

**Reasons for delay in responding to Myocardial Infarction symptoms**

**by**

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in Partial Fulfilment of the Requirements  
for the Degree of**

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**A Thesis/Practicum submitted to the Faculty of Graduate Studies of The University  
of Manitoba in partial fulfillment of the requirements of the degree  
of**

**Master of Nursing**

**Shannon L. Stefanson©1999**

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## **Abstract**

Studies have found that individuals tend to delay seeking medical attention for Myocardial Infarction (MI) symptoms. A number of studies have examined the factors which may attribute to the delay in seeking medical treatment with inconsistent findings. Further research pertaining to this topic was warranted. Therefore, a research study was undertaken to explore the reasons behind individuals' delay in responding to the symptoms of Myocardial Infarction.

The conceptual framework for this study was based on Becker's Health Belief Model. This model was chosen as it assisted in the identification of variables that explain the response of an individual to the symptoms of a Myocardial Infarction.

An exploratory design was employed to explore the relationship between delay times of MI patients in relation to demographic factors of age, gender, marital status, educational level and socioeconomical status. The effect of consulting a second person (eg. spouse or physician) in the decision to seek medical intervention was also explored in relation to MI patient delay times. A demographic form as well as a ResponseTime instrument were administered to a convenience sample (n=30) of the target population.

All variables were summarized utilizing descriptive statistics. The average delay time was 2.93 hours (S.D. = 3.131). Data was analyzed utilizing multiple regression, independent t-tests and ANOVA techniques. Findings of a significant relationship between age and delay time were revealed.

Various implications for nursing in the areas of education and research were identified. This study underscores the importance of reducing patient delay times in response to MI symptoms.

Reperfusion therapy, most commonly with thrombolytic agents, has altered the approach to the treatment of MI's. Patient delay is the main factor limiting the utilization of such interventions. Understanding the degree and the reasons patients respond to MI symptoms is the first step before appropriate interventions to decrease decision time can be designed and implemented.

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## **CHAPTER I: INTRODUCTION**

Studies have found that individuals tend to delay seeking medical attention for Myocardial Infarction (MI) symptoms. A number of studies have examined the factors which may attribute to the delay in seeking medical treatment with inconsistent findings. Further research pertaining to this topic was warranted. Therefore, a research study was undertaken to explore the reasons behind the delay by individuals in responding to the symptoms of Myocardial Infarction. The following chapter will discuss the statement of the problem. The purpose of the study will be presented. The significance of this research for nursing will be described. The conceptual framework for this study will be discussed. Lastly, the basic underlying assumptions for this study will be outlined. To begin, the statement of the problem is discussed.

### **Statement of the Problem**

In 1995, 18,480 Canadians who were 35 to 84 years of age died as a result of a Myocardial Infarction (MI) (Statistics Canada, 1997). Death as a result of a MI can occur within the first hour of symptom onset (Dracup et al, 1995). The time interval from symptom onset to the decision to seek medical treatment is a critical determinant of outcome both for survival and for preservation of myocardial tissue (Lenfant et al, 1990). Recent advances in early treatment for MI have made delay time one of the most essential determinants for optimal treatment of MI.

Numerous studies have demonstrated that reperfusion therapy, most commonly with intravenous thrombolytics has been shown to reduce mortality and morbidity

(Gruppo Italiano per lo Studio della Streptochinasi nell'infarto miocardico (GISSI), 1986, Kennedy et al, 1985 and Lee et al, 1995). Reperfusion is defined as the restoration of blood flow to myocardium tissue distal to an acute coronary occlusion (Newby et al, 1996). The benefits of this therapy are directly related to the interval between the onset of MI symptoms and the administration of the drug. The mortality rate can be reduced by forty-seven percent if thrombolytic therapy is initiated within one hour of the onset of symptoms (GISSI, 1986).

In a large, randomized thrombolytic trial, GISSI (1986) provided evidence of a relation between shorter time to randomization and better mortality outcome. Subsequent trials indicated that the mortality benefit extended to at least twelve hours (Lincoff & Topol, 1993). However, best results were evident for patients randomized within the first hour of MI symptom onset, with marked attenuation of the benefit after three to four hours. Additionally, the LATE investigators (1993) reported a 25 percent mortality reduction in relation to controls for those patients treated between six and twelve hours. However, no benefit was found for those individuals receiving later treatment.

Furthermore, early thrombolysis can limit infarct size. The shorter the interval between the onset of symptoms and medical intervention, the higher the resulting cardiac function (Mathey et al, 1985). Therefore, time is the critical factor of maximal benefit from treatment, thus, expedited identification of the symptoms of MI is critical.

Reducing delay time in MI patients is essential for two reasons. One, early identification and intervention of MI can reduce mortality. Two, early thrombolysis will limit infarct size and thus improve the patient's prognosis. The shorter the interval

between onset of myocardial infarction symptoms to medical attention, the better the patient outcome.

Consequentially, the factors that influence the time delay during the pre-hospital phase of MI must be understood. A number of studies have addressed the variables affecting delay time. However, conflicting results have often been found in these studies. The following five variables have been selected as relevant to delay time in seeking medical care. These are the most frequently studied variables attributed to delay times in MI patients. Studies of these variables in relation to delay time have reported considerable variation.

To begin, the first and second variables of age and gender have been evaluated in relation to delay time (Moss et al, 1969; Hackett & Cassem, 1969; Kenyon et al, 1969, 1991; Moss & Goldstein, 1970; Simon et al, 1972; Schroeder et al, 1978; Matthews et al, 1983; Turi et al, 1986; Wielgosz et al, 1988; Maynard et al, 1989; Schmidt & Borsch, 1990). However, conflicting results have been reported from these above mentioned studies.

The third variable, education, has been explored in relation to it's impact on delay in responding to MI symptoms (Moss et al, 1969; Moss & Goldstein, 1970; Simon et al, 1972; Turi et al, 1986; Wielgosz et al, 1988; Schmidt & Borsch, 1990; Ell et al, 1994). However, educational level has been shown to have little effect on delay time.

The fourth variable, socioeconomic status, has been studied in relation to MI patients' delay time (Kenyon et al, 1969, 1991; Hackett & Cassem, 1969; Simon et al,

1972; Matthews et al, 1983; Copper et al, 1986; Wielgosz et al, 1988; Schmidt & Borsch, 1990; Ell et al, 1994). The findings of these studies have been varied.

Lastly, certain studies have explored the effect of the role of a second person in initiating the decision to seek assistance for symptoms of a MI. Hackett & Cassem (1969) and Moss et al (1969) examined the role that spouses and significant others play in relation to MI patients' delay times. It has been found that individuals, who involve a spouse in the decision to seek assistance for MI symptoms, report longer delay times. Additionally, a limited number of studies have explored the involvement of a physician in the MI patient's decision to seek medical assistance for MI symptoms (Schroeder et al, 1978; Gray et al, 1993). Therefore, further evaluation of these variables is necessary.

### **Purpose of the study**

The phenomenon of delay by MI patients must be understood in order to design educational strategies to reduce response times. The purpose of this descriptive study was to explore the factors that contribute to the delay in responding to symptoms of a MI. Delay time is defined as the length of time, calculated in hours, it takes for individuals to make the decision to seek medical intervention for MI symptoms. This paper identified the extent and frequency of delay in MI patients and possible relationships between delay and other variables.

### **Significance to nursing**

The results of this study are believed to be applicable to nursing practice and education. The findings of this study may potentially alter nursing practices. This study will strengthen the knowledge base of the nursing profession about MI educational programs. Ultimately, it will result in the development of more effective educational programs. The factors associated with the outcome measures for this study could be used to predict future behavior of MI patients or to reinforce desired timely responses.

Assessment of the above mentioned variables could allow early identification of persons at risk of delay in responding to symptoms of MI. Ideally, preventive strategies will be developed, resulting in minimization of delay time. For example, a profile could be identified of those individuals most likely to delay seeking medical intervention so that high risk patients can be identified prior to a MI. Nurses could educate the patients about the recognition of symptoms as well as the importance of a rapid response.

### **Conceptual framework**

The conceptual framework which guided this study is the Health Belief Model (HBM). The HBM was selected as the conceptual framework for this study because it assists one to identify the variables that explain the response of an individual to the symptoms of a MI (see Appendix A). The HBM has served as a framework for a number of studies relating to preventive health behavior (Becker, 1974), illness (Kirscht, 1974) and the sick role (Becker, 1974). The HBM asserts that beliefs held

by an individual form the basis for that individual's decisions with respect to health care. The HBM is based on four motivational determinants which direct the decision of a person to perform a health-related action. The first component of motivation is the individual's state of readiness. Readiness stems from an individual's perception of his/her personal susceptibility to a health problem and his/her perception of the severity of the consequences of that problem.

