

EMPLOYMENT STATUS OF POST-MYOCARDIAL
INFARCTION PATIENTS

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We hereby recommend that the thesis prepared under
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DEDICATION

To my parents, whose love, support and encouragement helped to make a goal a reality.

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CHAPTER I

INTRODUCTION

Heart disease is the number one killer of the Western World. One common manifestation of heart disease is myocardial infarction.

A heart attack presents many difficulties for patients and families. For those fortunate enough to survive a heart attack, recuperation and return to functioning are high priorities. A major priority of patients is their ability to return to work.

In American society the husband is the usual source of income and support for the family unit. How many myocardial infarction patients are able to return to their former jobs? How many are forced to change jobs? Will they again be the main source of income and support for their families? Many are able to re-enter the job market after a heart attack, many are not. Assistance for the post-myocardial infarction patient returning to work may become available when the answers to these and other pertinent questions are answered.

Statement of Problem

The problem of this study was to determine the employment status of male post-myocardial infarction patients.

Statement of Purposes

The purposes of this study were to:

1. Determine pre-myocardial infarction employment status of post-myocardial infarction patients
2. Determine post-myocardial infarction employment status
3. Determine the time interval between the myocardial infarction and return to work
4. Identify problems encountered by post-myocardial infarction patients in obtaining re-employment
5. Identify problems encountered by post-myocardial infarction patients who are unemployed
6. Identify how many post-myocardial infarction patients are employed in their pre-infarction jobs
7. Identify how many post-myocardial infarction patients are employed in different jobs than pre-infarct
8. Identify reasons for unemployment in the post-myocardial infarction patient.

Background and Significance

Myocardial infarction, one of the many manifestations of heart disease, kills and disables hundreds of thousands each year (American Heart Association 1969). Because of earlier diagnosis and improved, more efficient management of potentially fatal complications, the mortality from heart attacks is decreasing each year (Grace 1970). Any significant decrease in mortality or morbidity may take as long as a decade or more (American Heart Association 1968).

After a heart attack many people suffer from fear and anxiety (Clarke and Goodwin 1975). The patient's problems are often aggravated by other people in his environment. The families of these patients have at least temporarily lost the services and support of one who has previously filled certain fundamental as well as socio-economic roles in their lives (Gentry and Williams 1975). The incapacity of the patient to return to work is often stressed by family, friends and physician. The patient makes the assumption that return to work is not feasible and that invalidism will follow (Joint Working Party 1975a). The physician often obstructs the patient's desire to return to work by overprotecting him in resumption of activities (Grodin 1967 and Joint Working

Party 1975a). A study by Groden (1967) suggests that a re-education of physicians is required. The belief held by doctors more recently is that exercise and return to work is beneficial for most patients, providing it does not cause pain, shortness of breath, or other symptoms. Many physicians now prescribe exercise, activity, and return to work. In many cases, doctors will prescribe even more regular exercise than what the patient may have been taking before his heart attack (American Heart Association 1969).

Wincott and Caird (1966) found fear of financial dependence caused almost as much psychological damage as does the anxiety over the heart condition. It is unnecessary and inadvisable to prohibit these patients from working. The study showed that work performance in the majority of subjects is very satisfactory and that life and health span are not affected by work.

Clarke and Goodwin (1975) identified various reasons for not returning to work. These include the easy accessibility of disability insurance, the inability to change work classification, forced retirement due to age, the state of the economy, and the emotional reaction to illness. Wincott and Caird (1966) cite other principal problems encountered by these patients. Anxiety over job,

the patient's physical limitations, fear of recurrence and death, financial dependence, depression and anxiety are only a partial list. A study by Nagle and Gangola (1971) showed that anxiety and depression were the most common causes for not returning to work.

There are, of course, cases where medical reasons may affect return to work. Among these are severe cardiac damage leading to continued symptoms and minimal effort tolerance (Grodén 1967). Results in a study (Malmcróna et al. 1962) showed that angina pectoris and congestive heart failure did in fact adversely affect return to work. On the other hand, Nagle and Gangola (1971) found no general correlation between angina and failure to return to work. It appears that psychological reasons such as anxiety and fear are among the leading causes for not returning to work after a myocardial infarction.

Despite the problems of anxiety and fear that patients experience, many do return to work. Generally speaking, it appears that patients prefer to continue in their former jobs. In a study by Biorck (1958) patients returned to their former jobs even when it was more physically demanding than other jobs. The patients were not willing to try another job with which they were unfamiliar and in which conflicts with fellow workers might arise.

Biorck (1958) not only studied myocardial infarction patients, but included a control group in the study. Statistically, of the group of patients with infarctions, the majority returned to previous occupations and the rest either preferred a job less physically demanding, or retired. Another study by Biorck (1964) yielded similar results.

The patient's personality and the type of work done prior to the patient's illness must be considered when return to work is possible. Any and all patients with an occupation requiring heavy manual labor should be evaluated individually to determine the functional capacity in order to decide the most suitable type of employment (Malmcrona et al. 1962). The Health Insurance Plan of Greater New York notes that blue collar workers returned to work less often than white collar workers (Ferres 1975). The need for more recovery time by manual workers was documented by Hampton and his associates (1975). Results showed that manual workers required, in some cases, twice as much recovery time as other workers. In a survey conducted by Weinstock and Halt (1974) it was found that patients returning to a job held prior to their heart attack had a higher rate of return in clerical or managerial positions. Maintenance workers had a greater

chance of losing their jobs with 33 percent not being allowed to return to work when asymptomatic and 41 percent being rejected when slight angina was present. It appears then, that even when asymptomatic, manual laborers have more difficulty in returning to their previous jobs. It is important that the physician determine when the patient can return to work, as well as assist in determining the type of work that can be safely undertaken (American Heart Association 1973b). Knowledge of the patient's exact job and a good relationship with management assist the industrial physician and private physician to place the employee in the most appropriate job (Penney 1971).

Cardiac rehabilitation efforts are directed at the patient's psychosocial problems as well as the physical. One of the major goals of rehabilitation is to return the patient to a lifestyle similar to that of his pre-morbid state (Gentry and Williams 1975). Many patients are able to achieve this goal. Wigle and associates (1971) showed that the majority of subjects that survive a myocardial infarction had made a complete or satisfactory recovery and returned to work. There is still a sizeable group, however, who, for various reasons, do not return to work (Grodén 1967).

Despite the many problems encountered with returning to work, of those patients who do survive, 85.7 percent usually return to work within three to six months after the heart attack. However, considering the number of people who each year suffer from myocardial infarction, the numbers who do not return to work, 14.3 percent, is substantial (Kjoller 1976).

It is generally agreed that the primary role of professional nursing focuses on patient education (Bean 1974). By increasing the nurse's knowledge of the problems faced by post-myocardial infarction patients the nurse may improve and expand her role as a teacher and counselor to the patient (Ferres 1975). Ferres (1975) goes on to say that the nurse will also be better prepared to assess and evaluate the patient's responses to his illness and assist him in problem identification. In this capacity the nurse will be better suited to assist the patient in alleviating the stress associated with re-employment and in the utilization of effective coping mechanisms.

