the answers matched the concepts of the HBM (Rosenstock, 1974). The decision to create a tool was made after discovering that there were no tools available to measure why persons delay in seeking treatment with onset of stroke symptoms. Although the HBM was considered as a relevant theoretical framework, no attempt was made to generate specific questions to measure concepts related to the model (O’Donnell et al., 1999).
Readability of the tool was determined following review of the questions by several laypersons and neuroscience and research professionals, with no misinterpretation or misunderstanding found. The researchers completed the first ten interviews with stroke survivors, decision partners, and research assistants (RA). Any adjustments that were needed in gross comprehension after evaluating the tool with the RA and subjects were completed after these first ten interviews.

According to the researchers, due to the nature of the questions on the tool and because data were self-reported, interrater reliability was not an issue. To date, there are no reliability or validity statistics reported. Face validity and content validity of the 13 belief statements was determined by experts and review of literature (O'Donnell, et al., 1999).

Measurements

As stated earlier, the first part of the tool includes questions related to the demographics of the population (see Appendix A). The questions used for the current study included: age (E), gender (F), race (G), education (H), work status (I), primary source of income (J), and insurance (K). The demographics of gender, race, work status, and insurance are nominal data and age, education, and income are ordinal data.

The dependent variable of time to seek treatment was measured in hours and minutes by asking the subject to report the date, time, and day of the week of the first awareness of symptoms (Appendix A, Question R). Then, a chart audit was completed to obtain the date and time the subject was triaged in the emergency room, and day of the week the subject arrived at the hospital in order to calculate the elapsed time to seek treatment (Question W). The time was calculated in hours and minutes (Item X).
Independent variables were measured by 13 belief statements that were placed on a 3-point Likert-type scale. The subject was asked if a certain belief statement was Very Important, Somewhat Important, or Not Important At All in the decision to seek treatment for onset of stroke symptoms. Each belief statement thus had a score range of 1-3. The lower the score, the more important the belief statement was in the stroke survivor’s decision to seek treatment. Grouping the 13 belief statements on the tool according to the concepts of the HBM resulted in the following.

a. **Perceived knowledge** was measured using the belief statements FF and MM.

b. **Perceived susceptibility** was measured using the belief statements labeled AA, EE, and II.

c. **Perceived seriousness** was measured using the belief statements BB, CC, and DD.

d. **Perceived barriers** were measured using the belief statements GG, HH, JJ, KK, and LL.

**Procedure**

Permission to collect data for the larger study was granted by the Institutional Review Boards (IRBs) and research committees at the participating hospitals (O’Donnell et al., 1999). An investigator was established to coordinate activities at the hospital. Research assistants (RA) were recruited from staff on the neuroscience unit by the investigator. After being recruited, the RAs had the responsibility to review the orientation manual as well as have a meeting with the investigator to review the interview process. The orientation manual explained the process of how to include a subject in the study and the sequence of questions that were included in the tool. The RA was also
expected to satisfactorily complete the National Institutes of Health Stroke Scale (NIHSS) training by watching a video and submitting a score sheet to the investigator with a competency of 80% or better (O'Donnell et al., 1999). This scale was used only in the larger study to determine the severity of the stroke.

The investigator, site coordinator, or RA identified potential participants in the larger study by checking the daily census at the hospital (O'Donnell et al., 1999). In order to include a stroke survivor in the study, the investigator, site coordinator, or RA reviewed the potential subject’s medical record to check for inclusion criteria. If the stroke survivor was eligible for the study, an interviewer approached him/her to seek consent. The stroke survivor was asked to identify the decision partner who was with him/her at the time of stroke symptom onset. If the decision partner could not be identified or located, the subject was excluded from the study.

In the larger study, if a stroke survivor could not communicate, consent was obtained from a family member. Stroke survivors who could not communicate were included in the larger study but were not included in this study. Both the stroke survivor and the decision partner had to agree to participate in the study and the decision partner’s consent and/or interview could be completed by phone. The interviews were completed between 24 to 72 hours after admission to the hospital.

To maintain quality, all the interviews were checked for inconsistencies or obvious errors, by the investigator or site coordinator, such as inability to read the RAs writing or not filling out the tool completely. It was also the responsibility of the RA to come to the investigator or site coordinator with any questions or concerns during the interviewing process. Also, as mentioned earlier, in order to avoid errors in calculations
by the RAs and for consistency, the investigator or site coordinators calculated the elapsed time between symptom awareness and hospital arrival, after the interviews were completed.

A consent form was developed in the larger study to seek written consent (Appendix B). The subject was asked to sign the form, if able, along with two witnesses after the study had been completely explained. No known risks were involved in subjects participating in the study except that the subject and/or decision partner might become fatigued during the interview. RAs were aware of this possibility and were to complete the interview in parts if the subject became fatigued. To maintain confidentiality, the stroke survivors and decision partners were assigned a number for each set of questionnaires.

Permission to analyze select data from the larger data set for this study was obtained from the primary and co-investigators of the larger study (see Appendix C), and Grand Valley State University’s Human Research Review Committee (see Appendix D). Permission was also obtained from Spectrum Health’s Nursing Research Committee (see Appendix E) and the Spectrum Health Research and Human Rights Committee (see Appendix F).
CHAPTER FOUR

RESULTS

The purpose of this study was to examine gender differences in importance of stroke health beliefs in timing to seek treatment for acute stroke symptoms. Data were utilized from interviews completed by RAs in the larger study and entered into the computer by this researcher. An analysis was performed using the Statistical Package for the Social Studies (SPSS). The demographics of the population are reported using descriptive statistics of frequencies and percentages. A Mann-Whitney U was performed to examine gender differences in timing to seek treatment. A Mann-Whitney U was also performed to determine if a gender-related difference existed in importance of knowledge, perceived susceptibility, perceived seriousness, and perceived barriers in the decision to seek treatment for acute stroke symptoms.

Demographics for the sample were measured at the nominal and ordinal level (see Table 1). The sample for the current study included 51 subjects who sought treatment at the hospital for acute stroke symptoms. Of the 51 subjects, 27 (52.9%) were male and 24 (47.1%) were female. Overall, 41 subjects (80.4%) were ages 56-85 with only 6 (11.8%) less than 55 years old and 4 (7.8%) greater than 86 years old. The majority of the sample consisted of 46 (90.2%) Caucasian while only 4 (7.8%) were African American and 1 (2.0%) was Asian/Pacific Islander.
### Table 1

**Sample Demographics (n=51)**

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;55</td>
<td>6</td>
<td>11.8</td>
</tr>
<tr>
<td>56-65</td>
<td>12</td>
<td>23.5</td>
</tr>
<tr>
<td>66-75</td>
<td>15</td>
<td>29.4</td>
</tr>
<tr>
<td>76-85</td>
<td>14</td>
<td>27.5</td>
</tr>
<tr>
<td>&gt;86</td>
<td>4</td>
<td>7.8</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>27</td>
<td>52.9</td>
</tr>
<tr>
<td>Female</td>
<td>24</td>
<td>47.1</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>46</td>
<td>90.2</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>1</td>
<td>2.0</td>
</tr>
<tr>
<td>African American</td>
<td>4</td>
<td>7.8</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;High-School</td>
<td>11</td>
<td>21.6</td>
</tr>
<tr>
<td>High-School</td>
<td>16</td>
<td>31.4</td>
</tr>
<tr>
<td>Some post High-School</td>
<td>5</td>
<td>9.8</td>
</tr>
<tr>
<td>Technical School</td>
<td>2</td>
<td>3.9</td>
</tr>
<tr>
<td>College</td>
<td>13</td>
<td>25.5</td>
</tr>
<tr>
<td>Graduate School</td>
<td>3</td>
<td>5.9</td>
</tr>
<tr>
<td>Missing Data</td>
<td>1</td>
<td>2.0</td>
</tr>
<tr>
<td><strong>Work Status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retired</td>
<td>33</td>
<td>64.7</td>
</tr>
<tr>
<td>Unemployed</td>
<td>5</td>
<td>9.8</td>
</tr>
<tr>
<td>Full-time</td>
<td>7</td>
<td>13.7</td>
</tr>
<tr>
<td>Part-time</td>
<td>2</td>
<td>3.9</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>7.8</td>
</tr>
<tr>
<td><strong>Primary Source of Income</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Security</td>
<td>30</td>
<td>58.8</td>
</tr>
<tr>
<td>Wages</td>
<td>10</td>
<td>19.6</td>
</tr>
<tr>
<td>Investment</td>
<td>3</td>
<td>5.9</td>
</tr>
<tr>
<td>Pension</td>
<td>5</td>
<td>9.8</td>
</tr>
<tr>
<td>None</td>
<td>3</td>
<td>5.9</td>
</tr>
<tr>
<td><strong>Primary Source of Insurance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medicare</td>
<td>28</td>
<td>54.9</td>
</tr>
<tr>
<td>Medicaid</td>
<td>2</td>
<td>3.9</td>
</tr>
<tr>
<td>Commercial</td>
<td>11</td>
<td>21.6</td>
</tr>
<tr>
<td>HMO/PPO</td>
<td>7</td>
<td>13.7</td>
</tr>
<tr>
<td>Private pay/none</td>
<td>3</td>
<td>5.9</td>
</tr>
</tbody>
</table>
Education level was mainly high-school (31.4%) followed by 25.5% with college degrees and 21.6% with less than a high-school education. Work status included 33 subjects (64.7%) who were retired, 17.6% who worked either full or part-time, 9.8% who were unemployed, and 9.8% who stated other.