The second element of the HBM is the individual's perception of the balance between the benefits of a particular health related action and the cost of that health related action. These expenditures can be viewed as actual or anticipated physical, economic or psychological costs that will be incurred by the health related action. The third component of this model is the external or internal cues received by the person which prompt the initiation of health behaviours. According to the HBM, health motivation arises from the belief that the threat of a health related action is less than the threat of living with a health deficit (Becker, 1974).

The health related action is influenced by the person's perception of the seriousness of the problem and by his/her susceptibility. The HBM suggests that an individual's beliefs regarding an impending health threat combined with beliefs about the likelihood that a specific action will lead to a reduction of the health threat are critical variables in predicting the person's imminent actions. Subsequent behavior is based on the individual's assessment of the health threat combined with a cost/benefit analysis of specific actions. The actions are based on the individual's beliefs pertaining to how susceptible he or she is to having a heart attack, the seriousness of the illness as well as how effective specific actions will be in reducing the perceived threat. This model will be utilized as a framework for organizing the selected variables



for this study and to direct the analysis.

None of the above mentioned studies have utilised the HBM as the conceptual framework to explore factors affecting the decision to seek medical attention for MI symptoms. However, it seems appropriate for two reasons. One, the HBM is often utilized for studies that are undertaken to identify variables that motivate individuals to seek health related actions. Two, it frames the MI patient's decision to seek care in a cost/benefit framework. According to the HBM, a MI patient will pursue the decision to seek medical intervention based on two factors. These are: the amount of perceived threat related to the MI symptoms and the attractiveness or benefit of receiving medical attention (Dracup et al, 1995). These two factors are modified by the variables of age, gender, socioeconomic status, education, and the influence of a second person (Dracup et al, 1995). These five variables serve as the independent variables for this study.

The HBM is an attractive framework for this study as it captures the patient's decision to seek medical treatment in a cost/benefit framework in a comprehensive manner. However, it has certain limitations. One, the HBM alone cannot explain the patient's delay behavior. Lastly, the HBM is most effective in describing preventive behaviours and less accurate in predicting care-seeking behaviours (Becker, 1974).

Delay time is defined as the amount of time between the onset of Myocardial Infarction symptoms and the patient's decision to seek medical attention (Moss et al, 1969). Patients will be asked the date and time when they first noticed their initial cardiac symptoms as well as when they decided to seek medical care. This delay time

constitutes the dependent variable for the study.

Myocardial Infarction (MI) is defined as the formation of a platelet-fibrin-rich thrombus in an atherosclerotic coronary artery (Mehta, 1992). Thrombolytic agents play the role of dissolving the thrombus and are linked to maximal savings of the myocardial tissue. Myocardial Infarction is confirmed by at least two of the three following criteria: 1) chest pain lasting for more than fifteen minutes duration; 2) elevation of serum creatine kinase (CK) and aspartate aminotransferase (ASAT) ; and 3) the development of diagnostic Q waves; disappearance of ST elevation followed by T wave inversion; or both, obtained from an electrocardiogram (EKG) (Hofgren et al, 1988).

### **Basic assumptions**

The following assumptions serve as the foundation of this study:

- 1) Individuals experience MI symptoms;
- 2) Individuals delay in responding to MI symptoms;
- 3) The results of this study will strengthen the nursing profession's knowledge base pertaining to a profile of individuals that delay in responding to MI symptoms.

### **Summary**

Delaying in response to Myocardial Infarction symptoms can be attributed to various factors. A study to explore the factors of delay in initiating the decision to seek medical attention for MI symptoms will be undertaken. Chapter 1 has described the

statement of this problem, purpose of the study, significance to nursing, conceptual framework and basic assumptions of this study. Chapter 2 will provide a review of the literature in relation to the reasons that patients delay in responding to MI symptoms.

## **CHAPTER II: REVIEW OF THE LITERATURE**

This chapter will present a review of the literature pertaining to the reasons that individuals delay in responding to their MI symptoms. The review examines research published between the years of 1964 and 1998, pertaining to the variables which may effect the delay of patients responding to symptoms of a MI. Two areas were examined. One, the delay time between onset of MI symptoms and the decision to seek medical attention. Two, five variables attributed to the delay in responding to symptoms of Myocardial Infarction. These five variables are age, educational level, gender, socioeconomic status and contact with another person. Research studies were identified through CINAHL and reference lists of the primary articles. Studies were included if: the sample consisted of MI patients, the methodology was described, and the data was clearly presented. To begin, a summarization of the studies that have evaluated MI patient delay time is presented.

### **Delay Times**

The median time from onset of MI symptoms to the decision to seek medical care ranges from two hours to six and a half hours (Dracup et al, 1995). Olin & Hackett (1964) found that in thirty-two hospitalized MI patients, delay was a common response. Eleven of these patients took five or more hours to make their decision to seek medical treatment for MI symptoms. The remaining twenty-one sought medical intervention within five hours. Similarly, Moss et al (1969) found that patients delayed in seeking medical treatment an average of five hours. Hackett and Cassem (1969) and Simon et al (1972) found that patients' mean delay times were four hours and two

hours and forty-five minutes respectively. Similarly, Schroeder et al (1978) found that patients delayed an average of two hours and eighteen minutes.

The decision to seek medical attention for MI symptoms is made within a framework of multiple interrelated variables. This section will summarize various research study findings about five variables and their relationship to MI patient delay times. The five variables that will be reviewed are: age; gender; educational level; socioeconomic status; and contact with a second person. First, the variable of age is considered.

### **Effect of age on delay time**

Various studies have explored the effect of age on delay time. Conflicting results have been found pertaining to the effect of age on MI patients' delay time however, it is suggested that older age is associated with an increase in delay time. Several researchers report that an increase in age resulted in an increased delay time. In a study of 778 randomized MI patients, Turi and colleagues (1986) found that older age was directly related to increased delay time. The significance of differences between the category of delay time and age was determined by a t-test. Maynard et al (1989) and Schmidt & Borsch (1990) also reported similar results in their studies of delay times in 690 and 744 MI patients respectively. Additionally, in an earlier study, Moss et al (1969) interviewed 64 MI patients admitted to a coronary care unit in relation to their delay times. It was found that the delay time increased progressively with age.

However, certain studies have revealed no direct relationship between age and

delay. Hackett and Cassem (1969) studied factors attributed to delay time among 100 randomly selected coronary care unit patients admitted with a diagnosis of probable or confirmed MI. It was reported that age of the patient was not related significantly to delay time. However, there was a trend for older patients to delay longer indicating that inadequate statistical power may have contributed to the negative finding. Additionally, in a Canadian study of 201 consecutive patients admitted for an MI, age was not found to be related to the degree of delay (Wielgosz et al, 1988). However, only 42 of these patients were interviewed and included in the data analysis of this study.

These above mentioned conflicting results can be attributed to methodological issues. The studies reporting no difference in delay time based upon age have had small sample sizes and therefore, limit the statistical power to detect differences. The above-mentioned studies utilized descriptive statistics to summarize their findings. However, further statistical analysis of these studies' findings was generally inconsistent. Certain studies utilized multivariate testing such as multiple regression or ANOVA while others utilized t-tests.

### **Effect of education on delay time**

Secondly, the influence of patients' educational level on delay time has been examined. A number of studies have demonstrated that education does not effect delay time (Moss et al, 1969; Simon et al, 1972; Turi et al, 1986; Wielgosz et al, 1988; Schmidt & Borsch, 1990 and Ell et al, 1994 ). For example, Moss et al (1969) report that the level of education did not significantly affect delay time. However, it was reported that those patients who had completed graduate school had the lowest mean

delay time.

### Effect of gender on delay time

Thirdly, various studies have explored the role of gender in relation to delay time. However, conflicting findings pertaining to this variable have been reported. Certain studies indicate that there is a relationship between gender and delay time (Turi et al, 1986; Moss et al, 1969; Hackett and Cassem, 1969). These studies conclude that women delay longer than men.

Turi et al (1986) found that women delay significantly longer than men in response to MI symptoms. Moss et al (1969) interviewed 17 women and 47 men admitted to a coronary care unit for a definite or probable MI and found that the mean delay times were 350 minutes and 140 minutes respectively. It was found that women delayed a mean of 3.3 hours longer than men in the decision to seek treatment for their MI symptoms. Hackett and Cassem (1969) interviewed 24 women and 64 men admitted to a coronary care unit for suspected or confirmed MI and reported no statistical difference in delay time. However, women were found to delay a median of one hour longer than men.