It has been cited (Ferres 1975) that lack of proper instruction for the patient's post-infarction period has accounted for unemployment. It is essential that the nurse has the appropriate knowledge to convey

to the patient. Patients have a right to proper instruction so they may equip themselves to live as full a life as possible. Another of the primary responsibilities of professional nursing is the integration of the clinical aspects of the illness with the responses of the person experiencing the illness. It is because of this responsibility that nurses are in the best position to impart knowledge and develop a healing, nurturing role in the recovery and re-integration phases of illness (Ferres 1975).

A review of the literature revealed a minimal amount written about the nurse's role and the myocardial infarction patient's return to work. Research and study in this area will not only add to the body of scientific nursing knowledge, it will facilitate the nurse in giving better patient care.

Definition of Terms

For the purposes of this study the following definitions applied:

Patient - An individual who has previously been hospitalized with a diagnosis of myocardial infarction

Myocardial Infarction (heart attack, coronary occlusion) - The diagnosis of myocardial infarction as established by

the physician and recorded as the final diagnosis on the medical record

Post-myocardial Infarction - A patient who has had a myocardial infarction and has been discharged from the hospital for at least six months to one year

Employment - Payment of a wage by an employer to perform a specific function.

Full-time Employment - Employment of 35-40 hours per week

Slack Full-time Employment - Employment of more than 20 hours but less than 35 hours per week.

Part-time Employment - Employment of 15-20 hours per week.

Limitations

For the purposes of this study the limitations were:

1. The ability and willingness of the subjects to respond truthfully to the questions asked could not be controlled

2. Knowledge of the present status of complications experienced during the patient's illness was not known

Delimitations

For the purposes of this study the delimitations were:

1. Sample consisted of men between the ages of 25-62
2. Subjects were diagnosed as having had a myocardial infarction as documented from the hospital records
3. Subjects were discharged from the hospital and were between six months to one year post-myocardial infarction
4. Subjects were employed prior to the myocardial infarction
5. Self-employed subjects were excluded from the study
6. A previous history of more than one myocardial infarction did not exclude a subject from the study
7. Subjects were able to read and write English
8. The pathophysiological conditions of diabetes, hypertension, and renal disease excluded a subject from the study.

Assumptions

For the purposes of this study the assumptions were:

1. The heart is perceived as the center of man's existence, the very source of life
2. Myocardial infarction is viewed as a catastrophic illness, both physically and psychologically

3. Adaptation is basic for survival
4. Adaptation varies from patient to patient
5. Return to work after myocardial infarction is considered positive adaptation
6. Negative adaptation after myocardial infarction can result in failure to return to work
7. Health care should focus on the psychosocial as well as the physical manifestations of the myocardial infarction patient.

Summary

Myocardial infarction and its complications account for 75 percent of all heart and blood vessel diseases. To return to work or not after a myocardial infarction is a question asked by hundreds of thousands of people each year. The problems faced by these people can seem insurmountable. It is the responsibility of the health team to assist the patient and his family in the identification and solution of these problems. The nurse, as patient educator, can play an integral part in the patient's recovery and return to work. It was felt that if the problems confronting these patients could be more clearly defined, a more effective approach to patient education could be instituted. It was the purpose of

this study to determine these problems and the status of post-myocardial infarction patients with regard to their employment.

Chapter II presents a review of the literature concerned with myocardial infarction, its incidence and etiology, the morbidity and mortality of myocardial infarction, employment and unemployment after myocardial infarction, and the nurse's role in health education and cardiac rehabilitation, and a summary of the chapter. The procedure for collection and treatment of data is presented in Chapter III. Chapter IV presents an analysis of the data and findings. Chapter V is based on all the material presented in Chapters I through IV and presents the summary, recommendations, implications, and conclusions of the study.

CHAPTER II

REVIEW OF LITERATURE

Introduction

An understanding of heart disease is a necessity for the provision of total patient care of the myocardial infarction patient. Chapter II reviews the concept of employment and the myocardial infarction patient. Myocardial infarction, its incidence and etiology, the mortality and morbidity, unemployment of the myocardial infarction patient, and the nurse's role in health education and cardiac rehabilitation are examined and presented.

Heart Disease and Myocardial Infarction

Heart disease is the nation's number one killer (American Heart Association 1977). Myocardial infarction is one of the most common manifestations of this disease. American Heart Association statistics for 1975 show that more than 29,000,000 Americans have some major form of cardiovascular disease. Over four million Americans have a history of heart attack and/or angina. For this reason alone, cardiovascular disease must be considered significant.

Atherosclerosis, is a progressive disease that helps set the stage for a heart attack (Hurst 1974, American Heart Association 1977). In this disease, which may begin early in life, the linings of the arteries become thick and rough. This is due to deposits of fat, fibrin, cellular debris and calcium. As this buildup becomes heavy and thick, arteries lose their elasticity. This loss of elasticity within the artery facilitates the formation of a clot. This clot may occlude the vessel and deprive the heart muscle of blood normally supplied by the artery. When occlusion occurs in a coronary artery, the result is myocardial ischemia and coronary thrombosis, one form of heart attack. In myocardial infarction, the heart muscle supplied by the occluded artery lacks sufficient oxygen and other nutrients and begins to die (American Heart Association 1977).

The exact mechanism responsible for the injury to the myocardial fibers which results in infarction is not yet known. Eliot and Edwards (1974) define acute myocardial infarction as "necrosis of cardiac muscle as a complication of ischemia". The ischemia can be precipitated by a number of factors, coronary occlusion caused by atherosclerosis or a combination of atherosclerosis and organized thrombus, a hypotensive episode, or

excessive demands made upon the heart by unusual levels of work or emotional stress (Eliot and Edwards 1974).

Although the exact mechanism of damage is not clearly understood, the process whereby a myocardial infarction occurs can be readily comprehended. Altschule (1974 p. 399) states: "the myocardial damage is clearly due to an imbalance between the energy requirement of a beating heart and the energy supply afforded by an impaired circulation". The muscle becomes non-functional and begins to die when the coronary circulation becomes so impaired that the blood supply to the cardiac muscle is diminished beyond a critical level. According to Guyton (1976) the death of the muscle fiber begins within one hour in the presence of total ischemia, and is complete in four to five hours.

After the infarction occurs, definite stages of healing must occur before full recovery of the myocardial tissue can take place. These stages are essential for the nurse to understand since the medical and nursing management of the acute myocardial infarction patient is based on this healing process.

After the acute myocardial infarction some of the muscle fibers in the center of the ischemic area die. Surrounding this necrotic tissue is an area of tissue

that is non-functional. Encircling this non-functioning tissue is an area which is ischemic but still capable of receiving electrical impulses and able to contract.

Braunwald (1974) refers to this ischemic area as a "twilight zone". For a period following the interruption of blood flow in a coronary artery, a substantial part of myocardial tissue served by the occluded vessel remains capable of essentially full recovery, or of further damage leading to necrosis (Braunwald 1974).

The maintenance of a balance between the metabolic demands of the myocardium and the local supply of oxygen available for use by the myocardial cells determines how much of the ischemic tissue will remain viable. Therefore, anything which tends to augment oxygen consumption, such as excess physical or psychological stress, can act on the area of ischemic tissue and ultimately enlarge the area of injury (Braunwald 1974). If, however, the heart is rested sufficiently following the myocardial infarction, much of the injured tissue in the ischemic "twilight zone" can become functional again.