Primary source of income came mainly from social security (58.8%) with wages accounting for 19.6% and 21.6% who stated their primary income came from investments, pensions, or other means. Lastly, the primary source of insurance coverage was from Medicare (54.9%) with 21.6% from commercial insurance, 13.7% from HMOs/PPOs, and 9.8% from Medicaid, private, or no insurance.

The dependent variable of timing to seek treatment was measured at the interval level. The independent variable of gender was measured at the nominal level while the questions measuring knowledge, perceived susceptibility, perceived seriousness, and perceived barriers were measured at the ordinal level. Analysis of these variables will be described in more detail according to each research question. Gender-specific responses to the 13 belief statements using the Likert-type scale of Very Important, Somewhat Important, and Not Important At All, are summarized in Table 2 and will be referred to as needed.

Research Question #1: "Is there a difference between men and women in timing to seek treatment for stroke symptoms?"

The data for time to seeking treatment was recorded by the interviews in hours and minutes and was collapsed into hour intervals for analysis. For the total sample, the median was 3 hours with a range of 88 hours to seek treatment after first symptom
awareness. Overall, 72.5% sought treatment at the hospital within 6 hours while 62.7% sought treatment within 3 hours.

Within a 3-hour time frame, females sought treatment slightly earlier (54.2%) compared to males (48.1%). A higher percentage of females also sought treatment earlier (79.2%) within six hours compared to males (66.7%). The longest time to seek treatment for a female was 51.3 hours compared to 88.87 hours for a male. Although the dependent variable was measured with interval data, the distribution was not normal. Therefore, a Mann-Whitney U was performed to look at gender and timing to seek treatment. Results indicated there was no significant differences by gender in timing to seek treatment ($z=-.59$, $p=.55$).

Research Question #2: “Is there a gender-related difference in importance of knowledge in the decision to seek treatment for acute stroke symptoms?”

An analysis was performed using frequencies and percentages to examine importance of the subject’s experience with stroke (Item FF). Overall, the analysis showed that 54.9% of subjects thought that this experience was not important in their decision to seek treatment while 25.5% thought it was somewhat important and 19.6% thought this was very important in their decision to seek treatment.

Some females thought that this type of knowledge was very important in their decision to seek treatment (29.2%) compared to males (11.1%). The same number of females (29.2%) also felt it was somewhat important compared to 22.2% of males, but the majority of females (41.7%) and males (66.7%) felt it was not important at all in their decision to seek treatment (see Table 2).
Table 2

Responses to 13 Belief Statements by Gender

<table>
<thead>
<tr>
<th>Question</th>
<th>Health Belief</th>
<th>Males (n=27) Frequency</th>
<th>%</th>
<th>Females (n=24) Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>AA. I never thought I would have a stroke.</td>
<td>Perceived Susceptibility</td>
<td>14</td>
<td>51.9</td>
<td>11</td>
<td>45.8</td>
</tr>
<tr>
<td>1. Very Important</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Somewhat Important</td>
<td></td>
<td>2</td>
<td>7.4</td>
<td>7</td>
<td>29.2</td>
</tr>
<tr>
<td>3. Not Important At All</td>
<td></td>
<td>11</td>
<td>40.7</td>
<td>6</td>
<td>25.0</td>
</tr>
<tr>
<td>BB. My symptoms didn't seem to be serious.</td>
<td>Perceived Seriousness</td>
<td>11</td>
<td>40.7</td>
<td>10</td>
<td>41.7</td>
</tr>
<tr>
<td>1. Very Important</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Somewhat Important</td>
<td></td>
<td>5</td>
<td>18.5</td>
<td>8</td>
<td>33.3</td>
</tr>
<tr>
<td>3. Not Important At All</td>
<td></td>
<td>11</td>
<td>40.7</td>
<td>6</td>
<td>25.0</td>
</tr>
<tr>
<td>CC. I thought the symptoms would go away.</td>
<td>Perceived Seriousness</td>
<td>13</td>
<td>48.1</td>
<td>15</td>
<td>62.5</td>
</tr>
<tr>
<td>1. Very Important</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Somewhat Important</td>
<td></td>
<td>5</td>
<td>18.5</td>
<td>5</td>
<td>20.8</td>
</tr>
<tr>
<td>3. Not Important At All</td>
<td></td>
<td>9</td>
<td>33.3</td>
<td>4</td>
<td>16.7</td>
</tr>
<tr>
<td>DD. These symptoms had always gone away before.</td>
<td>Perceived Seriousness</td>
<td>5</td>
<td>18.5</td>
<td>4</td>
<td>16.7</td>
</tr>
<tr>
<td>1. Very Important</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Somewhat Important</td>
<td></td>
<td>2</td>
<td>7.4</td>
<td>2</td>
<td>8.3</td>
</tr>
<tr>
<td>3. Not Important At All</td>
<td></td>
<td>20</td>
<td>74.1</td>
<td>18</td>
<td>75.0</td>
</tr>
<tr>
<td>EE. I didn't recognize my symptoms as being a stroke.</td>
<td>Perceived Susceptibility</td>
<td>12</td>
<td>44.4</td>
<td>15</td>
<td>62.5</td>
</tr>
<tr>
<td>1. Very Important</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Somewhat Important</td>
<td></td>
<td>4</td>
<td>14.8</td>
<td>3</td>
<td>12.5</td>
</tr>
<tr>
<td>3. Not Important At All</td>
<td></td>
<td>11</td>
<td>40.7</td>
<td>6</td>
<td>25.0</td>
</tr>
<tr>
<td>FF. My experience with someone else having had a stroke.</td>
<td>Perceived Knowledge</td>
<td>3</td>
<td>11.1</td>
<td>7</td>
<td>29.2</td>
</tr>
<tr>
<td>1. Very Important</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Somewhat Important</td>
<td></td>
<td>6</td>
<td>22.2</td>
<td>7</td>
<td>29.2</td>
</tr>
<tr>
<td>3. Not Important At All</td>
<td></td>
<td>18</td>
<td>66.7</td>
<td>10</td>
<td>41.7</td>
</tr>
<tr>
<td>GG. I didn't want to trouble or bother anyone.</td>
<td>Perceived Barrier</td>
<td>13</td>
<td>48.1</td>
<td>11</td>
<td>45.8</td>
</tr>
<tr>
<td>1. Very Important</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>2. Somewhat Important</td>
<td></td>
<td>2</td>
<td>7.4</td>
<td>6</td>
<td>25.0</td>
</tr>
<tr>
<td>3. Not Important At All</td>
<td></td>
<td>12</td>
<td>44.4</td>
<td>7</td>
<td>29.2</td>
</tr>
<tr>
<td>HH. I was embarrassed.</td>
<td>Perceived Barrier</td>
<td>4</td>
<td>14.8</td>
<td>7</td>
<td>29.2</td>
</tr>
<tr>
<td>1. Very Important</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Somewhat Important</td>
<td></td>
<td>3</td>
<td>11.1</td>
<td>3</td>
<td>12.5</td>
</tr>
<tr>
<td>3. Not Important At All</td>
<td></td>
<td>20</td>
<td>74.1</td>
<td>14</td>
<td>58.3</td>
</tr>
</tbody>
</table>

(Table continued on next page)
Table 2

Responses to 13 Belief Statements by Gender (continued)