Conversely, Schroeder et al (1978), Wielgosz et al (1988) and Simon et al (1972) report that gender does not play a role in influencing delay. Schroeder et al (1978) interviewed 158 men and 53 women admitted to a coronary unit for suspected myocardial infarction. Analysis of the patients' gender was not associated with prolonged patient delay times. Wielgosz et al (1988) reported that no significant difference in decision time was found for the sociodemographic variable of gender.

Simon et al (1992) reported that 160 MI patients (116 men and 40 women) were interviewed about their activities prior to hospital arrival. It was found that there was no significant correlation between delay time and gender. However, it is unclear if the women in these studies were older than the men. If the women were older, age may have been a confounding variable for gender. Additionally, it is felt that the methodological limitation of inadequate sample size was a factor in the failure to find statistical significance for these studies.

### **Effect of socioeconomic status on delay time**

Fourthly, certain studies have evaluated the effect of socioeconomic status on MI patients' delay times in seeking medical attention. The results of these research studies have been conflicting. Copper et al (1986) and Ell et al (1994) found that low socioeconomic status does influence delay time. Copper et al (1986) conducted a study of delay among 111 African-Americans in hospitals serving populations classified as "poor and underprivileged". It was found that delay times for these patients were three times longer than Caucasians. Ell et al (1994) interviewed two hundred and fifty-four African-Americans admitted to a public hospital and 194 African Americans admitted to a private hospital for suspected acute myocardial infarction in relation to their delay times. The total study population mean from onset of symptoms to the seeking of medical care was 9.14 hours. The results demonstrate significant within-group differences among African-American patients. Public hospital MI patients reported longer times in reaching the decision to seek medical care. This could be attributed to these individuals being disadvantaged with respect to education and income.



On the other hand, it has also been reported that socioeconomic status does not play a role in delay time (Hackett & Cassem, 1969; Simon et al, 1972 ). Again, these findings may be attributed to small sample sizes and thus, limited power. Nonetheless, personal demographic variables alone can not be expected to explain delays in responding to symptoms of a MI.

### **Effect of involvement of a second person on delay time**

Lastly, few studies have explored the social context by which a MI occurs. The role that a second person plays to individuals responding to MI symptoms must not be overlooked. The influence of a spouse/significant other as well as a physician in MI patients initiating medical intervention must also be explored. To begin, the influence of the spouse on MI patients' delay time is reported.

Hackett & Cassem (1969) and Moss et al (1969) found that patients tended to delay longer if a spouse was involved in the decision to respond to Myocardial Infarction symptoms. Hackett and Cassem (1969) found that 37 out of 100 patients were convinced by a family member to seek medical assistance. It was reported that patients who made the decision to seek medical assistance for MI symptoms independently made this decision quicker (mean = 5.4 hours S.D. = 9.3) than those individuals who required assistance with that decision (mean = 13.0 hours S.D. = 18.4). More specifically, the mean delay time for those MI patients assisted by family members to seek medical assistance was 17.22 hours S.D. = 21.6.

In a study conducted by Moss et al (1969) it was found that delay time was influenced by the individual who initiated the decision to seek medical assistance.

The delay time was shortest when the patient made the decision independently (delay time = 174 minutes) and was greater when the spouse initiated the decision for medical intervention (delay time = 210 minutes).

In addition, the act of consulting a physician in response to MI symptoms has also been studied. In two studies, it was reported that contact with physicians attributed to increased patient delay times (Schroeder et al, 1978; Hackett and Cassem, 1969). Schroeder et al (1978) studied the effect of contacting their physician on MI patients' delay times. Of the 140 patients who contacted a physician, 67 patients were sent to the Emergency department, whereas out of 71 patients, 59 had an additional mean of 180 minutes of physician-advised delay consisting of office visits, 5 patients had the physician make a house call while the remaining 7 patients attempted some sort of therapy (eg. antacid, anti-anginal medication etc.) Five of the seven patients whose physicians recommended further therapy were subsequently diagnosed with a MI.

Hackett and Cassem (1969) found that 12 of 100 patients were delayed in being hospitalized as a result of making contact with a physician. This delay consisted of an office visit scheduled for the next day or advice to take some medication and wait accordingly. For many MI patients, consulting or attempting to consult their physician is a logical first step in making the decision to get help for cardiac symptoms. However, research indicates that this act tends not to shorten their delay times.

### **Summary**

Methodological differences and study limitations make comparisons across studies difficult and likely account for the conflicting results. Nonetheless, certain conclusions from these studies about MI delay can be drawn. It appears that delay time tends to be increased in older age and with female patients. Lower socioeconomic status has been associated with an increase in delay times. Education does not appear to have a role in influencing patient delay times. It has been reported that the act of consulting a spouse or a physician has been associated with an increase in patients' response times to MI symptoms.

However, further research is required in this area to substantiate these preliminary findings. This was the impetus within this study. These inconsistent results reinforce the importance of further analysis of these variables. It is only with consistent research evidence that the theoretical foundation of delay will be established and knowledge of its relationship with these above mentioned variables will unfold. Chapter 3 will describe this study's methodology, sample and recruitment procedure, research setting, measurement methods, ethical considerations, data collection protocol, data analysis plan and limitations of the study.

### **CHAPTER III: METHODOLOGY**

Various studies have explored the reasons behind individuals delaying in response to their MI symptoms. However, the findings have been inconsistent. This study explores this issue. The following chapter illustrates the design for the study, the selection and the recruitment of participants, the research setting, methods of measurement, ethical considerations, the method of data collection and analysis, and lastly, the limitations of the study.

#### **Research design**

A quantitative, exploratory design was utilised for this study. An exploratory design was appropriate since a limited number of studies have explored the reasons why individuals delay in responding to symptoms of MI. The investigator explored possible relationships between delay and other variables. It provided the investigator with an opportunity to understand what factors are related to the phenomena of delay in MI patients.

#### **Sample**

Convenience sampling determined the participation of MI patients in this study. This sampling technique permits a broader view of the setting. The participants for the study were selected from individuals admitted to the acute care community hospital, Grace General Hospital, with a first-time diagnosis of MI. The sample consisted of 30 patients in total. This was felt to be an adequate sample size

because it is logically linked to previous studies as well as to the purpose and the design of the study (Polit and Hungler, 1995). Furthermore, based on the number of MI patients admitted to this facility in 1996/97, it was felt that a sample size of 30 would be an adequate representation of the target population. One means to address selection bias is to clearly outline the eligibility criteria.

Eligibility criteria for admission of subjects into the study included: 1) patients 35 to 85 years of age, 2) diagnosed with a MI (first-time) 3) admitted to the Intensive Care Unit (ICU) and 4) ability to read and speak English, and 5) alert and oriented to person, time and place.

### **Setting**

The study was conducted in the acute care community hospital, Grace General Hospital, in the City of Winnipeg. There are a total of 261 hospital beds in this hospital setting. Data collection took place in the ten bed Intensive Care Unit (ICU). This area is managed by one nurse manager. Registered nurses (RN's) and auxiliary staff work in ICU. Generally, bed utilization of the ICU is 99% occupancy. Patients are admitted to ICU via the Emergency Department. The participants were surveyed in ICU on day three of their hospitalization. Following their stay in ICU, MI patients are either transferred to the medical ward or are discharged home.

### **Measurement Methods**

Two instruments were utilized to collect data. These were developed after an extensive search of the literature. The first instrument is the

Demographic sheet (see Appendix B). It includes questions about the participant's age, gender, marital and socioeconomic status and educational level. It is based on various demographic factors that have been assessed in other studies of patients delaying their response to MI symptoms (Hackett and Cassem, 1969; Kenyon et al, 1969 and Matthews et al, 1983). The level of measurement for this instrument is nominal. This information facilitated the investigator in describing the characteristics of the participants in the study.

The second instrument is the Response Time sheet (see Appendix C). Two types of information were recorded on this sheet. One, the delay time. Specifically, the time that the patient first experienced the MI symptoms (T1) as well as the time when a decision was made to pursue medical intervention (T2). The duration between T1 and T2 will serve as the overall response time (T3). The second type of information that will be recorded on this sheet is whether or not any individual was involved in the decision to seek medical attention. The specific role of the second person will also be recorded (eg. spouse; physician etc.). The level of measurement for this record is nominal.