It is important to remember that pre-existing coronary artery disease is generally a pre-requisite to the occurrence of myocardial infarction (Guyton 1976). Therefore, the patient's recovery is not solely dependent

on the extent of injury to the myocardium, but also on the degree of pre-existing atherosclerosis.

Heart disease, until recently, has been considered to be a component of the aging process. However, recognition of environmental, genetic, and other factors that can accelerate the atherosclerotic process has made aging an important but not the only determinant of the pathologic changes. These changes are influenced to varying degrees by multiple factors, only some of which have been identified. All evidence at present indicates that coronary atherosclerosis is a multifactorial disease (DiGirolamo and Schlant 1974).

Males, older individuals, individuals from affluent countries, and affluent families within underdeveloped countries are susceptible to more frequent and more extensive lesions associated with heart disease (DiGirolamo and Schlant 1974). The incidence of this disease also varies directly with the economic well-being of the subject (Hurst 1974).

A heart attack may seem sudden to the patient and his family. In all likelihood the coronary disease has been progressing over the years, helped along by the patient who ignored the risk factors and failed to heed early warning signs (American Heart Association 1977).

The American Heart Association (1977) has identified certain "risk factors" associated with heart disease. These factors include: heredity, sex, age, race, cigarette smoking, hypertension, high blood cholesterol levels, diabetes, electrocardiogram abnormalities, stress, and lack of exercise. The significance of the major risk factors in heart disease has been documented in the Framingham Study (American Heart Association 1973c). This study also demonstrates that the danger of heart disease increases with the number and severity of risk factors.

The American Heart Association separates the risk factors into three categories: 1) risk factors that cannot be changed, 2) risk factors that can be changed by medical supervision, and 3) risk factors that can be changed by the person at risk. Each of these categories will be discussed separately.

The American Heart Association (1977) states that the risk factors that cannot be changed include, sex, heredity, race, and age. Although there is no evidence that heart attack or atherosclerosis, which contributes to myocardial infarction, are hereditary, it appears that a tendency towards these problems can be inherited. Young men have a higher incidence of heart attack than young women. The rate for women increases sharply after

the menopause, but never reaches that of men. High blood pressure is twice as likely among Black Americans as among whites. There is evidence to show that high blood pressure is a contributing factor for heart attack and stroke. Heart attack death rates increase with age; however, one in four heart attack deaths occur under the age of sixty-five (American Heart Association 1977).

There are, according to the American Heart Association (1977), some risk factors that can be changed by Medical Supervision. Serum cholesterol is essential to health. However, when there is too much in the blood it builds up on the walls of the arteries, narrows the passageway and sets the stage for a heart attack. A physician can measure the cholesterol level and prescribe a diet regimen to maintain a normal cholesterol level. High blood pressure is one of the most insidious factors for stroke and heart attack. It presents no characteristic symptoms and must be diagnosed and treated by a physician. Modern medicine does not yet know the basic cause for most hypertension, but a wide variety of drugs are available to control it. Diabetes is associated with an increased risk of heart attack. A physician can prescribe drugs, diet regimens, weight control and exercise programs to keep diabetes under control.

The person at risk can also alter some of the factors associated with heart disease. The American Heart Association (1977) recommends that people at risk control their cigarette smoking, diet, stress levels, and exercise. Smoking cigarettes can increase a person's risk of heart attack as much as six times that of someone who does not smoke. The increase in risk, however, is proportional to the number of cigarettes smoked per day (Hurst 1974). The death rate for cigarette smokers who stopped is nearly as low as for people who never smoked (American Heart Association 1977). A nutritious diet low in cholesterol and saturated fat, consumed at a calorie level to maintain optimal weight, will also help reduce the risk of myocardial infarction (American Heart Association 1977).

An environmental factor which may contribute to cardiovascular disease is stress. Occasionally stressful situations can be identified and appropriate alterations made. The nurse is able to assist in the identification of these situations and initiate appropriate action with the subject. Some studies show that men who get regular exercise run a lower risk of heart attack than men who lead sedentary lives (American Heart Association 1977). Exercise programs however, should be undertaken only after consulting with a physician (American Heart Association 1977).

Clinical trials and research are underway on the precise effect of correcting risk factors. The American Heart Association (1977) believes that modification of risk factors will reduce the risk of heart attack. The greatest improvement results from simultaneously lowering all possible factors. They emphasize that close adherence to a risk reduction program is essential. There is reasonable evidence that the risk of heart attack can be significantly altered, for most people, by dietary and other measures (DiGirolamo and Schlant 1974).

In summary, myocardial infarction, or heart attack, may occur in several ways. The number of fatty deposits in the vessels increases and may narrow the diameter of the artery. The result is an inadequate blood supply to the area supplied by the vessel. Or, a piece of fatty tissue or clot may form and break away from the wall of a vessel. It is then carried by the blood to a smaller branch which it may occlude. Some heart attacks occur when there is an unusually great demand for oxygen by the heart, for example during unaccustomed or strenuous exercise or severe emotional stress (American Heart Association 1973e). Regardless of the mechanism of myocardial infarction, it remains the leading cause of death in the United States (Hurst 1974, American Heart Association 1977).

Mortality and Morbidity of Myocardial Infarction

Cardiovascular disease claims more American lives than all other causes of death combined. The death rate from heart and blood vessel disease in 1975 was 994,513, accounting for fifty-three percent of death from all causes. Of this total, 642,719 were from myocardial infarction (American Heart Association 1977). Heart attack according to the American Heart Association, remains the nations number one killer (1977).

Many thousands of these deaths occur among people in their most productive years--women and men with responsible jobs, with families and financial responsibilities (American Heart Association 1968). Premature death from coronary artery disease among men and women in their productive years continues to be a major health problem.

The most common mode of death for persons either with symptomatic or pre-symptomatic coronary artery disease is sudden death (American Heart Association 1973a). The American Heart Association states that sudden death accounts for more than half of all coronary fatalities for persons under age sixty-five. Over sixty-five percent of these fatalities are unheralded by prior symptoms and occur unexpectedly.

According to Fulton and his associates (1967) and Adgey (1971) most deaths from acute myocardial infarction occurred within two hours of onset of pain. Studies by Grace (1970) and Pantridge and Geddes (1967) showed that a large percentage of sudden deaths were due to cardiac arrhythmias. Arrhythmias occur in approximately eighty percent of myocardial infarction patients. However, the risk of death resulting from serious arrhythmias has been reduced with the introduction of improved methods and treatment and Coronary Care Units (Hurst 1974).

When death does not occur suddenly and the patient survives to reach medical help, mortality is still high. Guyton (1976) and Edwards and Eliot (1974) have identified four major causes of death from myocardial infarction. The most common cause of death is considered to be decreased cardiac output or acute coronary failure, or insufficiency. Death from edemas, especially pulmonary edema, is caused by damming of blood in the pulmonary or systemic veins. Another cause of death stems from cardiac arrest or ventricular fibrillation. Ventricular fibrillation is the most common of the two. On rare occasions rupture of the heart is the cause of death after a myocardial infarction.