<table>
<thead>
<tr>
<th>Question</th>
<th>Health Belief</th>
<th>Males (n=27)</th>
<th>%</th>
<th>Females (n=24)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>II. I couldn't believe this was happening to me.</td>
<td>Perceived</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Very Important</td>
<td>Susceptibility</td>
<td>17</td>
<td>63.0</td>
<td>17</td>
<td>70.8</td>
</tr>
<tr>
<td>2. Somewhat Important</td>
<td></td>
<td>7</td>
<td>25.9</td>
<td>4</td>
<td>16.7</td>
</tr>
<tr>
<td>3. Not Important At All</td>
<td></td>
<td>3</td>
<td>11.1</td>
<td>3</td>
<td>12.5</td>
</tr>
<tr>
<td>JJ. I was afraid of what was happening.</td>
<td>Perceived</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Very Important</td>
<td>Barrier</td>
<td>14</td>
<td>51.9</td>
<td>13</td>
<td>54.2</td>
</tr>
<tr>
<td>2. Somewhat Important</td>
<td></td>
<td>6</td>
<td>22.2</td>
<td>4</td>
<td>16.7</td>
</tr>
<tr>
<td>3. Not Important At All</td>
<td></td>
<td>7</td>
<td>25.9</td>
<td>7</td>
<td>29.2</td>
</tr>
<tr>
<td>KK. My symptoms interfered with getting help.</td>
<td>Perceived</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Very Important</td>
<td>Barrier</td>
<td>6</td>
<td>22.2</td>
<td>8</td>
<td>33.3</td>
</tr>
<tr>
<td>2. Somewhat Important</td>
<td></td>
<td>3</td>
<td>11.1</td>
<td>2</td>
<td>8.3</td>
</tr>
<tr>
<td>3. Not Important At All</td>
<td></td>
<td>18</td>
<td>66.7</td>
<td>14</td>
<td>58.3</td>
</tr>
<tr>
<td>LL. I was worried about the cost/who would pay for the medical care.</td>
<td>Perceived</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Very Important</td>
<td>Barrier</td>
<td>2</td>
<td>7.4</td>
<td>2</td>
<td>8.3</td>
</tr>
<tr>
<td>2. Somewhat Important</td>
<td></td>
<td>1</td>
<td>3.7</td>
<td>2</td>
<td>8.3</td>
</tr>
<tr>
<td>3. Not Important At All</td>
<td></td>
<td>24</td>
<td>88.9</td>
<td>20</td>
<td>83.3</td>
</tr>
<tr>
<td>MM. I didn't realize that stroke was an emergency.</td>
<td>Perceived</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Very Important</td>
<td>Knowledge</td>
<td>14</td>
<td>51.9</td>
<td>11</td>
<td>45.8</td>
</tr>
<tr>
<td>2. Somewhat Important</td>
<td></td>
<td>4</td>
<td>14.8</td>
<td>6</td>
<td>25.0</td>
</tr>
<tr>
<td>3. Not Important At All</td>
<td></td>
<td>9</td>
<td>33.3</td>
<td>6</td>
<td>25.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>4.2</td>
</tr>
</tbody>
</table>

A Mann-Whitney U was performed and although no significance was found between gender and this type of experience ($z=-1.92$, $p=.06$), the trend appears to be toward significance (see Table 3).

With respect to realizing that stroke is an emergency (Item MM), 49.0% thought that this was very important in their decision to seek treatment, 19.6% felt it was somewhat important, 29.4% felt it was not important at all, and 2.0% was missing data.
<table>
<thead>
<tr>
<th>Research Question</th>
<th>Belief Statements</th>
<th>Males (n=27) Mean Rank</th>
<th>Females (n=24) Mean Rank</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>My experience with someone else having had a stroke.</td>
<td>29.39</td>
<td>22.19</td>
<td>.06</td>
</tr>
<tr>
<td>2</td>
<td>I didn't realize stroke was an emergency.</td>
<td>25.59</td>
<td>25.39</td>
<td>.96</td>
</tr>
<tr>
<td>3</td>
<td>I never thought I would have a stroke.</td>
<td>26.48</td>
<td>25.46</td>
<td>.79</td>
</tr>
<tr>
<td>3</td>
<td>I didn't recognize my symptoms as being a stroke.</td>
<td>28.33</td>
<td>23.38</td>
<td>.19</td>
</tr>
<tr>
<td>3</td>
<td>I couldn't believe this was happening to me.</td>
<td>26.78</td>
<td>25.13</td>
<td>.64</td>
</tr>
<tr>
<td>4</td>
<td>My symptoms didn't seem to be serious.</td>
<td>27.19</td>
<td>24.67</td>
<td>.52</td>
</tr>
<tr>
<td>4</td>
<td>I thought the symptoms would go away.</td>
<td>28.19</td>
<td>23.54</td>
<td>.22</td>
</tr>
<tr>
<td>4</td>
<td>These symptoms had always gone away before.</td>
<td>25.85</td>
<td>26.17</td>
<td>.92</td>
</tr>
<tr>
<td>5</td>
<td>I didn't want to trouble or bother anyone.</td>
<td>26.80</td>
<td>25.10</td>
<td>.66</td>
</tr>
<tr>
<td>5</td>
<td>I was embarrassed.</td>
<td>28.06</td>
<td>23.69</td>
<td>.21</td>
</tr>
<tr>
<td>5</td>
<td>I was afraid of what was happening.</td>
<td>26.02</td>
<td>25.98</td>
<td>.99</td>
</tr>
<tr>
<td>5</td>
<td>My symptoms interfered with getting help.</td>
<td>27.22</td>
<td>24.63</td>
<td>.47</td>
</tr>
<tr>
<td>5</td>
<td>I was worried about the cost/who would pay for the medical care.</td>
<td>26.63</td>
<td>25.29</td>
<td>.59</td>
</tr>
</tbody>
</table>
Males indicated that this was very important (51.9%), somewhat important (14.8%), and not important at all (33.3%). This compared to females who thought it was very important (45.8%), somewhat important (25.0%), not important at all (25.0%), and one subject (4.2%) with missing data (see Table 2). A Mann-Whitney U was performed and there was no significant difference between males and females in the importance of realizing that stroke is an emergency ($z=-.053$, $p=.96$) (see Table 3).

**Research Question #3:** “Is there a gender-related difference in importance of perceived susceptibility in the decision to seek treatment?”

The first belief statement analyzed, "I never thought I would have a stroke" (Item AA) looks at susceptibility to stroke. Overall, this belief was very important in the decision to seek treatment (49.0%), while 17.6% stated it was somewhat important, and 33.3% felt it was not important at all. The majority of males (51.9%) and females (45.8%) felt that this belief was very important in their decision to seek treatment (see Table 2). A Mann-Whitney U was performed with no significant difference found between gender in the importance of perceived susceptibility to stroke in decision to seek treatment ($z=-.27$, $p=.79$) (see Table 3).

The second belief statement, recognizing symptoms as being a stroke (Item EE), also examines perceived susceptibility (see Table 2). Overall, 52.9% felt that this belief was very important in their decision to seek treatment, 13.7% felt it was somewhat important, and 33.3% felt it was not important at all. Males were almost equal in regards to 44.4% felt that this belief was very important, and 40.7% felt that it was not important at all, while 14.8% felt it was somewhat important.
The majority of females (62.5%) thought that this statement was very important in their decision to seek treatment, 12.5% felt it was somewhat important, and 25.0% felt it was not important at all. A Mann-Whitney U was performed with no significant difference between gender and importance of susceptibility in decision to seek treatment ($z=-1.32$, $p=.19$) (see Table 3).

The third belief analyzed regarding perceived susceptibility, "I couldn't believe this was happening to me" (Item II) was shown overall to be very important (66.7%) while 21.6% felt it was somewhat important, and 11.8% felt it was not important at all in decision to seek treatment. The majority of males (63.0%) felt it was very important, 25.9% stated it was somewhat important, and 11.1% stated it was not important at all. Also, the majority of females (70.8%) stated it was very important, while 16.7% stated it was somewhat important, and 29.2% stated it was not important at all (see Table 2). There was no significant difference found between males and females in the importance of believing that a stroke was happening to them in decision to seek treatment ($z=-.48$, $p=.63$) (see Table 3).

**Research Question #4:** "Is there a gender-related difference in importance of perceived seriousness in the decision to seek treatment for stroke symptoms?"