Prior to the utilization of these instruments, face and content validity were established by means of a panel of experts in cardiovascular nursing viewing the instruments. Inter-rater reliability was enhanced through one individual administering the instruments. Furthermore, the same instruments were utilized throughout the study.

### **Procedure**

Upon approval from the Ethical Review Committee, Faculty of Nursing at the University of Manitoba, and approval for access to the Grace General Hospital (see Appendix D), the investigator met with the nurse manager of the ICU to further discuss the purpose of the study. The Registered Nurses for ICU provided each newly admitted MI patient who met the eligibility criteria with an, "Invitation to Participate" (see Appendix E and F). This letter explained the purpose of the study, identified that participation is voluntary as well as what the study entailed. After patients read the letter, they were asked to inform their nurse if they wanted to participate in the study. This process, whereby participant contact was initiated by a third party, ensured that the investigator with a vested interest in the study did not exercise coercion in order to obtain subjects for the study.

The ward clerks for ICU notified the investigator of the patients who were willing to meet with the investigator and discuss the study further. The investigator met with the patient and explained the study in more detail, using the "Invitation to Participate" letter as a guide. This letter was one means to maintain constancy of conditions. It was one method that ensured that the same message was delivered to all subjects (Polit and Hungler, 1995). The prospective participants were informed that they could withdraw or refuse to answer any question at any time without any effect on their care. The investigator explained that confidentiality would be maintained as follows.

One, patients' names would not appear on the questionnaire. Each patient

would be assigned a code number. Two, the list of the patient names and codes as well as consent forms would be kept separate from the data and accessible only to the investigator. The list and consent forms would be destroyed at the completion of the study. All raw data would be retained in a locked, secure place for seven years following data collection and then destroyed. The investigator explained that the participants' identity would not be revealed in any published work. At this time, the participants were given the consent form to sign (see Appendix G). After the patient read the consent form, he or she would sign it.

On the third day of their hospitalization, the investigator met with the patient to complete the Demographic sheet. The investigator also completed the Response Time sheet by asking questions pertaining to the times that the MI patient began to experience MI symptoms and when he/she decided to seek medical assistance. Additionally, the participants were asked if anyone was consulted prior to their decision to seek medical attention. The role of that individual was also recorded. To ensure reliability, this information was obtained both by interviewing the patient and by examining the hospital chart.

### **Ethical considerations**

Ethical approval for this study was sought from the Ethical Review Committee, Faculty of Nursing at the University of Manitoba. Access to the patients was initiated by means of a letter to the Research committee at the hospital. The letter outlined the purpose of the study and requested permission from the hospital to approach patients. The investigator did not approach the potential participants directly. Rather, participants were sought via means of an "Invitation to Participate".



This was one measure to avoid any element of coercion. Following the participants' permission, these individuals were approached by the investigator to sign a consent form. The participants were assured that withdrawal or refusal from the study at any time would not affect their subsequent hospital care. The consent form clearly stated that the participant would not directly benefit from the study. However, the participant was informed that findings from the study may be used in future studies looking at effective educational programs for MI patients. The patients had the opportunity to have any questions answered. Thus, an informed consent was obtained from all participants.

The consent and "Invitation to Participate" identified that the only individuals who would have access to the data were the investigator and the thesis chairperson. Confidentiality was maintained through each participant being assigned a code number. The list of the participants and the consent forms were kept in a locked drawer. The information obtained from each instrument was entered as a distinct file under a Windows '95 Program.

### **Data Analysis**

Statisticians from the Manitoba Nursing Research Institute were consulted throughout the study. Descriptive statistics were utilized to analyze and interpret the data. These included frequencies, measures of central tendency (mean) and measures of variance (standard deviation). Multiple regression, ANOVA and t-tests were the other statistical procedures utilized for analysis. The data analysis was facilitated through a computerized statistical package. These

analyses assisted in the exploration of relationships between variables and delay time.

### **Limitations**

The following limitations existed within the methodology. One, as a result of this not being a randomized sample, chances decrease that the sample was representative of the population. This is compounded with a limited sample size. The findings of this study may be limited as a result of the data being collected in one hospital. Consequentially, generalizability may be limited. However, this hospital serves a wide array of patients thus, enhancing heterogeneity of participants. Additionally, a statistician from the Manitoba Institute of Nursing Research has been consulted who believes that this is an appropriate sample size for the study. Two, the investigator is currently employed at the hospital under study. However, this individual was not involved with the recruitment of the participants.

### **Summary**

The methods utilized in implementing this exploratory study to examine some of the potential reasons that individuals delay in responding to their MI symptoms have been discussed. The research sample, setting, methods of measurement, ethical considerations, procedure for data collection, data analysis and study limitations have been described. The results of the study will be presented in the following chapter.

## **Chapter IV: RESULTS**

The purpose of this study was to explore the factors that contribute to the delay in responding to MI symptoms. The intent is to identify the frequency and extent of delay in MI patients as well as any possible relationships between delay and other variables. Data for this study was collected over an eight week period between October and December, 1998. The data collected from the participants was coded and transferred to a computer file by the investigator. In consultation with a statistician, the SPSS computer package was utilised to analyze the results.

Five variables were considered potentially relevant to delay. These were age, marital status, level of education, gender, socioeconomic status and the involvement of another individual in initiating the decision to seek medical attention. All variables were summarized utilizing descriptive statistics. Inferential statistics assisted analysis of the results of the instruments. The level of significance for all analyses was set at the .05 alpha level. This level of significance is common with most nursing research since a five percent risk must be recognized in order to obtain statistically significant results (Polit & Hungler, 1995).

This chapter discusses the results of the data analysis for the study. Following a description of the sample characteristics, the demographic data, and the social context within which the decision was made, the extent and frequency of delay times will be described. Relationships between the study variables will then be explored.

### **Sample Characteristics**

During the study, data were collected from thirty participants. The sample was comprised of 19 men (63.3 percent) and 11 women (36.7 percent). However, one female participant, whose delay time was reported as 45 hours, was deemed to be an outlier. Therefore, upon consultation with a statistician, to avoid skew of the data, this individual was excluded from the following results. Therefore, the following results and discussion are based upon a sample size of twenty-nine.

All MI patients presented to the Grace General Hospital Emergency department and were subsequently admitted to the ICU. All participants were approached to participate in the study on the day following their admission to ICU. All patients were first time MI patients, experienced chest pain lasting for more than fifteen minutes duration; had elevation of serum CK and ASAT; the development of diagnostic Q waves; and the disappearance of ST elevation followed by T wave inversion or both obtained from an EKG.

### **Age**

Participants ranged in age from 32 to 85 years, with a mean age of 68.24 years (S.D. = 10.79). Ages were grouped into four categories (see Table 1, p.27). The majority (48.3 percent) fell into the 59-71 years range, followed by 37.9 percent in the 72-85 years, 10.3 percent in the 47-58 years and 3.4 percent in the 32-46 years categories. Males ranged in age from 32 to 84 years while females ranged in age from 57 to 85 years. Male and female mean ages were 66.63 and 71.30 years

respectively.

**Table 1 Demographic Data:Age**

	A	B	C	D
1	32-46	1	3.4	3.4
2	47-58	3	10.3	13.8
3	59-71	14	48.3	62.1
4	71-85	11	37.9	100

A= years of age    B= frequency    C= percent    D= cumulative percent

### **Marital Status**

More than half (55.2 percent) of the sample reported being married/common-law (see Table 2) . Thirty-four and a half percent were widowed and 10.3 percent were divorced.

**Table 2 Demographic Data:Marital Status**

	A	B	C	D
1	married/common-law	16	55.2	55.2
2	divorced	3	10.3	65.5
3	widowed	10	34.5	100

A= marital status    B= frequency    C= percent    D= cumulative percent

### **Education**

The mean level of education was 13.24 years with a range of 8 to 26 (see Table

3). Years of education were fairly evenly distributed. The highest frequency of level of education being reported at 11 years (31.0 percent). The lowest frequency being reported in the grade eight, fifteen and twenty-one and greater years of education (3.4 percent each).

**Table 3 Demographic Data: Education**

	A	B	C	D
1	8 years	1	3.4	3.4
2	9 years	2	6.9	10.3
3	10 years	6	20.7	31
4	11 years	9	31	62.1
5	12 years	2	6.9	69
6	14 years	2	6.9	75.9
7	15 years	1	3.4	79.3
8	19 years	2	6.9	86.2
9	21 years	1	3.4	89.7
10	22 years	1	3.4	93.1
11	25 years	1	3.4	96.6
12	26 years	1	3.4	100

A= years of education    B= frequency    C= percent    D= cumulative percent

### **Gender**

Almost two-thirds (65.5 percent) of the sample were men while 34.5 percent were women (see Table 4).