The ability to control fatal arrhythmias, earlier diagnosis, and improved more efficient management of potentially fatal complications are but a few factors responsible for lowering the hospital mortality rate from myocardial infarction (Kuller et al. 1967, Grace 1970). The American Heart Association (1977) acknowledges that advances in reducing mortality have been made. Statistics for 1968 through 1975 indicate that the age-adjusted death rate for cardiovascular disease is on a significant decline. The decline in mortality has increased the number of myocardial infarction patients looking to return to work after their illness.

Prognosis for Myocardial Infarction Patients

Hurst (1974) states that the prognosis for a myocardial infarction patient is difficult to determine. A major problem regarding prognosis is that criteria used to diagnose infarction are not clearly specified. Even if criteria for identifying a myocardial infarction were agreed upon, the prognosis would be greatly modified depending on the complications that take place. Unfortunately, criteria used to define the complications of myocardial infarction are not universally known or accepted (Hurst 1974).

Russek and Zohman (1952) recommended that myocardial infarction patients be divided into two groups: "good risk" and "poor risk". They reported that good risk mortality was 3.1 percent, of which one half died within thirty-eight hours after onset of infarction. The poor risk mortality was sixty percent. They concluded that poor risk patients were those with the following conditions: 1) a previous history of myocardial infarction, 2) intractable pain, 3) persistent shock, 4) significant enlargement of the heart, 5) gallop rhythm, 6) congestive heart failure, 7) diabetes, 8) marked obesity, 9) varicose veins in the lower extremities, or 10) thrombophlebitis or other conditions predisposing to thrombosis. Good risk patients had none of these findings. Russek and Zohman (1952) caution that the assessment from "good risk" to "poor risk" is subject to change in about twenty-five percent of patients during the first forty-eight hours following infarction.

As stated previously, the advent of Coronary Care Units has reduced the mortality from myocardial infarction and therefore improved the prognosis as well (Hurst 1974). Prior to the advent of the Coronary Care Unit most "good risk" patients died of cardiac arrhythmias. Today with specially trained nurses and monitoring to

identify arrhythmias, and proper and prompt treatment, many more patients in the "good risk" group are saved and their prognosis improved. It is likely too that the mortality for "poor risk" groups can be lowered and the prognosis improved. This can be accomplished by recognizing and treating heart failure and arrhythmias as quickly as possible (Hurst 1974).

Dr. H. Feil published material in 1961 concerning the prognosis of myocardial infarction patients. He concluded that the following factors influence prognosis: 1) previous attacks, 2) pain, 3) shock, 4) heart failure, 5) fever and leukocytosis, 6) diabetes, 7) arrhythmias, 8) embolism, 9) electrocardiogram, 10) obesity, 11) severe hypertension, and 12) pulmonary disease. Dr. Feil's publication predated the development of modern Coronary Care Units. However, based on the previous discussions, the factors concerned with prognosis do not seem to have changed a great deal in the last seventeen years.

Findings favorable to long-term prognosis were also identified by Feil (1961). He stated that the patient should be of average weight, middle age, have normal pulmonary function, have little fever and that of short duration, have only moderate reduction in blood pressure, be free of arrhythmias and congestive failure,

and must readily respond to the optimism of the attending physician. He should not have had a previous history of infarction. Feil (1961) believes that the prognosis for myocardial infarction cannot be accurately made. Some patients, apparently making an uneventful recovery, die suddenly, while others go through a stormy convalescence but do well. According to Feil (1961), it is best not to be too precise in judgement of the patient's prognosis. If the patient survives the first year, his chances of living five years is seventy-five percent. If he lives five years and appears to be doing well he has a slightly less than even chance of living fifteen years, and if he continues to do well, his chances of surviving twenty years are approximately forty-one percent.

Norris and associates (1970) in a study to determine post hospital mortality of myocardial infarction patients, found that of the factors investigated, only four, age, heart size, degree of pulmonary congestion and previous ischemia were related to three year survival. Hurst (1974) also made a statement regarding the prognosis for the patient with a healed myocardial infarction. He stated that the majority of these patients are subject to recurrent problems, either from considerable loss of muscle or from peculiar localization of the infarction in

the papillary muscles which causes mitral insufficiency. Others endure the effects of existing coronary artery disease and experience either acute ischemic attacks which become complicated by either ventricular fibrillation or cardiac standstill, or they suffer a recurrent myocardial infarction.

It would seem that the appalling annual toll of coronary mortality can be expected to continue despite advancements in the management of the overt disease. A preventive approach can correct some conditions that are forerunners of coronary disease. Only through such an approach can a substantial reduction in coronary mortality be achieved (American Heart Association 1973c). There is still no guarantee that heart attack can be prevented. However, should a myocardial infarction occur, despite the high mortality rate, people do survive myocardial infarction. They encounter some problems and alterations in lifestyle, but most do well (Wigle et al. 1971). The American Heart Association (1973d) states that a person's chances of recovery are better than ever before, and that most patients eventually can return to leisure activities and work.

Return to Work After Myocardial Infarction

Cardiac patients, typically, but not always, have worked many hours a day, including overtime work for most of their lives (Scalzi et al. 1976). Often these strenuous work habits were developed in order to achieve through hard work what others have achieved through higher education or special privileges. Cardiac patients frequently approach their work with competitiveness and fierce intensity. They often become so wrapped up in their work that they find little relaxation in it. They tend to compete, not only at work, but also even at playing games at home with neighbors and children. Perhaps as a result of the cardiac patients' high expectations of themselves, they often notice a strong sense of time urgency, or never have enough time or hours in the day to complete everything they want to do. When they become too frustrated in their plans they tend to become angered quickly (Scalzi et al. 1976, American Heart Association 1973e, Jenkins 1971).

After the patient is discharged from the hospital, return to work is the most important milestone on the patients way to full recovery (Joint Working Party 1975a). Not only does the patient become economically independent, but in most cases, he resumes his accustomed pattern of

life and role in society. Return to work, according to the Joint Working Party (1975a), is the index of recovery that can be measured with the most precision and accuracy; therefore, the proportion of patients resuming full employment is an important guide to the success of rehabilitation efforts and recovery.

Hospital based studies from several centers indicate that eighty percent of survivors of myocardial infarction eventually return to work without any special measures (Sharland 1964, Groden 1967, Hay and Turbott 1970, Royston 1972, Mulcahy and Hickey 1971). Most physicians now agree that the majority of myocardial infarction patients are fit to return to work earlier than six months (Joint Working Party 1975a). The studies (Sharland 1964, Mulcahy and Hickey 1971, Groden 1967, Hay and Turbott 1970, Royston 1972), showed that the proportion returning to work by three months is variable, but commonly this is only fifty to sixty percent. It was therefore concluded that there appears to be a considerable amount of unnecessary and unduly prolonged invalidism following infarction.

Delay in returning to work has economic effects on the patient, industry, and government (Joint Working Party 1975b). The American Heart Association (1977)

estimates that heart and blood vessel disease will cost the nation approximately 28.5 billion dollars in 1978. Other "hidden" costs, difficult to determine, include losses in management skills, production "know how", labor turnover, and personnel training and development (American Heart Association 1977).

Care-givers need to be able to identify the patient's specific underlying need for help if they are to have any success in assisting the patient to cope with and restore a balance in the psychosocial and environmental factors in their lives (Orlando 1972). Studies conducted not only in America, but elsewhere, have identified the major reasons for delay in return to work of the myocardial infarction patient. Among the reasons are, physical factors, psychological factors, social and economic factors, age, and person's in special occupations (Joint Working Party 1975b, Clarke and Goodwin 1975, Wincott and Caird 1966, Nagle and Gangola 1971).