The first belief statement analyzed related to perceived seriousness states, "My symptoms didn't seem to be serious" (Item BB). Overall, 41.2% stated that this belief was very important, 25.5% stated it was somewhat important, and 33.3% stated that it was not important at all in their decision to seek treatment. The majority of the males in the study had an equal number, 11 (40.7%) stating that the belief was very important and not important at all in their decision to seek treatment, while 18.5% stated it was
somewhat important. The majority (41.7%) of females stated it was very important, 33.3% stated it was somewhat important, and 25.0% stated it was not important at all in their decision to seek treatment (see Table 2). There was no significant difference found between males and females in the importance of believing that their symptoms were serious in the decision to seek treatment ($z=-.64, p=.52$) (see Table 3).

The next perceived seriousness belief statement analyzed states, "I thought the symptoms would go away" (Item CC). Overall, the majority (54.9%) stated that this belief was very important, 19.6% felt it was somewhat important and 25.5% felt it was not important at all. The majority of males (48.1%) felt that this belief was very important, while 18.5% felt it was somewhat important, and 33.3% felt it was not important at all. Also, the majority of females (62.5%) stated that the belief was very important, while 20.8% stated it was somewhat important, and 16.7% stated it was not important at all in their decision to seek treatment (see Table 2). An analysis showed no significant difference between gender in the importance of thinking the symptoms would go away in the decision to seek treatment ($z=-1.23, p=.22$) (see Table 3).

The third belief statement analyzed related to perceived seriousness states, "These symptoms had always gone away before" (Item DD). Overall, 17.6% stated that this belief was very important, 7.8% stated it was somewhat important, and 74.5% stated that this belief was not important at all in their decision to seek treatment. In regards to gender, 18.5% of males stated that this belief was very important, 7.4% stated it was somewhat important, and 74.1% stated that it was not important at all. For females, 16.7% stated that it was very important, 8.3% stated it was somewhat important, and 75.0% stated that it was not important at all (see Table 2). As with the other two belief
statements related to perceived seriousness, no significant difference was found between gender, in the importance of thinking that the stroke symptoms had always gone away before, in their decision to seek treatment ($z = -0.10$, $p = 0.92$) (see Table 3).

**Research Question #5.** "Is there a gender-related difference in importance of perceived barriers in the decision to seek treatment for stroke symptoms?"

The first barrier belief statement analyzed, "I didn't want to trouble or bother anyone" (Item GG) showed that overall 47.1% stated that this belief was very important, 15.7% stated it was somewhat important, and 37.3% stated it was not important at all in their decision to seek treatment. Almost equal numbers of males thought that this belief was very important (48.1%) as those who thought it was not important at all (44.4%), while 7.4% thought it was somewhat important. The majority of females (45.8%) thought that this belief was very important, 25.0% thought it was somewhat important, and 29.2% thought it was not important at all (see Table 2). There was no significant difference found between gender in the importance of not wanting to trouble or bother anyone, in the decision to seek treatment ($z = -0.44$, $p = 0.66$) (see Table 3).

The second barrier belief statement analyzed, "I was embarrassed" (Item HH) showed that overall 21.6% stated that it was very important, 11.8% stated it was somewhat important, and 66.7% stated that it was not important at all in their decision to seek treatment. For males, 14.8% stated the belief was very important, 11.1% stated it was somewhat important, and 74.1% stated it was not important at all in their decision to seek treatment. For females, 29.2% stated the belief was very important, 12.5% stated it was somewhat important, and 58.3% stated that it was not important at all (see Table 2).
There was no significant difference found between gender in the importance of embarrassment, in the decision to seek treatment \((z=-1.26, \ p=.21)\) (see Table 3).

The third barrier belief statement analyzed, "I was afraid of what was happening" (Item JJ) showed that overall the majority of subjects (52.9%) stated the belief was very important, 19.6% stated it was somewhat important, and 27.5% stated it was not important at all in their decision to seek treatment. The majority of males (51.9%) stated it was very important, 22.2% stated it was somewhat important, and 25.9% stated that it was not important at all. The majority of females (54.2%) also stated that it was very important, 16.7% stated it was somewhat important, and 29.2% stated it was not important at all. There was no significant difference found between gender in the importance of fear of what was happening in the decision to seek treatment \((z=-.01, \ p=.99)\) (see Table 3).

The fourth barrier belief statement analyzed, "My symptoms interfered with getting help" (Item KK) showed that overall 27.5% stated it was very important, 9.8% stated it was somewhat important, and 62.7% stated it was not important at all in their decision to seek treatment. For males, 22.2% stated that it was very important, 11.1% stated it was somewhat important, and 66.7% stated it was not important at all. For females, 33.3% stated it was very important, 8.3% stated it was somewhat important, and the majority (58.3%) stated that it was not important at all in their decision to seek treatment (see Table 2). As with the other beliefs related to perceived barriers, there was no significant difference found between gender in the importance of stroke symptoms interfering with getting help in the decision to seek treatment \((z=-.73, \ p=.47)\) (see Table 3).
The last barrier belief statement analyzed related to cost or worry about whom would pay for the medical care (Item LL). Overall, 7.8% stated that this belief was very important, 5.9% stated that it was somewhat important, and 86.3% stated that it was not important at all in their decision to seek treatment. Responses by gender showed that 7.4% of males stated that it was very important, 3.7% stated it was somewhat important, and 88.9% stated that it was not important at all. For females, 8.3% stated that it was both very important and somewhat important, while the majority (83.3%) stated that cost was not important at all (see Table 2). There was no significant difference found between gender in the importance of cost in the decision to seek treatment \((z = -.54, p = .59)\) (see Table 3).

In summary, although the information from this study is important, the relationships between gender and timing to seek treatment for acute stroke symptoms was not statistically significant. Also, no statistical significance was found between gender and importance of knowledge, perceived susceptibility, seriousness, and barriers in decision to seek treatment for acute stroke symptoms.
CHAPTER FIVE
DISCUSSION AND IMPLICATIONS

The purpose of this study was to examine gender differences in importance of stroke health beliefs in timing to seek treatment for acute stroke symptoms. The findings of this study did not show a difference between men and women in timing to seek treatment for acute stroke symptoms. The results of the study also did not show a gender-related difference in importance of knowledge, perceived susceptibility, perceived seriousness, or perceived barriers in the decision to seek treatment for stroke symptoms.

Relationship of Findings to Previous Research

Since previous research on timing to seek treatment for acute stroke symptoms is minimal, it is difficult to compare results. Findings from this study were consistent with others in that gender was not significantly related to timing to seek treatment for acute stroke symptoms (Azzimondi et al. 1997; Harper et al., 1992; Jorgensen et al., 1996). These previous studies looked at gender as an overall variable in the analysis but not as the key variable.

The results of this study were also similar to a study conducted by Meischke et al. (1998) that looked at gender differences in symptoms of MI and impact on delay to treatment and in which they found no significance between gender and delay time. Since studies have not been conducted using the HBM concepts to look at gender and timing to seek treatment for acute stroke symptoms, a comparison cannot be made. But the HBM
has been utilized in many other areas, as indicated in the early literature review, and has been shown to be useful in explaining and predicting health behaviors in relation to attitudes and beliefs (Janz & Becker, 1984).

This study was consistent with other studies conducted on MI and strokes, in that people continue to delay in seeking treatment with onset of threatening symptoms. For instance, a study by Reilly et al. (1994) showed that the mean delay time for MI patients to seek treatment was 25.4 hours with 31 (40%) seeking treatment in less than 3 hours and 46 (60%) seeking treatment more than 3 hours after symptom onset. A study by Azzimondi et al. (1997) examined timing to seek treatment for stroke symptoms and found that the mean time to treatment was 11.3 hours with 59 (31%) seeking treatment within 2 hours and 100 (53%) within 5 hours. A study by Harper et al. (1992) examined factors related to hospital admission after stroke and found that 25% sought treatment within 2.5 hours and 75% sought treatment within 11.5 hours.

Lastly, a study by Jorgensen et al. (1996) that also looked at factors that delayed stroke victims, found that 7% sought treatment within 1 hour, 25% within 3.5 hours, 35% within 6 hours, and 48% within 12 hours. The current study found that the mean time to seeking treatment was 10.10 hours with 62.7% seeking treatment within 3 hours and 72.5% seeking treatment within 6 hours of symptom onset. Ideally, a patient should receive treatment for a stroke within 3 hours of onset in order to improve morbidity and mortality. Overall, delay in seeking treatment is a continuing problem that needs to be addressed in order to improve outcomes.
Discussion

Although this study did not find significance in relation to the research questions, the information obtained may be used to better understand gender differences to guide future research and education.