**Table 4 Demographic Data: Gender**

	A	B	C	D
1	male	19	65.5	65.5
2	female	10	34.5	100

A= gender    B= frequency    C= percent    D= cumulative percent

### **Socioeconomic Status**

Almost one third of the sample reported an income of \$40,000 to \$49,000 (see Table 5). The lowest frequency being reported in the \$10,000 to \$19,000, above \$75,000 and refusing to answer (3.4 percent each) categories.

**Table 5 Demographic Data :Socioeconomic Status**

	A	B	C	D
1	\$10,000-19,000	1	3.4	3.4
2	\$20,000-29,999	5	17.2	20.7
3	\$30,000-39,999	7	24.1	44.8
4	\$40,000-49,999	10	31	75.9
5	\$50,000-75,000	5	17.2	93.1
6	above \$75,000	1	3.4	96.6
7	refuses to answer	1	3.4	100

A= family income in 1997    B= frequency    C= percent    D= cumulative percent

### **Involvement of Second Person**

Whether or not the participants reported involving anyone in the decision to seek medical assistance were fairly evenly distributed (see Table 6, p. 30). Fifteen participants (51.7 percent) reported that they had involved an individual in the decision to seek medical assistance. On the other hand, fourteen participants (48.3 percent) pursued medical assistance independently.

**Table 6 Contact with a second person**

	A	B	C	D
1	yes	15	51.7	51.7
2	no	14	48.3	100

A= contact with a second person    B= frequency    C= percent    D= cumulative percent

Nine of the remaining pertinent sample reported consulting their spouse (see Table 7). On the other hand, five participants (17.2 percent) involved a physician in their decision. One participant consulted a home care nurse prior to deciding to seek medical attention for her MI symptoms.

**Table 7 Role of second person**

	A	B	C	D
1	spouse	9	31	31
2	physician	5	17.2	48.3
3	other	1	3.4	51.7
4	n/a	14	48.3	100

A= role of second person    B= frequency    C= percent    D= cumulative percent

**Summary of independent variables**

In summary, the average male MI patient in this study was 66.63 years old, married, had at least 14 years of education and earned between \$40,000 and \$49,999 in 1997. On the other hand, the average female MI patient in this study was 71.3 years of age, widowed, had 12 years of education and also had an income between \$40,000 and \$49,999 in 1997.



### Delay times

The average delay time was 2.93 hours (S.D. = 3.13). The delay times reported by the participants ranged from .33 hours to 12 hours. The most frequently reported delay times were 1.75 hours and 2 hours (10.3 percent each). Please see Table 8 for a summarization of the delay times.

**Table 8: Delay Times**

	A	B	C	D
1	0.33	2	6.9	6.9
2	0.4	2	6.9	13.8
3	0.45	2	6.9	20.7
4	0.5	1	3.4	24.1
5	0.92	1	3.4	27.6
6	1	2	6.9	34.5
7	1.5	2	6.9	41.4
8	1.58	1	3.4	44.8
9	1.75	3	10.3	55.2
10	2	3	10.3	65.5
11	2.3	1	3.4	69
12	3.5	1	3.4	72.4
13	4	1	3.4	75.9
14	5	2	6.9	82.8
15	6	1	3.4	86.2
16	6.5	1	3.4	89.7
17	8	1	3.4	93.1
18	11	1	3.4	96.6
19	12	1	3.4	100

A= delay time (hours)    B= frequency    C= percent    D= cumulative percent

Although the variables have been described, it is critical to examine the relationship between the variables of age, educational level, gender, socioeconomic status, contact with a second person and the delay time. In order to complete the

analysis, multiple linear regression, ANOVA and t-tests were utilized. This is appropriate since the investigator was interested in the reasons that affect delay time. Multiple regression assists one to explain the variability in delay time accounted by the independent variables. This statistical procedure facilitates analysis of the effects of the independent variables on delay time (Polit & Hungler, 1995).

T-tests were performed on the variables of gender as well as whether anyone was involved in the decision to seek medical intervention in relation to delay times. The statistical procedure, ANOVA, was utilized to analyze results of the independent variables of age, marital status, education, socioeconomic status and the role of the second person in relation to the dependent variable, delay time. T-tests and ANOVA are appropriate data analysis statistical procedures since they compare the variability between two and three or more groups respectively.

To begin, utilizing multiple regression, the results of analyzing the overall effects of age, educational level, gender, socioeconomic status, contact with a second person and the role of that second person on the MI patient's delay time were examined. These results were  $F = 1.70858$  and significance of  $p = .1661$ . These findings indicate that overall the independent variables had no effect on MI patient delay time. However, age was found to have affected the MI patients delay time ( $t = -2.484$   $p = .0211$ ). Table 9 (p. 33) demonstrates the t values and the p values for each of the independent variables.

**Table 9: Variables in the Multiple Regression Equation**

	A	B	C	D
1	Age	-0.501101	-0.484	0.0211
2	Educational level	-0.160766	-0.833	0.4136
3	Gender	0.055283	0.263	0.7947
4	Income	-0.029458	-0.143	0.8879
5	Contact with 2nd person	-0.768748	-1.518	0.1433
6	Role of 2nd person	0.48741	0.902	0.3766

A= independent variable    B= Beta    C= T value    D= p value (level of significance)

As identified, age appears to be the only variable that has an effect on these participants' delay times. Further analysis of this statistical significance was necessary. Utilizing multiple regression, the impact of age on delay times is explored further. The following results were found:  $F = 4.64384$  and  $p = .0402$ . Beta was found to be  $-0.383084$ ,  $t = -2.155$ , and  $p = .0402$ . Again, further analysis of the effects of age on delay time was necessary. Utilizing ANOVA with the four categories of age, the mean delay time was compared (see Table 10). The mean delay time delay for the entire sample was 2.93 hours S.D. = 3.1305.

The independent variable of contact with a second person came close to being significant ( $t = -1.518$   $p = .1433$ ). It is also noted that socioeconomic status was found to be the strongest variable for not being statistically significant relating to delay time.

**Table 10: Summary of Delay times compared to categories of age**

	A	B	C	D
1	32-46	1	11	0
2	47-58	3	3.9833	3.7981
3	59-71	14	2.5307	3.1343
4	72-85	11	2.4118	2.1023

A= years of age    B= frequency    C= mean delay time    D= standard deviation

There is a trend that the younger individuals delay longer than the older MI patients. However, there was wide variation in the cell sizes for each of the four age group categories. The results of this analysis must be considered in the context that only four participants reported being between 32 and 58 years of age.

Utilizing ANOVA, it was found that  $F = 3.0566$  and  $p = .0468$ . It was found that those individuals in the first age category were significantly different from those in the third and fourth age group. The first age group was not found to be significantly different from the second age group. This is likely attributed to the small cell size. As previously mentioned, t-tests and ANOVA were run as applicable. However, no statistically significant differences were found between the groups.

### Summary

Demographic data were summarized with descriptive statistics. The data reported from this study were also analyzed through the utilization of multiple regression, t-tests and ANOVA as appropriate. A multiple regression analysis was carried out to identify which factors accounted for the variance in delay times. Findings indicated that MI patients' level of education, gender, socioeconomic status, and contact with a second person were not statistically significant in relation to delay times. However, age was found to impact on MI patients' delay times. The implications drawn from this data will be discussed in the following chapter.

## **Chapter V: DISCUSSION**

This study was designed to explore the factors that contribute to the delay in responding to symptoms of a MI. The conceptual framework which directed this study was based upon the Health Belief Model (Becker, 1974). The HBM was utilized to assist this writer in the identification of the variables that may contribute to a patient's response to MI symptoms. According to the HBM, a MI patient's delay time is based on two factors. One, the amount of perceived threat related to the MI symptoms and two, the attractiveness or benefit of receiving medical attention (Dracup, 1995). These factors are modified by the demographic factors of age, educational level, gender, socioeconomic status, contact with a second person, and the role of the second person. A Demographic sheet and Response Time sheet were the research instruments utilized to operationalize these variables.

This study employed a quantitative approach to study these above mentioned variables. The methods of data analysis included frequency distributions, multiple regression, t-tests and ANOVA. Overall, age, education, gender, socioeconomic status and involvement with a second person were not found to affect delay time. However, further analysis of these variables indicated that age and delay time were statistically significant ( $t = -2.155$  and  $p = .0402$ ) with each other.