The majority of patients who survive a myocardial infarction can return to their former jobs (Biorck 1964, American Heart Association 1970, 1977, Wincott and Caird 1966, Wigle et al. 1971). The unnecessary cossetting of the mild and uncomplicated case and poor communication between patient and physician accentuates the difficulty

of recovery (Groden 1967, Joint Working Party 1975b). Nearly one half of the survivors have mild heart attacks without residual physical disability. Those with extreme damage can usually be recognized early and appropriate management instituted. Most patients should be able to return to their original work after a few weeks. Assessment by a specialist is recommended if three months elapses without return to work (Joint Working Party 1975a, Groden 1967). It should therefore be realized that a small proportion, usually those with more severe infarction, will take longer to return to work and a few of these will be permanently unfit because of cardiac enlargement, uncontrolled congestive failure, or by a concurrent illness such as diabetes or chronic obstructive lung disease (Groden 1967, Malmcrona et al. 1962, Nagle and Gangola 1971).

There are several occupations that are not open to those who have had a myocardial infarction because of risk to the public. Examples of these jobs include cab driver, airline pilot, and diver. Other occupations usually not suitable for those with significant cardiac disability include bricklayer, scaffolder, steel worker, and others usually considered to be manual labor (Joint Working Party 1975b). Work involving heights or heavy lifting

or general heavy manual labor requires an individual evaluation of both the patient and the occupation (Joint Working Party 1975a, Malmcrona et al. 1962, Ferres 1975). Weinstock and Halt (1974) and Hampton and his associates (1975) documented that manual workers have difficulty in obtaining re-employment and that they usually require more recovery time than other workers. This extension of time for manual workers is not difficult to comprehend. The manual laborer often has the safety of others to consider. He is less likely to be given part-time or light work upon his return, and transportation to and from work may also present problems, especially if he is a shift worker (Hampton et al. 1975, Weinstock and Halt 1974, Penney 1971). Manual workers may also find out that they are as financially stable while off work as when working (Clarke and Goodwin 1975). High unemployment or attempts at increased productivity, as well as working in a small firm reluctant to hire myocardial infarction patients, also increases the patients reluctance to return to work (Joint Working Party 1975b, Malmcrona et al. 1962).

Age also plays an important role for the patient returning to work. Younger men do not seem to return to work any sooner than older men. It is thought that the psychological trauma may be more marked in younger men

(Joint Working Party 1975b). The older man may accept his disability more easily and attempt to return to work earlier (Clarke and Goodwin 1975). On the other hand, some men already in their early sixties may prolong convalescence unduly until they finally reach retirement age (Clarke and Goodwin 1975, Biorck 1964, Joint Working Party 1975b).

Although persistent invalidism may be due to cardiac damage, psychological or social problems are at least as important. Fear, anxiety, and depression, as well as extraneous influences should be anticipated not only in the patient, but in his family, and his place of work, and should be managed appropriately (Joint Working Party 1975b, Gentry and Williams 1975, Wincott and Caird 1966, Clarke and Goodwin 1975).

The Significance of Psychological Factors

Despite shorter hospitalization and earlier permission to return to work, studies indicate that many patients are reluctant to return to work after a myocardial infarction (Goble et al. 1963, Groden et al. 1967, Klein et al. 1965, Weinblatt et al. 1966, Wincott and Caird 1966, Wynn 1967). These same studies showed that psychological and social reasons for delay or failure to

return to work were at least as prominent as the physical causes for not returning to work.

Wynn in 1967 found that if proper psychosocial management had been provided for the myocardial infarction patient that prolonged unemployment could have been avoided. Approximately four hundred of Wynn's patients were also found to have unnecessary emotional distress (1967). Wishnie et al. (1971) reported that eighty-eight percent of their patients were anxious or depressed, fifty-five percent had sleep disturbances, thirty-eight percent had not returned to work due to psychological reasons, and eighty-three percent complained of weakness six months after infarction. All of the families showed some evidence of significant emotional conflict subsequent to the heart attack, seventy-five percent of the problems being the result of "differences over medical instructions for convalescence" (Cassem and Hackett 1973).

The Joint Working Party (1975b) found that in the management of patients with heart disease invalidism is often unnecessarily prolonged because of ignorance of the natural history of the condition and because anxiety, depression, or social difficulties are present. They state that there is abundant evidence from many countries that conventional medical treatment is often insufficient to

ensure return to a full, active and productive life (Joint Working Party 1975b, Groden 1967).

In Goteberg Sweden, studies of more than one thousand patients, anxiety, depression, exhaustion, and irritability were noted three months after myocardial infarction and these symptoms were more frequent than in a control population (Tibblin et al. 1972, Wilhelmsen et al. 1972). Nagle and his colleagues (1971), using clinical assessment of anxiety and depression, found that non-organic causes of invalidism were as common as physical ones in delaying return to work. Anxiety and depression were found to be present in fifty-five percent of the patients still home and it was concluded by Nagle and his colleagues (1971) that these symptoms were the commonest non-cardiac causes of persistent invalidism. Hinohara (1970) described types of anxiety state retarding return to work in Japan very similar to those reported in other countries.

Mulcahy and Hickey (1970) noted that organic causes for delay were relatively unusual following a first infarct. Elizabeth Cay and her colleagues (1973) studied approximately two hundred patients and found some degree of anxiety and depression was extremely common, particularly in those with a second infarction, and apparently unrelated to the severity of the attack. Cay's findings (1973)

indicated that those patients with anxiety and depression had a higher incidence of social and employment problems before the illness. Their return to work was poor and their symptoms persisted for a year or more. Thus, Cay's findings in 1973 clearly support the view that psychological and social factors are at least as important as medical ones in determining delay in return to work.

Nagle et al. (1971) also concluded that adverse emotional reactions were not dependent on the severity of the heart attack but instead were related to inadequate medical instruction about fitness and work or how to prepare for resumption of normal activities. Klein et al. (1965) concluded that features of invalidism are usually evident in the early convalescent period of the patient with myocardial infarction. They suggested that the identification and treatment of anxiety, fear or depression were important for the postcoronary patient.

Clearly then, the health team should have an awareness of these problems so that affected patients are managed as potential psychological casualties from the start, with advice and explanation about their illness, assistance with socio-economic and employment difficulties, and special attention paid to graduated physical activity (Joint Working Party 1975b). There is mounting evidence

to indicate that failure to recognize, prevent, and treat the psychological aspects of myocardial infarction leaves a situation fertile for the development of problems (Klein 1965). Furthermore, it appears that the patient seems to accrue minimal benefit when his life is saved by elaborate hospital care and he is then returned to environmental conditions in which he feels he cannot cope (Bruhn et al. 1969, Rahe and Arthur 1968, Rahe et al. 1973).

Hellerstein (1973) has pointed out that there is a subtle transfer of attitude from doctor to patient. Anxious doctors and nurses have anxious patients (Joint Working Party 1975b, Hellerstein 1973). Perhaps due to early mobilization, less anxious physicians and nurses, and better communication there seems to be less anxiety and depression in the early phase of myocardial infarction than ten years ago. This same enthusiasm for active measures to help the patient on his return to home and later during rehabilitation should be encouraged (Joint Working Party 1975b, Hellerstein 1973).