Research Question #1

Research question number one asks, "Is there a difference between men and women in timing to seek treatment for stroke symptoms?" A proportion of males (51.8%) and females (45.9%) did delay in seeking treatment by coming to the hospital more than 3 hours after first awareness of their stroke symptoms. An important point to make is the current study looked at timing to seek treatment in relation to first awareness of symptoms, not the last time the patient was symptom free. An interesting finding is that 48.1% of males and 54.2% of females sought treatment less than 3 hours after symptom onset and 25.9% of males and 29.2% of females, sought treatment 3-10 hours after symptom onset. At greater than 10 hours after symptom onset, 25.9% of males and 16.7% of females sought treatment.

Several different factors may explain these findings, such as both genders in this particular sample may have had the same type of education, prior experience with strokes, or may exhibit the same type of decision making process related to beliefs and attitudes towards stroke. These findings may also suggest that males and females are not different in their beliefs towards stroke or that education on strokes may not need to be tailored differently for males than for females, unless learning styles differ. Overall though, these results suggest that both males and females continue to delay in seeking treatment, which is distressing.
Research Question #2

The second research question asks, "Is there a gender-related difference in importance of knowledge in the decision to seek treatment for stroke symptoms?" No significance was found between gender and knowledge, as measured by the subject’s experience with someone else having had a stroke (Item FF) and realizing that a stroke is an emergency (Item MM). The majority of males (66.7%) and plurality of females (41.7%) agreed that prior experience with strokes was not important at all in their decision to seek treatment, but knowing that stroke is an emergency was very important to the majority of males (51.9%) and plurality of females (45.8%).

One may speculate on the reasons for these findings such as the possibility that the sample in the study did not have much prior experience with someone else having had a stroke. According to the results, the majority stated that realizing that stroke is an emergency was important in their decision to seek treatment. This may indicate that some education has been done in the community that has impacted the study sample on how serious a stroke can be. This leads the author to believe that education on the seriousness of stroke is beneficial since this seems to be very important in stroke victim’s decision to seek treatment.

Research Question #3

The third research question asks, "Is there a gender-related difference in importance of perceived susceptibility in the decision to seek treatment for stroke symptoms?" This question, in which there was no difference found between genders, looked at the subjects' perceptions related to their personal susceptibility to stroke. The majority of males (51.9%) and plurality of females (45.8%) stated that the belief
statement, "I never thought I would have a stroke" was very important in their decision to seek treatment. The belief statement, "I couldn't believe this was happening to me" also was seen as very important to males (63.0%) and females (70.8%). This may indicate more education is needed to inform both males and females about risk factors that may increase one's susceptibility to stroke such as smoking, family history, high cholesterol, and high blood pressure (Alberts et al., 1994). One may speculate on these results that people in this sample were maybe in denial of their risk factors or were not educated on their risk factors. This leads the researcher to believe that strategies focused on denial of stroke risk factors in stroke victims might be beneficial.

The last belief statement related to research question three, "I didn't recognize my symptoms as being a stroke" was considered by males almost equally as very important (44.4%) as well as not important at all (40.7%) in their decision to seek treatment. On the other hand, the majority of females (62.5%) stated that this belief was very important in their decision to seek treatment. These findings may suggest that females need more education on the warning signs of stroke along with their possible increase in susceptibility to stroke. Since we tend to concentrate on men who are at higher risk than women, we may miss those women who are also at high risk. As mentioned earlier, females have a higher mortality rate due to stroke compared to males, therefore increasing the need to inform females of the risks and warning signs.

Research Question #4

The fourth research question asks, "Is there a gender-related difference in importance of perceived seriousness in the decision to seek treatment for stroke symptoms?" There was also no significant difference between gender in importance of
perceived seriousness in decision to seek treatment for stroke symptoms. The statement, "My symptoms didn’t seem to be serious" (Item BB), was perceived by males (40.7%) and females (41.7%) to be very important in their decision to seek treatment. Although males also thought that this statement was equally not important at all in their decision to seek treatment (40.7%) and 18.5% thought it was somewhat important. On the other hand, 33.3% of females thought it was somewhat important and 25.0% thought it was not important at all in their decision to seek treatment.

These results may indicate that males may not perceive stroke symptoms as serious as females or that they may not have had as much education or experience with strokes to know the possible outcomes. But there was no statistical difference between males and females. According to the HBM, knowledge indirectly affects perceived seriousness and has an indirect effect on health beliefs and behavior (Rosenstock, 1974). Females tend to be in caregiver roles as health care providers or caregivers of relatives, thus females may have more experience with diseases such as stroke. Although the majority of females thought this statement was very important in their decision to seek treatment, the percentage was not very high suggesting that females also do not take stroke symptoms any more serious than men.

The next statement, "I thought the symptoms would go away" (Item CC), also looked at perceived seriousness. The majority of females (62.5%) and plurality of males (48.1%) thought that this statement was very important in their decision to seek treatment. Although these numbers look different, the results were not statistically significant and may show that both genders are not convinced that stroke symptoms are serious enough to influence their decision to seek treatment. This belief may lead to a
delay in treatment if stroke victims think if they wait, the symptoms will go away or improve on their own. One may relate these results to not enough education on stroke or actual denial of symptoms by the stroke victim. Also, the symptoms may resemble other disease processes such as arthritis, diabetes mellitus, nerve entrapment, or transient ischemic attacks (TIAs) in which the symptoms have gone away before.

The last statement related to perceived seriousness, “These symptoms had always gone away before (Item DD)”, was seen as not important at all by the majority of males (74.1%) and females (75.0%) in their decision to seek treatment. This result may be because the majority of subjects did not have a history of a previous stroke, or in other words, most of the subjects were having stroke symptoms for the first time. The thought is that someone will seek treatment earlier if the symptoms were previously experienced and thus realize how serious it is and seek treatment. In this study, it was not determined if the subjects had a previous stroke, which limits interpretation of these results. It remains important though to increase education and awareness for both genders who have experienced a stroke. Increased education will help previous stroke victims realize the warning signs and dangers of another stroke therefore improving the time to seek treatment.

Research Question #5

Lastly, research question five asks, "Is there a gender-related difference in importance of perceived barriers in the decision to seek treatment for stroke symptoms?" There was no significant difference found between gender in importance of perceived barriers in the decision to seek treatment for acute stroke symptoms. The barriers that were assessed included feeling like a bother to someone, embarrassment, being afraid of
what was happening, subjects' stroke symptoms interfered with getting help, and cost of medical care.

The plurality of males (48.1%) and females (45.8%) stated that feeling like they were troubling or bothering someone with their symptoms (Item GG) was very important in their decision to seek treatment. These feelings may arise from our society impressing on us that we should be independent and should not have to lean on anyone else for help. Increased awareness about the importance of seeking early treatment is needed so that both male and female stroke victims do not worry about asking for assistance. Another strategy includes creating a stroke phone line that the public may access with questions or concerns about stroke without feeling like a bother to anyone.

The second barrier assessed, embarrassment (Item HH), was perceived by both males (74.1%) and females (58.3%) to be not important at all in their decision to seek treatment. Overall, the majority of males and females did not feel that embarrassment was a barrier in their decision to seek treatment. It should be emphasized that stroke victims should not feel like they are bothering anyone with their symptoms, especially since embarrassment is not perceived as a barrier to seeking treatment.

The third barrier, fear of what was happening to the stroke victim (Item JJ), was seen as very important to the majority of males (51.9%) and females (54.2%) in their decision to seek treatment. Although this may lead someone to seek early treatment, it can also delay treatment since the stroke victim may be scared of the outcome when he or she seeks treatment. Education again is needed to inform people that stroke symptoms are serious and therefore may increase fear, but seeking early treatment will alleviate some of this fear when the stroke victim finds out about the treatments that are available.
If people are aware of the consequences of stroke, they will be more likely to seek treatment out of fear of the end outcome without treatment rather than of the symptoms alone.

The majority of males (66.7%) and females (58.3%) stated that the belief that their symptoms interfered with getting help was not important at all in their decision to seek treatment. It may be assumed then that the subjects in the study did not have problems with getting help once they decided to seek treatment. This may be due to the severity of the stroke, which was not considered in this study. The sample in this study may have included stroke victims that had mild strokes or strokes that did not interfere with the victim's speech or movement to reach a phone to call for help. The study also did not include non-communicating stroke victims or obtunded patients. The stroke victims also could have had their symptoms at work where there were many people around or at home with their spouse or family there to initiate help.