The following discussion of the research findings has been organized to correspond with the study's conceptual framework. The demographic characteristics as well as contact with a second person will be discussed in relation to MI patient delay time. The preceding literature review serves as the basis for comparison of this

study's findings in relation to previous research findings.

### Age

The sample consisted of MI patients ranging from 32 to 85 years of age. The longest delay times were reported by those participants aged 32 to 58 years old. One 32 year old MI patient's delay time was 11 hours in duration. The mean delay time for the 47 to 58 year old participants was 3.98 hours. The overall mean delay time was 2.93 hours (S.D. = 3.13). These results suggest that there is a trend towards younger MI patients delaying longer than older MI patients. However, these findings must be viewed with caution as a result of the small cell sizes.

Nonetheless, statistical analysis revealed a significant relationship between MI patient's age and delay time. Review of the literature indicated that various studies have provided evidence that age could be attributed to delay times (Turi et al, 1986; Maynard et al, 1989; Schmidt and Borsch, 1990 and Moss et al, 1969). These studies provided evidence that delay times increase progressively with MI patients' age. This current study's results contradict such reports. It is suggested that these inconsistent findings could be related to the previous research studies' larger sample sizes in comparison to this study's sample size. Therefore, it is believed that a larger sample size would have yielded different results.

On the other hand, certain studies have reported no statistical significance of age in relation to delay times (Hackett and Cassem, 1969 and Wielgosz et al, 1988). Consideration must be given to the fact that participants for the studies included in the review of the literature were drawn from different catchment areas.

Nevertheless, the trend towards younger MI patients delaying significantly longer than older MI patients cannot be overlooked. This finding could be attributed to the suggestion that individuals' tolerance towards deep pain sensations decreases with age (Woodrow et al, 1972). Thus, older individuals would respond more expediently to MI symptoms.

Furthermore, it is suggested that the younger MI patients may have believed that they were "too young" to be experiencing a MI. In addition, the younger MI patients may have attributed their MI symptoms to other causes. Since this study was quantitative in nature, it provided limited opportunity to capture the participants' experience with MI symptoms. This would be an interesting venue to pursue.

According to the Health Belief Model, the manner in which a MI patient will pursue medical intervention is modified by the variables of age, education, gender, socioeconomic status and the influence of a second person. The results of a positive relationship between age and delay time lend support to Becker's conceptual framework.

### **Education**

It was found that the mean level of education was 13.24 years. This study did not reveal a significant relationship between educational level and delay time. Educational level does not appear to have any effect on delay times. A university degree does not necessarily guarantee an expedient and timely response to MI symptoms. These results support studies undertaken by Moss et al (1969); Simon et al (1972); Turi et al (1986); Wielgosz et al (1988); Schmidt and Borsch (1990) and Ell

et al (1994). Consistent results could be attributed to similar instruments being utilized among these studies. This study has substantiated the previous studies' findings.

### Gender

Gender was measured by the Demographic Sheet. Nineteen males and ten females comprised the sample size. The mens' mean delay time was found to be 2.85 hours in comparison to the females' mean delay time of 3.07 hours. The finding of no significant relationship between gender and MI delay time is consistent with certain previous research studies (Schroeder et al, 1978; Wielgosz et al, 1988 and Simon et al, 1972). These studies reported that gender does not play a role in influencing delay. However, it is suggested that this current study, as well as the above mentioned studies, had the methodological limitation of an inadequate sample size. Therefore, small sample sizes could play a role in the failure to find statistical significance between these two variables. It is important to note that cell size for both groups was quite small. Thus, the power of analysis relating to this demographic variable is limited.

On the other hand, this study's findings contradict the results of certain nursing research studies. For example, Moss et al (1969) found that women delayed a mean of 3.3 hours longer than men in the decision to seek treatment for their MI symptoms. The methodological limitation of a small sample size is evident ( $n = 64$ ). Of these participants, only 17 were women. Therefore, these results must be viewed with caution as a result of the small cell sizes. It is suggested that different results would have been found with a larger sample size.



### **Socioeconomic Status**

Thirty-one percent of the sample reported an income of \$40,000 to \$49,000. It was found that there was no significant relationship between socioeconomic status and delay time. Previous research has produced mixed results relating to this variable. This study's finding is consistent with previous research undertaken by Hackett and Cassem (1969) and Simon et al (1972). For example, Simon et al (1972) report that socioeconomic status does not play a role in MI patient delay times. These findings substantiate the contention that higher levels of socioeconomic status do not necessarily ensure a more expedient response to MI symptoms. Furthermore, this current study is a Canadian study in which income should not influence the use of Emergency Room services unlike the United States.

It should be noted that this study's results are inconsistent with other research studies. For example, Cooper et al (1986) conducted a study of delay times among African-Americans in hospitals serving populations classified as "poor and underprivileged". The delay time was prolonged compared with studies of predominantly Caucasian populations. A statistically significant relationship was found between socioeconomic status and delay time. Differences in these studies could be precipitated by a variety of factors.

One, different instrumentation may have been utilized. Consideration must be given to differences among the data collection tools. This could provide varying results. Secondly, this study was limited to an analysis of a certain culture. Furthermore, this study was undertaken in a country that has social medicine available

to those individuals with the financial means. This study was undertaken in the United States. These participants likely do not have health insurance. Thus, these results would be different from this current study.

Thirdly, the varying catchment areas must also be considered. It is suggested that the sample for this current study was not representative of a large number of MI patients with lower socioeconomic status. For example, the mean income level was substantially above the poverty line. Therefore, limited representation from this group could also affect these results. Lastly, inconsistent results could be attributed to different interviewing techniques that were utilized in these studies. For example, Cooper et al (1986) interview techniques included collecting data from either the patient, a family member or a friend. Varying research methods could account for conflicting results across the studies. Therefore, comparisons among these studies must be made with caution.

### **Involvement with a second person**

This study found that 51.7 percent of the participants involved someone in the decision to seek medical treatment while 48.3 percent did not. A significant relationship between involvement with a second person and delay time was not found. Although it was not statistically significant, there appears to be a potential relationship between this factor and delay time. The results from this study are inconsistent with previous studies (Hackett and Cassem, 1969; Moss et al, 1969 and Schroeder et al, 1978). Delay time was not affected by whether or not the MI patient involved anyone in the decision to seek medical assistance. Furthermore, a significant relationship was not found between delay time and the role of that second person. However,

comparisons to other studies must be made with caution as a result of these studies being undertaken in different geographical locations. It is suggested that a study with a larger sample size would have yielded different results.

Nonetheless, it is suggested that the dynamics of interactions with spouses and physicians by MI patients needs to be further researched. More than fifty percent of the participants involved another individual in the decision to seek medical treatment for MI symptoms. Therefore, the onus of recognizing MI symptoms and responding appropriately should not rest on the patient alone but also be shared with others.

### **Delay Times**

The study found that the mean delay time was 2.93 hours (S.D. = 3.13). These findings are generally inconsistent with previous research studies. For example, Schroeder et al (1978) found that the mean delay time was 5.12 hours (S.D. 9.58) while Hofgren et al (1988) reported a mean delay time of 15.2 hours (S.D. 34.6). Inconsistent findings could be attributed to different interview techniques. For example, Simon et al (1986) interviewed patients at different times of their hospitalization. This may have affected the results of the study. Additionally, these differences in delay time may be geographically related. Each catchment area likely has pursued public educational programs to varying degrees.

Furthermore, a number of the above mentioned studies were undertaken in the United States. Limited Canadian studies have been undertaken on the frequency and variability of delay times. Universal accessibility to health care in Canada may affect such findings. It seems that health care costs are generally not a factor in pursuing

medical care in Canada. United States citizens do not have universal access to health care unlike Canadian citizens. Therefore, it is suggested that MI patients from the United States delay longer than Canadians as a result of their health care system.

The delay times reported in this study varied considerably. The delay times for this sample ranged from .33 hours to 12 hours. Certain patients delayed for a short period of time while others waited a long time prior to making the decision to seek medical intervention for MI symptoms. It is suggested that the varied responses could be attributed to the MI patients' size of infarct. It would be interesting to quantify the size of infarct (small versus large) in order to determine if this has an effect on the MI patients' delay times.

Furthermore, it is believed that the response to MI symptoms is subjective. This study did not measure the severity of pain that the MI patients experienced. It is suggested that those individuals reporting more severe pain would have shorter delay times than patients with a less severe degree of pain.