The person who has had a myocardial infarction has had a frightening experience. Even when he is getting better and the health team assures him that he will be all right, the patient is still likely to be filled with doubt and fear. The properly informed nurse can help rid the patient of many of these feelings.

The American Heart Association (1969) says that these fears are perfectly natural at first. With the assistance of the nurse, the patient can gain an understanding of his illness and the healing process. By increasing his activities without discomfort, and by being aware of the great number of people who have had a heart attack and are now back at work and enjoying life, he can truly feel that he will once again be well. It is important for the nurse to assist the patient in the recognition of these problems, and to bring them out in the open. By doing this, the patient will have a better understanding of these difficulties.

Many of these problems can be dispelled, and none will loom so large once they have been openly discussed. The American Heart Association (1969) says that the physician caring for the patient is the best person to answer all of his questions. But, questions often occur when the doctor is not there, or are forgotten when he is there. It is the nurse who is in constant attendance. It is therefore vitally important for the nurse to also have the necessary knowledge to allay the fears of the myocardial infarction patient and be able to start him on a successful rehabilitation effort. The entire success

of intensive coronary care is dependent on the competent nurse (Ferrigan 1966).

The Nurse and Cardiac Rehabilitation

Rehabilitation of the patient may begin in the Coronary Care Unit. It is possible, even in this early stage of illness, that a patient with an uncomplicated heart attack do things for himself under the guidance of his physician and the Coronary Care Unit nurse (American Heart Association 1977). The Joint Working Party (1975b) agrees that it is increasingly apparent that the process of rehabilitation should start when the patient is first seen after the heart attack by the doctor and the attending nurse so that the underlying line of communication, so important in the prevention of anxiety and cardiac neurosis, can be established.

The introduction of cardiac rehabilitation in North America seems to have been initiated by cardiac work assessment teams such as that started by Hellerstein in Cleveland in the early sixties (Joint Working Party 1975b). The American Heart Association (1977) and Gentry and Williams (1975) feel that the basis of the rehabilitation effort is to return the patient toward normal living similar to that of his pre-morbid state.

Cardiac rehabilitation efforts are directed at the patient's psychosocial problems as well as the physical problems. The American Heart Association (1977) defines the goals of a successful rehabilitation program. These goals should be: 1) Return to independent living or self-care, return to gainful employment, 2) Reducing or minimizing patient and family economic burden resulting from the myocardial infarction by working toward a short hospital stay and maximum speedy recovery, 3) Through re-education and implementation of a secondary prevention program, reduce the risk of another heart attack, 4) Improvement of the quality of life for the surviving myocardial infarction patient. Generally speaking, British and American doctors believed that most patients given proper advice and using simple techniques, rehabilitate themselves satisfactorily (Joint Working Party 1975b). Many people are able to achieve these goals with the aid of the health team. However, considering the number of people who each year suffer from myocardial infarction, the numbers who do not return to work or achieve these goals are substantial.

From the beginning, education of both the patient and his family is extremely important (American Heart Association 1977, Joint Working Party 1975a). Because

of the frequent development of over-protective attitudes of spouse, children, and friends the patience shown by the health team in listening to the anxieties of the families can make a contribution to the avoidance of cardiac neurosis in the patient (Joint Working Party 1975b).

This education needs to be continued throughout the recovery process. The information given to the patient and his family will help them deal with what has happened, what can be expected, special care the patient may need, and the importance of following the prescribed regime (American Heart Association 1977, Garrity 1973).

It is often the nurse who can identify a psychological and rehabilitative problem at an early stage. Therefore, such a program of systematic information and education should and does help the patient to adjust to and understand his condition, and may allay the anxiety and depression which often follow the attack (American Heart Association 1977). Many of the problems of rehabilitation can be remedied by the judicious intervention of the care-giving staff (Joint Working Party 1975b, American Heart Association 1973b). It is important to assure the patient of the temporary character of the restrictions designed to assist in the healing process (American Heart Association 1973b). Especially in anxious

and depressed patients, the psychological aspect of exercise prescription is important both in the early stages of rehabilitation, as a means of increasing their confidence and encouraging adherence, and later when they are being encouraged to return to an active independent and confident existence (Joint Working Party 1975b, Garrity 1973).

After the most acute phase has passed, the patient will gradually increase the level of physical activity (American Heart Association 1977, Joint Working Party 1975b). This gradual resumption in activity will help the patient readjust to activities he may anticipate facing upon discharge from the hospital (Scalzi et al. 1976). Uncertainty about the future and lack of specific information regarding activity, leisure, diet, and life-style in general after hospital discharge are typical problems that need to be solved by specific and detailed information (Joint Working Party 1975b, Garrity 1973, Gentry and Williams 1975). It is during this phase of the hospital stay that the role of the professional nurse and the nurse-educator increases (American Heart Association 1973b). It is the staff that can be instrumental in facilitating the development of individually tailored constructive coping mechanisms by patients (Garrity 1973, Gentry and

Williams 1975). Therefore, the role of the Coronary Care Unit staff is of particular importance in this respect.

The health team can also be instrumental in the success of the cardiac rehabilitation effort by assisting in the development of an advisory booklet for the patient and his family. The Joint Working Party (1975b) feels that a well designed booklet will contribute to the success of a rehabilitation program and the education of the patient and relatives. They also feel that it could save professional time and in general improve the communication between the health team and the patient. The American Heart Association has several publications available to the public. The input of the health team, especially the professional nurse, cannot be overlooked and is evident throughout.

When the patient does return home , rehabilitation efforts should not be stopped. The American Heart Association (1977) suggests that at this phase the patients' activity is usually increased and that the patient might work toward a goal of returning to work by the eighth or twelfth week after the attack. It is here that the role of the public health nurse is important. This nurse should be available to reinforce the previous teaching that has

been done and to reassure the patient of his capabilities at this phase of his illness.

The last phase of the rehabilitative effort is recovery and maintenance (American Heart Association 1973b, 1977, Gentry and Williams 1975). The patient may be able to return to work or former daily activities by this time, or he may be trained for new, more appropriate, less rigorous activities (American Heart Association 1973b). Systematic rehabilitation programs after hospitalization for acute myocardial infarction have been shown to enhance the functional capacity of cardiac patients (Fox et al. 1972, Detry et al. 1971, Redwood et al. 1972, Detry and Bruce 1971). Studies by Hackett and Cassem (1971) and Wishnie and his associates (1971) have also indicated that there is an improvement in anxiety and depression scores on standard psychological tests after cardiac rehabilitation. The patient's sense of "well being" in his own self-confidence and in his self-esteem have also been improved (Hellerstein 1968).