Lastly, the barrier of cost was perceived as not important at all in the majority of males (88.9%) and females (83.3%) decisions to seek treatment. This may be due to the fact that the majority of the subjects of the study were retired, on Medicare, and receiving social security that they did not worry about the cost. This is encouraging since many people do not have adequate insurance and it is devastating when someone does not seek treatment because of cost.

Relationship of Findings to Conceptual Framework

The HBM (Rosenstock, 1974), that was utilized in this study, hypothesizes that for an individual to follow a certain health behavior, the individual perceives susceptibility to a disease, views the disease as threatening or severe, sees benefit in
taking action, and perceives few barriers to performing the action. For this study, in order to seek treatment early for acute stroke symptoms, a stroke victim needs to feel susceptible to a stroke, view the symptoms as threatening or severe, believe seeking early treatment is beneficial, and perceive few barriers to seeking treatment (Rosenstock, 1974). This study showed how certain beliefs related to the HBM impacted the decision to seek treatment for both males and females experiencing acute stroke symptoms. Examples of beliefs that were very important to the subjects include perceived susceptibility with Item AA (49.0%), Item EE (52.9%), and Item II (66.7%). Other beliefs that were very important to subjects in decision to seek treatment include perceived seriousness with Item BB (41.2%) and Item CC (54.9%), perceived barriers with Item GG (47.1%) and Item JJ (52.9%), and perceived knowledge with Item MM (49.0%) (see Table 2).

Many factors affect the way a stroke victim reacts to experiencing stroke symptoms including knowledge about strokes, prior education, past experiences with stroke, perceptions of stroke, and perceptions of how easy it is to seek treatment. The HBM provides a useful framework for nurses to help understand the behaviors related to attitudes or beliefs of males and females who are experiencing acute stroke symptoms. Utilization of the HBM (Rosenstock, 1974) can assist the nurse in understanding the behaviors of stroke victims as they seek treatment. The HBM also provides a framework for nursing assessments and interventions for stroke victims, before, during, and after treatment. Interventions can facilitate seeking treatment early as well as improving future outcomes, especially if stroke symptoms recur.
Limitations

There were several limitations in this study. One such limitation is the small sample size of 51 subjects, which did not allow for a more powerful statistical analysis. In fact, overanalysis did occur even within this current work. Also, the subjects consisted of a convenience sample from one large hospital in the Midwest, which was mainly comprised of Caucasian, retired, males and females, ages 56-85.

The results from this homogenous group therefore cannot be generalized for all groups outside of this study. A larger sample size is more likely to be a better representation of the population as well as balance the atypical values more than a smaller sample size can. Also, the researcher does not know beliefs of those who do not seek care who may have increased mortality and morbidity in that group.

Another limitation included the tool used in the study. The tool, developed for the larger study from which the sample for this study was obtained, has not been used before. The tool was not developed specifically for use with the HBM, although the belief statements can be related to the concepts of the HBM. The reliability coefficient of the 13 selected items (.68) is close to what Polit & Hungler (1995) state is an adequate, reliable tool (.70). The coefficient is lower probably due to small sample size, the tool being new, and only 13 items included in the study. Results from this study, using the tool, cannot be compared to other studies since the tool has not been utilized yet.

Another limitation is related to the small sample size, which limits the ability to look at correlation between gender and the concepts of the HBM. With the type of data in this study (ordinal), the researcher was limited to nonparametric analyses, which are not as powerful in demonstrating differences. Also, due to the small sample size, the 13
belief statements could not be combined to look at correlation between the HBM concepts and the variables of gender and timing to seek treatment. Since the study was descriptive the results are not predictive of behavior and correlation could not be made between a subject’s answer and actual time to seek treatment. The study was only able to look at the HBM concepts and their importance in decision to seek treatment. Therefore, no cause and effect can be made.

**Threats to Validity**

Threats to validity in the larger study and this study include the possibility that the patient or interviewer may interpret the tool incorrectly. To help improve the interpretation, the tool was reviewed by over 40 people to improve the clarity of questions. The larger study, self-training manuals and videotapes were used to train research assistants (RA) at distant sites. For the current study, RAs were trained by only 2 research investigators from the team through inservices with question and answer format. The objectives of the larger study were explained and the research investigator reviewed the process of interviewing with the RAs using a reference/orientation manual which was kept available to the RAs at all times.

Another possible threat to validity is the impact of time on the subject’s memory. To control for this threat, all interviews were conducted within 72 hours of admission to the hospital. Another threat, due to the nature of some strokes, is cognitive, speech or language deficits that may affect the subjects' responses. To control for some of this threat, this study did not include data from non-communicating stroke survivors.

Lastly, many different RAs collected data for the larger study from which the data came for the current study. It is possible that the RAs conducted the interviews
differently, even though they all had the same training. A subject may answer a question differently depending on the way the RA presents the information, which may affect the results.

Implications

Certain beliefs affected how males and females made their decision to seek treatment for stroke symptoms, although no statistical differences were found. Information on how males and females perceive importance of seriousness, susceptibility, knowledge and barriers in their decision to seek treatment for stroke symptoms has an impact on how nurses take care of stroke victims. Prevention of stroke is important as well as increasing the public’s awareness of the warning signs of stroke, emphasizing that stroke is an emergency, and that seeking early treatment has a positive effect on outcome. The results of this study should have an effect on nursing education, practice, and administration.

With the knowledge from this study, the nurse is able to focus on certain areas of education that is beneficial to potential patients. The results of this study concluded that males and females were similar in their perceptions, which may indicate that stroke education may be presented in a generalized manner without worrying too much about tailoring it to specific gender needs. Although, one must keep in mind that females do have a higher mortality rate due to stroke, so we must not minimize cerebrovascular risk factors in females.

Both males and females need increased awareness and knowledge of stroke warning signs, risk factors, and emphasis on the seriousness of strokes. Also, it seems as though both males and females perceived barriers such as embarrassment, symptoms
interfering with getting help, and cost, as not important at all in their decision to seek treatment. Therefore, maybe not as much time needs to be spent in this area or focus more on the beliefs that were perceived to be related to timing.

A nurse at the bedside or in the office has the potential to make an impact on a stroke victim by assessing learning needs, with special attention to education and gender. Although this study did not show a difference between males and females, it cannot be generalized to other groups. This study only included those stroke victims that actually sought care for stroke symptoms and therefore left out those who did not seek care at the hospital. In such cases, males and females may have different ideas or perceptions, which may affect their timing to seek treatment.

Nursing administration may have the ability to impact how money is spent in certain areas of education for strokes such as blood pressure screenings or educational offerings related to the warning signs of stroke. Nursing administration also should be challenged to support nurses in their practice by offering inservices for staff on strokes as well as making important resources available.

Future Research

As indicated earlier, research on strokes and timing to seek treatment is minimal. To improve the delay in seeking treatment, more research is needed to fully understand the factors that affect a stroke victim’s decision to seek treatment. To increase our knowledge on this topic, future research should include larger sample sizes in order to conduct more powerful statistical analyses. Although more data was available from the larger study including location of stroke victim at onset of symptoms, past medical history, severity of stroke, and type of transportation to the hospital, this data was not
utilized for this study. These pieces of data would have been beneficial to the study and added more for analysis. It is important to also go out into the community to catch those who are not coming in for treatment at the hospital or outpatient settings. Replication of the study, using different types of groups, would strengthen its validity as well as provide data for refinement of the tool.

Future research should also look more in depth, such as with qualitative methods, at how males and females may perceive their symptoms differently, which can affect their decision-making. It is crucial to look at a possible correlation between gender and timing to seek treatment to try to find possible cause and effect. It is also important to conduct more research on this topic using the HBM as a framework or other nursing models to develop valid and reliable instruments to help guide and strengthen our practice. Lastly, research should continue to look at factors that affect a stroke victim’s time to seek treatment. If nurses can discover these factors or barriers, the time to seek treatment may be reduced and outcomes improved.