Additionally, it is suggested that administering medication, once MI symptoms were experienced, could influence the delay time. Whether or not medication was administered could result in the wide range of delay times. This information was not collected for the purposes of this study. However, it is believed that MI patients who take medication for MI pain wait longer.

As a result of the varied delay times and small sample size, it is suggested that the results of this study are not likely representative for all MI patients. However, these findings are representative of those individuals within the catchment area.

Additionally, a number of the studies were undertaken over twenty to thirty years ago. It is believed that the public's knowledge pertaining to MI's has changed over the past three decades.

### Summary of variables

In summary, the relationship between these modifying factors and delay time proposed by the Conceptual Framework was supported by the findings that delay time was related to age. However, no significant relationship was found between delay time and level of education, gender, socioeconomic status and involvement with a second person. It is important to recognize that the small cell sizes on several demographic characteristics limited the power of analysis of these variables. Additionally, the fact that only one of the demographic characteristics of the MI patients were related to delay times is not surprising, given the highly inconsistent findings about demographic variables in other studies. This study demonstrates that patients do delay in responding to MI symptoms.

Overall, the Health Belief Model provided this investigator with a comprehensive framework to organize the above mentioned variables for this study and to direct the data analysis. However, the failure to identify effects on delay time by the level of education, gender, and socioeconomic status raises questions about the credibility of the Health Belief Model and it's research for dealing with the effects of certain variables on delay times. However, the study design may not have permitted an adequate test of the model. Conclusions drawn from this sample are only tentative due to certain study limitations.

Nonetheless, the HBM was an attractive framework for this study as it captured the patient's decision to seek medical treatment in a cost/benefit framework in a comprehensive manner. It assisted in the organization of the variables for the purposes of this study. Certain components of the HBM worked adequately for this study. These were the modifying factors of demographic variables (eg. age, gender etc.), sociopsychological variables such as the MI patients interaction with others (eg. spouse or physician) as well as the cues for action (advice received from others).

However, the HBM is not without limitations. For the purposes of this study, the HBM alone could not explain the patient's delay behavior. The HBM is most effective in describing preventive behaviors and less accurate in predicting care-seeking behaviors (Becker, 1974). Furthermore, certain aspects of the HBM were not possible to measure as a result of the instruments utilized. For example, perceived seriousness/susceptability, perception of the threat of disease as well as cues to action (eg. mass media) could not be addressed. It is believed that mass media would indeed affect the delay time of MI patients.

### **Discussion of study limitations**

The results from this study must be viewed with caution for various reasons. One, the sample size was small. This was especially true with respect to the female participants as well as the younger MI patients. A repeated study with a larger sample size would be required to confirm the suggested results. Two, it is acknowledged that a convenience sample is less likely to be representative of the population. This study's method of sampling may have introduced some sampling bias as this was a non-probability sample. A study using a probability sample would be helpful. The

sample was recruited over a limited collection period. It is suggested that if this study was repeated over a year versus the eight week period, different results would be yielded. For example, seasonal variations may affect the delay time. Additionally, seasonal variations could also affect the gender of the sample.

Three, with respect to instrumentation, it is acknowledged that the Demographic and Time Response data sheets require additional validity and reliability testing prior to further utilization. Lastly, the data were collected at only one site. Therefore, generalization to all hospitals admitting MI patients is limited. These above mentioned limitations, must be considered when generalizing to a larger population. These results lead to the following interpretation and recommendations for future research.

### **Recommendations for further research**

Specific recommendations for future research were derived from the preceding results and discussion. These recommendations focus on the methodology for future research in this area.

Subsequent studies in this area should pursue a larger sample for the population. This study's sample size was small, and thus, generalizations to the population are limited. The small cell sizes for the various demographic characteristics limited the power of analysis. A replication study to validate the findings would lend further support to the conceptual model. This sample consisted of 29 participants. To increase validity, consideration should be given to replicating this study with a new, larger sample. Replication of the study could verify the results of the present study or establish the limits of the present study. Additionally, it would be

interesting to explore a larger sample size of women to more clearly delineate the differences between men and women MI patients.

A regionalized study to compare delay times between community and tertiary hospitals would also be beneficial. In addition to supplementing the knowledge base related to the issue of delay times in MI patients, such a study may provide invaluable insight into a comparison of these study variables between the hospitals.

Exploration of the cognitive processes behind patient delay times would be an interesting area of research to pursue. Additionally, further research into patient arrival times at the hospital, urban versus rural patient delay times as well as the time that medical intervention is initiated would also be beneficial. Further studies are recommended to examine the relation of delay in relation to infarction size as well as to the severity of pain experienced by MI patients. Lastly, it is important to note that the results of this study have certain implications for nursing education.

### **Recommendations for nursing education**

The findings from this study indicate that delay in response to MI symptoms remains a serious problem. The delay time for these MI patients was 2.93 hours. Compared to previous studies, it appears that delay time is being reduced over time. Nonetheless, it is imperative that nurses recognize that people do delay in responding to MI symptoms. Every minute counts.

Although, significant relationships between education, gender, socioeconomic status, involvement with a second person in relation to delay time were not supported,



these findings have positive implications for MI education programs. It is recommended that education be global in nature and not geared towards any specific demographic group. Mass education must continue to alert the public to the signals and actions related to a MI. Such campaigns have been shown to shorten delay (Mitic, 1984).

### **Summary**

The previously discussed conclusions were drawn on the basis of the study results. The conceptual framework was revisited. From this study, a number of recommendations for nursing research and nursing education were drawn. These suggestions are imperative to be addressed in order to reduce MI patients' delay and thus reduce mortality and morbidity. Reperfusion therapy in the form of thrombolytic agents such as streptokinase have altered the approach to treatment of MI's. Patient delay is the main factor limiting the utilization of such an intervention. Understanding the degree and reasons patients respond to MI symptoms is the first step before appropriate interventions to decrease decision time can be designed and implemented.

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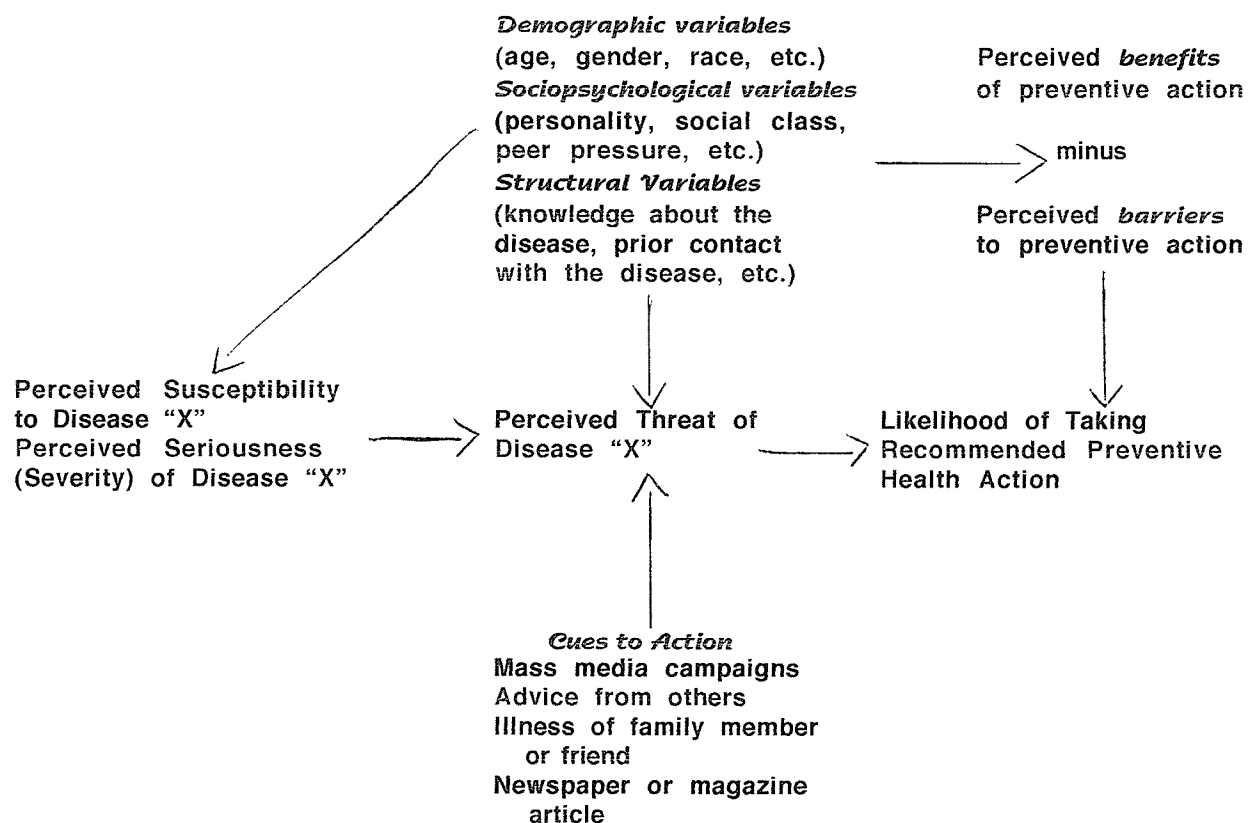
## Appendix A