It is evident that the myocardial infarction patient and his family need a great deal of support and education during all phases of the illness. The well trained nurse is high on the list of those qualified to help. The Coronary Care Unit nurse should have a good

relationship with the physician and other members of the health team, enabling her to inform them about the patient's reaction to his illness. The nurse can assist with the identification of social and psychological problems, and if trained in the principles of cardiac rehabilitation, she can initiate her role as nurse-educator and counselor (Joint Working Party 1975b, Ferres 1975). In these roles, the nurse will assist the patient and family with the implementation of appropriate coping mechanisms (Ferres 1975). The Joint Working Party (1975b) feels that the nurse acting in this capacity has been an invaluable member of the health team. Besides implementation of appropriate coping mechanisms, the nurse is also in a position to supervise graded exercise programs and supplement the advice and information received from the physician and the advisory booklet, if one is utilized (Joint Working Party 1975b, Ferres 1975).

Since the professional nurse is the one who is with the patient most often, she is therefore better able to assess the patient's adaptive process. Knowing the patient's individual adaptive mechanisms, his treatment plan, and obtaining an adequate knowledge of cardiovascular disease, the professional nurse can assist the patient to independently adapt his medical regimen to his total being (Palm 1971).

It is generally agreed that a primary role of the professional nurse focuses on patient education (Bean 1974, Redman 1974). Increasing the nurse's knowledge of problems faced by myocardial infarction patients can only serve to improve the care rendered by the professional nurse.

It has been shown that lack of proper instruction for the patients' post-infarction period accounts for unemployment (Ferres 1975). With the appropriate knowledge to convey to the patient, the professional nurse is better able to assist the patient in the alleviation of the stresses and problems associated with myocardial infarction and in the utilization of effective adaptation. By imparting this knowledge and developing a healing nurturing role in the recovery and re-integration phases of illness the nurse can equip the patient to live as full a life as possible.

Summary

A review of the literature revealed that heart disease is the nation's number one killer, surpassing all other causes of death in the United States, and that myocardial infarction is the leading cause of death. Myocardial infarction is one manifestation of cardiovascular disease. The most common mode of death for persons with

heart disease is "sudden death". Premature death from coronary heart disease among men and women in their productive years of life continues to be a major health problem. However, decreases in mortality have occurred and a person's chances of recovery and return to leisure activities and work are better than ever before.

After the patient is discharged from the hospital, return to work is an important measure of the patient's recovery. Approximately eighty percent of those who survive a myocardial infarction do eventually return to work. However, there is still a sizeable group who do not return to work. The problems and alterations in lifestyle for these patients are varied and complex. Among the most common problems are psychological manifestations of myocardial infarction. These problems such as anxiety and depression are among the most common non-cardiac causes for not returning to work after a myocardial infarction.

The professional nurse plays an important role in all phases of the myocardial infarction patients' recovery and rehabilitation. The nurse's knowledge of the cardiac patient and his disease state enables the professional nurse to assist the patient and his family in the identification and alleviation of the physical and psychological manifestations associated with myocardial infarction. In

doing so, the professional nurse is able to educate the patient and his family and supply them with the information necessary for the patient to live as full a life as possible after a myocardial infarction.

CHAPTER III

PROCEDURE FOR COLLECTION AND TREATMENT OF DATA

Introduction

This section describes the procedure utilized for collection of data. The first section depicts the setting for the study, the next section describes the population from which the sample was derived and the method for selection of the sample. The development, pretesting, and description of the tool utilized follows the description of the population. The procedure for collection of the data is presented next. The final section discusses the procedure for the treatment and analysis of the data and a summary of the chapter.

Setting

There were two settings for this study. The settings were two community hospitals of approximately 300-500 beds. These hospitals are situated in a residential county in the southern portion of New York State. The population of the surrounding area is approximately 1.5 million people. The Coronary Care Units and the Medical Records Department of the same two hospitals was the setting for the acquisition of the sample. Also

included in the setting for this study were the individual homes of the participants where the research packets were mailed. These homes are located in a suburban region of New York State approximately 25-50 miles from the main center of industry.

Population

The population for this study consisted of subjects who had suffered a myocardial infarction between December 1976 and July 1977. Two community hospitals were utilized. The individual Coronary Care Unit log books of each agency were reviewed to obtain a population. Additional names were obtained from the Medical Records Department of one of the hospitals from their computer printout, "Discharge Analysis". This source contained individual monthly printouts according to discharge diagnosis. This book was consulted for the time period of December 1976 to July 1977 to complete the acquisition of the population.

Each subject was assigned a number by the investigator to assist in the statistical analysis. After the appropriate information was obtained from these sources, the Medical Records Departments were consulted. Each file was reviewed by the investigator, to determine

eligibility for inclusion in the study according to the delimitations of the study, and to procure the additional information needed. Those records that indicated a final diagnosis of myocardial infarction determined by the attending physician, were utilized. Subjects were excluded from the study if the file could not be located or if a delimiting factor was determined to be present. This review also yielded the addresses of the sample so they could be contacted and invited to participate in the study. The form utilized for obtaining this data is included in Appendix A.

A total of 422 charts were reviewed to obtain a sample of 318. A minimum of 50 subjects was acceptable for this study.

Development of the Instrument

A thorough review of the literature demonstrated a lack of an appropriate tool for the purposes of this study. A questionnaire (Appendix B) was developed by the investigator based on the purposes of the study and a review of the relevant literature.

A demographic data sheet was also developed for this study (Appendix B). A review of the literature applicable to this study assisted in the development of this tool. The use of the Hollingshead Two-Factor Index

of Social Position in the statistical analysis also contributed to the style and content of the demographic data sheet. The development of two cover letters completed the research tools for this study (Appendix C).

The questionnaire and demographic data sheet were reviewed by a panel of three experts in the field. The panel included a cardiologist, a nursing research instructor, both of whom wish to remain anonymous, and a cardiovascular clinical nurse specialist, Mrs. Elizabeth H. Winslow. The panel was asked to review the material and comment on its contents, clarity, and format on the form provided (Appendix D). A brief abstract of the study was included to assist the panel in their review. Taking into consideration the comments from the three panel members, minor changes were made to provide for more meaningful data collection. The factors of age, race, and religion were placed into categories since this format lends itself to easier analysis.

Since changes were made, the demographic data sheet and questionnaire were resubmitted to the thesis committee chairman for approval of the changes. These approved forms were the ones utilized in the data collection process.

Pretesting of the Instrument

After the research packet was reviewed by the panel of experts and the revisions made, pretesting was accomplished. The research packet was pretested in November 1977. The pretest identified problems with the instrument that might need to be corrected. The pretest population consisted of five graduate nursing students. The research packet was directly distributed to the pretest subjects and returned to the investigator on the same day. The subjects were asked to comment on the phraseology and format of the research packet. Results of the pretest did not indicate any major discrepancies in the design of the research tools.

Description of the Instrument

The questionnaire consisted of two pages. Page one was designed for those subjects who had returned to work, and had ten questions. Page two was designed for those subjects who had not returned to work, and consisted of four questions. Question number four on page two had seven parts to it, each of them concerned with the reasons that the participants did not return to work. All the questions referred to the subjects' employment status before and after his myocardial infarction. Each

page of the questionnaire allowed for comments from the participants. The participants were also thanked for their cooperation and participation in the study.

Contents of the demographic data sheet included marital status, religion, race, age, educational level, and income level both before and after their heart attack. By obtaining this information the investigator was permitted a more comprehensive description of the sample.