Summary

Overall, this study provides an initial look at gender and health beliefs that may affect a stroke victim’s decision to seek treatment. It is important for nurses to be aware of possible gender differences while providing care for stroke victims or those who may be at risk for a stroke. Education continues to be an important intervention in the fight against stroke, and nurses have the power to impact this directly.
APPENDICES
APPENDIX A

DATA COLLECTION TOOL: "ASSESSMENT OF HEALTH CARE SEEKING BEHAVIOR FOLLOWING STROKE"
# Data Collection Tool — Stroke Survivor

**Assessment of Health Care Seeking Behavior Following Stroke**

## Site Information

<p>| | |</p>
<table>
<thead>
<tr>
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<th></th>
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</thead>
<tbody>
<tr>
<td>A.</td>
<td>Site Code</td>
</tr>
<tr>
<td>B.</td>
<td>Interviewer Code</td>
</tr>
<tr>
<td>C.</td>
<td>Stroke Survivor &quot;Study&quot; Number</td>
</tr>
</tbody>
</table>

## Subject Interview Information

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
</table>
| D. | Responder: 1. Communicating Stroke Survivor  
2. Non-communicating Stroke Survivor  
3. Decision Partner of Communicating Stroke Survivor  
4. Decision Partner of Non-communicating Stroke Survivor |
| E. | Age: 1. ≤ 55 y/o  
2. 56-65 y/o  
3. 66-75 y/o  
4. 76-85 y/o  
5. ≥ 85 y/o |
| F. | Gender: 1. Male  
2. Female |
| G. | Race: 1. Caucasian  
2. Asian American/Islander  
3. Black/African American  
4. Hispanic American/Latino  
5. Native American  
6. Other |
| H. | Highest Formal Education Completed: 1. Less than High School  
2. High School  
3. Some Post High School  
4. Technical School  
5. College (Undergraduate)  
6. Graduate School |
| I. | Work Status: 1. Retired  
2. Unemployed  
3. Full Time  
4. Part Time  
5. Other |
| J. | Primary Source of Income: 1. Social Security  
2. Salary/Wages  
3. Investments  
4. Retirement/Pension  
5. None |
| K. | Insurance: 1. Medicare  
2. Medicaid  
3. Commercial  
4. HMO/PPO  
5. Private Pay/None  
6. Other |
L. **Pre-Symptom Karnofsky Performance Status Scale Score:** (see below)  
1. 80-100%  
2. 50-75%  
3. 0-45%  

<table>
<thead>
<tr>
<th>Condition</th>
<th>PERFORM STATUS (%)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Able to carry on normal activity &amp; work, no special care</td>
<td>100</td>
<td>Normal. No complaints. No evidence of disease</td>
</tr>
<tr>
<td>Able to carry on normal activity, no major symptoms of disease</td>
<td>90</td>
<td>Normal activity with effort; some signs/symptoms of disease</td>
</tr>
<tr>
<td>Able to live at home &amp; handle most personal needs, some assistance needed, no work</td>
<td>70</td>
<td>Care of self, unable to carry on normal activity or do active work. Requires occasional assistance but is able to care for most needs.</td>
</tr>
<tr>
<td>Unable to care for self, requires equivalent of institutional or hospital care, disease may be progressing rapidly</td>
<td>40</td>
<td>Disabled, requires special care and assistance. Severe disability, hospitalization indicated although death not imminent.</td>
</tr>
<tr>
<td>Unable to care for self, requires institutional or hospital care, disease may be progressing rapidly</td>
<td>20</td>
<td>Hospitilization necessary (very sick), active supportive treatment needed</td>
</tr>
<tr>
<td>Unable to care for self, disease may be progressing rapidly</td>
<td>10</td>
<td>Moribund, fatal processes progressing rapidly.</td>
</tr>
<tr>
<td>Unable to care for self</td>
<td>0</td>
<td>Dead.</td>
</tr>
</tbody>
</table>

M. **Reported Risk Factors:** (mark all that are reported as present in history)  
- a. Hypertension/High Blood Pressure (consistently SBP ≥ 150 mmHg or DBP ≥ 90 mmHg)  
- b. Diabetes (including "a touch", "a little", and "borderline" sugar)  
- c. Heart Disease (including Coronary Artery Disease, Valve Dysfunction)  
- d. Carotid Disease (including "hardening of the arteries", history of endarterectomy)  
- e. Atrial Fibrillation  
- f. Hypercholesterolemia/High Cholesterol (total cholesterol consistently ≥ 250 mg/dL)  
- g. History of TIA's (including "mini-stroke", "warning stroke", and "spells")  
- h. History of Stroke  
- i. Family History of Stroke or TIA  
- j. Smoking (or has quit within previous 6 months)  
- k. Overweight (mark yes if wt. is in excess for ht, per A.D.A. guidelines below)  
- l. Other (please define: ________________________________________________)  

**American Diabetes Association Guidelines for Weight**  

<table>
<thead>
<tr>
<th>Height</th>
<th>4'10&quot;</th>
<th>5'2&quot;</th>
<th>5'4&quot;</th>
<th>5'6&quot;</th>
<th>5'8&quot;</th>
<th>5'10&quot;</th>
<th>6'0&quot;</th>
<th>6'2&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women</td>
<td>137#</td>
<td>143#</td>
<td>150#</td>
<td>153#</td>
<td>164#</td>
<td>172#</td>
<td>179#</td>
<td>186#</td>
</tr>
<tr>
<td>Men</td>
<td>150#</td>
<td>150#</td>
<td>165#</td>
<td>172#</td>
<td>179#</td>
<td>186#</td>
<td>194#</td>
<td>203#</td>
</tr>
</tbody>
</table>

N. **First Symptoms of THIS stroke:**  
- a. Loss of change in consciousness  
- b. Change in cognition or thinking  
- c. Change in speech (slurred, nonsense, none) or understanding others who are speaking  
- d. Change in vision (including visual field cut, double vision, blurred vision - loss of depth perception, "shade being pulled down," not recognizing things)  
- e. Weakness or paralysis of arm(s) and/or leg(s)  
- f. Weakness or paralysis of face and/or tongue  
- g. Change in sensation (including heaviness, numbness, tingling, loss of proprioception, neglect of body parts)  
- h. Loss of sense of balance (including falling)  
- i. Severe headache  
- j. Other (define: ________________________________________________)  

O. "What did you think was happening when you first noticed these symptoms?"  


P. **IF PREVIOUS STROKE, were the symptoms the same as with this stroke?**  
1. Yes  
2. No  
99. Not applicable, no previous stroke
<table>
<thead>
<tr>
<th>Q.</th>
<th>Q. IF PREVIOUS TIA(s), were the symptoms the same as with this stroke?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>R.</th>
<th>R. Awareness of First Symptoms:</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>a. Date (as six digits -- e.g.: 040196)</td>
</tr>
<tr>
<td>b.</td>
<td>b. Time (&quot;best guess&quot;) in military time -- e.g.: 2045</td>
</tr>
<tr>
<td>c.</td>
<td>c. Day of the Week: {M - T - W - R - F - S - N}</td>
</tr>
<tr>
<td>d.</td>
<td>d. Location</td>
</tr>
<tr>
<td></td>
<td>2. Work</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>S. (1 of 2)</th>
<th>S. Who was with you -- between symptom awareness and care decision.</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>a. Spouse/Significant other</td>
</tr>
<tr>
<td>b.</td>
<td>b. Other family members(s)</td>
</tr>
<tr>
<td>c.</td>
<td>c. Friends/co-workers</td>
</tr>
<tr>
<td>d.</td>
<td>d. Strangers</td>
</tr>
<tr>
<td>e.</td>
<td>e. Alone</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>T.</th>
<th>T. First Action with First Symptoms:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1. Called 911/Ambulance/EMS</td>
</tr>
<tr>
<td>2.</td>
<td>2. Went to the Emergency Room</td>
</tr>
<tr>
<td>3.</td>
<td>3. Called the doctor/insurance office</td>
</tr>
<tr>
<td>4.</td>
<td>4. Went to doctors office/Med Center</td>
</tr>
<tr>
<td>5.</td>
<td>5. Wished/decided to wait for symptoms to go away</td>
</tr>
<tr>
<td></td>
<td>6. Called a friend/family</td>
</tr>
<tr>
<td></td>
<td>7. Tried to relax/go to sleep</td>
</tr>
<tr>
<td></td>
<td>8. Took medication</td>
</tr>
<tr>
<td></td>
<td>9. Other ( )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>U. (1 of 2)</th>
<th>U. Who Participated in the Decision to take this Action?</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>a. Spouse/Significant Other</td>
</tr>
<tr>
<td>b.</td>
<td>b. Other family members(s)</td>
</tr>
<tr>
<td>c.</td>
<td>c. Friends/co-workers</td>
</tr>
<tr>
<td>d.</td>
<td>d. Strangers</td>
</tr>
<tr>
<td>e.</td>
<td>e. Health Care Provider</td>
</tr>
<tr>
<td>f.</td>
<td>f. Made the decision alone</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>V.</th>
<th>V. Who Actually Made the Decision to take this Action?</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>a. Spouse/Significant Other</td>
</tr>
<tr>
<td>b.</td>
<td>b. Other family members(s)</td>
</tr>
<tr>
<td>c.</td>
<td>c. Friends/co-workers</td>
</tr>
<tr>
<td>d.</td>
<td>d. Strangers</td>
</tr>
<tr>
<td>e.</td>
<td>e. Health Care Provider</td>
</tr>
<tr>
<td>f.</td>
<td>f. Made the decision alone</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>W.</th>
<th>W. Admission to Hospital:</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>a. Date (as six digits -- e.g.: 040196)</td>
</tr>
<tr>
<td>b.</td>
<td>b. Time (from ED triage forms or admission record in military time -- e.g.: 2045)</td>
</tr>
<tr>
<td>c.</td>
<td>c. Day of the Week: {M - T - W - R - F - S - N}</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>X.</th>
<th>X. Calculated Elapsed Time: Between Symptom Awareness &amp; Hospital Arrival</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(in hours and minutes)</td>
</tr>
</tbody>
</table>
In deciding to seek treatment for your symptoms, how important were the following:

(Indicate as: 1. Very Important  2. Somewhat Important  3. Not Important at all)

AA. I never thought I would have a stroke.
BB. My symptoms didn’t seem to be serious.
CC. I thought the symptoms would go away.
DD. These symptoms had always gone away before.
EE. I didn’t recognize my symptoms as being a stroke.
FF. My experience with someone else having had a stroke.
GG. I didn’t want to trouble or bother anyone.
HH. I was embarrassed.
II. I couldn’t believe this was happening to me.
JJ. I was afraid of what was happening.
KK. My symptoms interfered with getting help.
LL. I was troubled about the cost/who would pay for the medical care.
MM. I didn’t realize the stroke is an emergency.

PATIENT ASSESSMENT

OO. NIH Stroke Scale Score: (see attached)

CHART REVIEW

PP. Stroke Type: 1. Ischemic  2. Hemorrhagic
QQ. Stroke Location:

Thank you for your time and willingness to participate in this research study!!

Interview Comments: (Please provide any feedback about the interview process, patient, S.O., and/or situation that may be helpful in interpreting the answers above.)

Suggestions: (Please include any suggestions or comments about the data collection and/or data analysis processes on the back of this page.)
APPENDIX B

CONSENT FORM UTILIZED IN LARGER STUDY
Informed Consent Form -- "Stroke Survivor"

Factors Related to Timing of Seeking Health Care for Stroke Symptoms

You are being asked to participate in a study, along with 800 other "stroke survivor/decision partner" pairs, to evaluate factors that may affect when people with stroke symptoms go for medical care.

Your participation in this study will involve an interview consisting of questions and a brief assessment. This will take a total of about 30 minutes. The questions will be about who you are, the symptoms you experienced, your life situation, some history related to your health, and when and how you decided it was necessary to seek treatment for your symptoms. We would also like to interview the person who helped you make your decision to seek care.

There are no immediate benefits to you; however, the information gained from this study may, in the future, help other people with possible stroke symptoms seek earlier treatment and care. There are no known risks involved with participating in this study.

The information you provide to us will be kept confidential to the extent permitted by law. All of the results will be coded so that individual people cannot be identified. Your name will not be revealed in any reports or publications resulting from this study without your written consent.

You have the right to refuse to participate in this study without any fear of prejudice to your treatment and care. In addition, you may choose to stop the interview at any time.

You have had the opportunity to ask questions regarding this study and those questions have been answered to your satisfaction. You will be given a copy of your signed consent form.

If you have any questions regarding this study, you may contact Louise O'Donnell at (616)391-1557. If you have any questions regarding your rights as a participant, you may call the Human Rights Committee representative Linda Pool at (616)391-1291.

<table>
<thead>
<tr>
<th>Participant or Responsible Party Signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Witness Signature</td>
<td>Date</td>
</tr>
<tr>
<td>Investigator Signature</td>
<td>Date</td>
</tr>
</tbody>
</table>

[ ] YES. I would like to receive a summary of the study results when they are available.

<table>
<thead>
<tr>
<th>Full Name:</th>
<th>Street Address:</th>
<th>City, State, Zipcode:</th>
</tr>
</thead>
</table>
APPENDIX C

APPROVAL LETTER FROM PRIMARY AND CO-INVESTIGATORS OF LARGER STUDY
December 12, 1998

Brenda,

As requested, I am providing you with a letter regarding your use of the data from our study "Factors Related to Timing in Seeking Health Care for Stroke Symptoms." I, along with the Co-Investigators of this study, have granted you permission to use the data collected in Grand Rapids from this study, to perform your own analysis on the affect of gender of the decision making process.

Please let me know if I can be of any further assistance as you move forward through the approval process.

Sincerely,

Louise E. O'Donnell RN, MS, CNRN, ANP
January 12, 1999

Brenda Nyenhuis
2085 Tyler St.
Jenison, MI 49428

Dear Brenda:

Your proposed project entitled "Gender Differences in the Relationship of Stroke Health Beliefs and Timing of Seeking Treatment for Acute Stroke Symptoms" has been reviewed. It has been approved as a study which is exempt from the regulations by section 46.101 of the Federal Register 46(16):8336, January 26, 1981.

Sincerely,

Paul Huizenga, Chair
Human Research Review Committee
APPENDIX E

APPROVAL LETTER FROM SPECTRUM HEALTH NURSING RESEARCH COMMITTEE
February 18, 1999

Brenda Nyenhuis, RN, BSN
2985 Tyler Street
Jenison, MI 49428

Dear Brenda,

The Nursing Research Committee has completed the review of your research proposal Gender Differences in the Relationship of Stroke Health Beliefs and Timing of Seeking Treatment for Acute Stroke Symptoms at the February 16, 1999 committee meeting. I am pleased to inform you that your proposal has received approval from our committee. You are now ready to proceed to the Hospital Research and Human Subjects Committee. Contact Linda Pool at the Cook Institute, 391-1291, for those arrangements.

As per Nursing Research Committee policy, you will be assigned a sponsor who will serve as resource to you during this study. Carole Roberts, RN, MSN will serve in that capacity. Please contact her at 774-7768 when you are ready to begin data collection, and keep her informed of your progress during the study.

Upon completion of your research study, we will look forward to an oral and/or poster presentation in a format appropriate to the topic and in timing with other educational offerings. We also encourage you to present your findings via conference presentations and publication.

Please feel free to call me if you have any questions or need further clarification. I can be reached at 391-1625.

Sincerely,

Linda D. Urden, DNSc, RN, CNA
Director, Quality, Research & Advanced Practice
Chairperson, Nursing Research Committee

c: Linda Pool, Research Office
Carole Roberts, RN, MSN
Phyllis Gendler, RN, PhD, KSON, GVSU
APPENDIX F

APPROVAL LETTER FROM SPECTRUM HEALTH RESEARCH AND HUMAN RIGHTS COMMITTEE
February 26, 1999

Brenda Nyenhuis, R.N., BSN
2085 Tyler St.
Jenison, MI 49428

Dear Ms. Nyenhuis:

By means of the expedited review process your protocol entitled, "Gender Differences in the Relationship of Stroke Health Beliefs and Timing of Seeking Treatment for Acute Stroke Symptoms" and was given approval by the Spectrum Health Research and Human Rights Committee.

Please be advised this does not include any budgetary items. Should you require funds from the Research and Human Rights Committee at any time, you will need to present the entire project to them. The Spectrum Health number assigned to your study is #99-070.

Please be advised that any unexpected serious, adverse reactions must be promptly reported to the Research and Human Rights Committee within five days; and all changes made to the study after initiation require prior approval of the Research and Human Rights Committee before changes are implemented.

The Research and Human Rights Committee and the F.D.A. requires you submit in writing, a progress report to the committee by January 1, 2000 and you will need reapproval should your study be ongoing at that time. Enclosed are some guidelines, entitled "Protocol Points", for your convenience in working with your study.

If you have any questions please phone me or Linda Pool at 391-1291/1299.

Sincerely,

Jeffrey S. Jones, M.D.
Chairman, Spectrum Health Research and Human Rights Committee

JS/Jfn

c: Louise O’Donnell, R.N.

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