### HEALTH BELIEF MODEL

#### INDIVIDUAL PERCEPTIONS

#### MODIFYING FACTORS

#### LIKELIHOOD OF ACTION



(Becker, 1974)

**Appendix B**

Code Number \_\_\_\_\_

**DEMOGRAPHIC DATA**

1) What is your age? \_\_\_\_\_ years

2) Marital status (circle one)

1 = single, never married

2 = married/common-law

3 = separated

4 = divorced

5 = widowed

3) Highest level of school completed (circle one)

Grade school through high school

1 2 3 4 5 6 7 8 9 10 11 12 13

Vocational or community college

1 2 3 4

University

1 2 3 4 5 6 7 8 9

4) Gender (circle one)

1 = male

2 = female

5) What amount reflects your total family income in 1997 before taxes? (circle one)

1 = below \$10,000

2 = \$10,000 to \$19,999

3 = \$ 20,000 to \$ 29,999

4 = \$30,000 to \$ 39,999

5 = \$40, 000 to \$ 49,999

6 = \$50,000 to \$ 75, 000

7 = Above \$75, 000

8 = refuses to answer

## Appendix C

Code number \_\_\_\_\_

Response Time Sheet

**T1** \_\_\_\_\_  
**T2** \_\_\_\_\_  
**T3** \_\_\_\_\_

6 a) Was anyone involved with patient's decision to seek medical attention?

1 = yes

2 = no

b) If yes, what relationship is that person to patient?

1 = spouse

2 = son/daughter

3 = physician

4 = friend

5 = other (specify) \_\_\_\_\_

**T1** = Date and time for onset of MI symptoms

**T2** = Date and time for decision to seek medical attention for MI symptoms

**T3** = T2 - T1 (Total delay time)



## Appendix D

Shannon Stefanson

August 17, 1998

Ms. Sue Gudmundson  
Vice President of Patient Care Administration  
Grace General Hospital  
300 Booth Drive  
Winnipeg, Manitoba  
R3J 3M7

Dear Sue:

I am writing to request permission to conduct my thesis research project entitled, "Reasons for delay in responding to Myocardial Infarction symptoms" in the Intensive Care Unit at Grace General Hospital. My research proposal is pending ethical approval by the Ethical Review committee, Faculty of Nursing at the University of Manitoba.

The purpose of the study is to explore the factors that contribute to the delay of individuals in responding to symptoms of a MI. This study will identify the extent and the frequency of delay in MI patients and possible correlations between delay and other variables. The phenomenon of delay by MI patients must be understood in order to design educational strategies to reduce response times.

I would like to interview thirty Myocardial Infarction patients on their third day of hospitalisation. At this time, these individuals would be asked questions pertaining to their demographics. Additionally, I would ask the patients questions pertaining to times when steps were taken to initiate care for their Myocardial Infarction symptoms. This information would be obtained both by interviewing the patient as well as by examining the hospital chart. Interviews would last approximately fifteen minutes.

Informed consent will be obtained from all patients prior to the interview. Participation in the study would be completely voluntary. Participants in the study would be assured that all information will be kept strictly confidential. Anonymity will be maintained through identifying records via a code number. The participants may withdraw from the study or refuse to answer any questions at any time. If desired, a summary of my findings will be shared with the hospital following completion of my thesis.

Please find attached a "Request for Research Access" form, as well as a brief proposal of the study's purpose, research design, process for data collection and data analysis. In addition, I have also provided you with copies of the instruments, the disclaimer and the informed consent.

If you have any questions pertaining to this research project, please do not hesitate to contact me at the phone number . . . . . You may wish to contact my Thesis Committee Chairperson, Dr. Erna Schilder, Associate Professor, Faculty of Nursing at the University of Manitoba at the phone number 474-6216.

Thank-you for your consideration. I look forward to your response.

Sincerely,

Shannon Stefanson RN, BN  
Master's in Nursing Student  
University of Manitoba

## Appendix E

### Introductory Letter

Dear Registered Nurse:

Please read aloud the following when handing out this letter:

***"I am leaving this letter for you to read. If you are interested in participating in this trial, please tell your nurse."***

Thank you.

## Appendix F

### "INVITATION TO PARTICIPATE"

#### **in a study about the factors affecting the decision to seek treatment of heart attack symptoms**

To Whom It May Concern:

This letter is being given out to certain patients who are admitted to the Intensive Care Unit (ICU) through Emergency. These patients have had symptoms of a Myocardial Infarction (heart attack). My name is Shannon Stefanson. I am a nurse taking a Master's in Nursing degree at the University of Manitoba. I am conducting a study to explore the factors affecting decisions to seek treatment for the symptoms of a heart attack. Your assistance in helping me to learn about your experience with heart attack symptoms would be greatly appreciated. In addition, your experience would be valuable to educate others in responding to their heart attack symptoms. This study has been approved by the Ethics Review Committee, Faculty of Nursing at the University of Manitoba. If you agree to participate, this study will involve the following:

1. You will be asked some questions about your demographic background (eg. age);
2. You will be asked some questions about the time when specific steps were taken to seek medical attention;
3. The discussion will last approximately 15 minutes;
4. Your answers will be written down. The written material will be analysed by the investigator. Your name and any identifying information will not be revealed or used in the study. The investigator will ensure confidentiality by identifying her notes by a code number. The code list will be destroyed by the investigator following completion of the study;
5. You are under no obligation to participate in the study. You may refuse to

answer questions or to participate without any effect on your future care. If you agree to participate, you may withdraw from the study or refuse to answer any questions at any time;

6. By participating in this study, there may be no benefit to you this hospitalisation. However, there may be some benefit to your, as well as others', future health care needs; and,
7. The information obtained in this study may be used to publish findings. A summary of the findings may be shared with Grace General Hospital and any funding organization. **Any details which may reveal your identity will not be revealed in any published work.**

If you are interested in participating in this study, a written consent will be obtained. If you have further questions regarding the study, please contact me at extension 2318. Thank-you for considering to be involved in this study.

Yours truly,

Shannon Stefanson RN, BN

## Appendix G

### **Factors affecting the decision to seek treatment of heart attack symptoms (Informed Consent)**

This study is being conducted by Shannon Stefanson, a student in the Master's of Nursing program at the University of Manitoba. Approval for this study has been obtained by the Ethical Review Committee, Faculty of Nursing at the University of Manitoba. I understand that the purpose of this study is to explore the factors effecting the decision to seek treatment for Myocardial Infarction (heart attack) symptoms. I understand that participating in this study will involve the following:

~ On the third day of my hospitalisation, I will be asked some questions about my experience with my heart attack. My answers will be written down. All written material will be analysed by the investigator and her chairperson. All records will be securely locked and destroyed following completion of the study.

~ I understand that any identifying information will not be revealed or used in the study. The investigator will ensure confidentiality by identifying all records by a code number. The code list will be destroyed by the investigator following completion of the study.

~ I understand that I am under no obligation to participate in the study. I may refuse to participate or to answer any questions without any effect on my future care. If I do agree to participate, I may withdraw from the study or refuse to answer any questions at any time.

~ By participating in this study, there may be no benefit to this hospitalisation. However, there may be some benefit to my, as well as others', future health care needs.

~ I understand that the information obtained in this study may be used to publish findings. A summary of the findings may be shared with Grace General Hospital and any funding organization.

~ I understand that my identity and any details which may reveal my identity will

not be revealed in any published work.

~ I have been given the opportunity to ask questions and such questions have been answered to my satisfaction.

~ I understand that if I have any further questions regarding the study I can contact Shannon Stefanson at . Shannon Stefanson's thesis chairperson, Dr. Erna Schilder, Faculty of Nursing at the University of Manitoba can be reached at 474-6216.

~ I understand the nature of this study and give my consent to participate.

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Date

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Signature of Participant

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Date

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Signature of Researcher