Two cover letters completed the research tools for this study. The first letter which accompanied the consent form consisted of a brief explanation of the study, and a request for participation and a deadline for return of the consent. Included in the second letter were instructions for the research packet, a deadline date, and directions for the return of the packet to the investigator. Anonymity was guaranteed to the participants by not requiring the subjects to include their name on the questionnaire and by having the consent and research packets returned via mail in an unmarked envelope.

A coding of the subjects' questionnaire was applied so that the investigator could correlate the research packets to the information previously obtained from the medical files. This was accomplished by listing

the subject number, previously assigned by the investigator, on the back of each demographic data sheet with invisible ink. The demographic data sheet was used since that was the one sheet that all the participants filled out.

Procedure for Data Collection

Permission to conduct the proposed study was sought from the Texas Woman's University Human Research and Review Committee. Permission was granted in December 1977 (Appendix E).

Twenty-three agencies were contacted for an appointment with the director of nursing. Nine hospitals granted an appointment. Prior to the established appointment date all the required documents were provided for the agency to review. The investigator met with five agencies on the appointed day. These appointments were used to answer any questions that the agency had, and to obtain approval for the study. Permission to conduct the study was granted by two agencies (Appendix E).

A cover letter and consent form (Appendix E) were mailed to 318 subjects on January 3, 1978. All participants were given ten days to return the consent form. The consent was enclosed in a long business envelope along with a stamped envelope addressed to the investigator.

There were 110 consents returned. Four consents were returned with a note that the subject had expired. One hundred and six research packets containing a cover letter, demographic data sheet, and questionnaire were mailed to those subjects who had given their written consent. The research packets were mailed on a daily basis as the consents were received. Two weeks were allotted for return of the research packet. The research packet was enclosed in a long business envelope along with a stamped envelope addressed to the investigator. There were 71 research packets returned.

Procedure for Treatment and Analysis of Data

Frequency distribution of individual numbers and percentages were utilized for the information on the demographic data sheet. The Hollingshead Two-Factor Index of Social Position was utilized for the variables of education and occupation (Appendix F). These variables were scaled and weighed individually to obtain a single score. This score was then used to determine the social class of the individual participants. Based on data obtained, each subject was placed into one of the following groups: one myocardial infarction with no complications, one myocardial infarction with complications, more than one myocardial infarction with no

complications, and more than one myocardial infarction with complications, for data analysis. The statistics for the data were frequency distribution and percentage. Chi Square Contingency Table Analysis was computed to determine levels of significance for various classes of information obtained during data collection.

The data was presented in tables. Summary tables were used to present the percentages and frequency occurrence of the various classes of information obtained during data collection due to the ease in that type of presentation method.

Summary

Chapter III describes the setting of the study, the sample population, the development of the instrument, the pretesting of the instrument, the description of the instrument, and the procedure for data collection. Three hundred and eighteen consents were mailed requesting participation in the study. One hundred and ten consents were returned, four with notes indicating that the subjects had expired. One hundred and six research packets were mailed and seventy-one completed packets were returned. A demographic data sheet and questionnaire designed for this study by the investigator were used to collect the data. Based on data obtained, each subject

was placed into one of the following groups: one myocardial infarction with no complications, one myocardial infarction with complications, more than one myocardial infarction with no complications, and more than one myocardial infarction with complications, for data analysis. The data was analyzed using percentages and frequency occurrence. The Hollingshead Two-Factor Index of Social Position and Chi Square Contingency Table Analysis completed the statistical analysis. Tables were used for presentation of the data.

CHAPTER IV

ANALYSIS OF DATA

Introduction

A retrospective study was conducted to determine the employment status of post-myocardial infarction patients. Statistical information pertaining to the purposes of the study was analyzed using frequency occurrence and percentage. The Hollingshead Two-Factor Index of Social Position was utilized for determination of the subject's pre- and post-infarction employment status as well as the social class of the subjects.

Based on the data obtained, each subject was placed into one of the following groups: one myocardial infarction and no complications, more than one myocardial infarction and no complications, one myocardial infarction and complications, and more than one myocardial infarction and complications, for data analysis. The data is presented in tables, where appropriate, by frequency distribution and percentage. Demographic and medical records data obtained is also presented.

Chi Square Contingency Table Analysis and Fisher's Exact Probability Test were employed to analyze for statistically significant relationships between various sets

of data. There were significant relationships for several sets of data pertaining to the employment status of the post-myocardial infarction patient.

Description of the Sample

Seventy-one subjects comprised the total sample. All subjects were white males previously diagnosed as having had a myocardial infarction. No one was under the age of thirty-one. Two subjects (3 percent) were between thirty-one and thirty-five. Five subjects (7 percent) were between the age of thirty-six and forty; eight (11 percent) were between the age of forty-one and forty-five; ten (14 percent) were between the age of forty-six and fifty; and twenty (28 percent) were between fifty-one and fifty-five. There were twenty-six (37 percent) between the age of fifty-six and sixty-two.

Sixty-eight persons (95.8 percent) were married. One subject (1.4 percent) was single; one (1.4 percent) was divorced; and one (1.4 percent) was separated. There were no widowers in the sample.

The religious profile of the sample shows that thirty-nine (55 percent) were Catholic. Fifteen (21.1 percent) were Protestant and the same number were Jewish. One (1.4 percent) subject claimed no religious affiliation, and one (1.4 percent) was a Christian Scientist.

Educationally, no one had less than seven years of schooling. Two subjects (3 percent) had between seven and nine years of school; six (8 percent) had ten to eleven years; eighteen (25 percent) completed high school; nineteen (27 percent) had between one and three years of college or vocational training. Fourteen (20 percent) of the subjects had four year college degrees and twelve (17 percent) had a Master's or higher degree.

After myocardial infarction, patients commonly fear financial dependence. Table 1 demonstrates the subjects' income level before and after myocardial infarction and the changes that occurred.

Income level before the myocardial infarction shows that seventeen (23 percent) were either in the fourteen to nineteen thousand dollar category and the same number were in the nineteen to twenty-four thousand category. Two subjects (2.8 percent) reported an annual income of more than forty-nine thousand dollars.

After the myocardial infarction, table 1 shows that thirteen (18.3 percent) of the subjects remained in the fourteen to nineteen thousand dollar category. It also shows how many of those thirteen subjects were employed and how many were not employed. The table indicates a drop in the nineteen to twenty-four thousand

TABLE 1
INCOME LEVEL BEFORE AND AFTER INFARCT

Income (dollars)	Before		After			
	No. of Case	Per- cent	No. Empl.	No. Un Empl.	No. of Cases	Percent
Under 5,000	0	0	1	2	3	4.2
5,000-9,000	0	0	1	0	1	1.4
9,001-14,000	6	8.5	5	8	13	18.3
14,001-19,000	17	23.9	11	2	13	18.3
19,001-24,000	17	23.9	11	1	12	16.9
24,001-29,000	7	9.9	6	2	8	11.3
29,001-34,000	8	11.3	7	0	7	9.9
34,001-39,000	9	12.7	7	0	7	9.9
39,001-44,000	2	2.8	2	0	2	2.8
44,001-49,000	3	4.2	3	0	3	4.2
49,001 +	2	2.8	2	0	2	2.8
Total	71	100.0	56	15	71	100.0

Empl= Employed UnEmpl.= Unemployed

bracket, from seventeen (23.9 percent) to twelve (16.9 percent) after the infarct. Also illustrated is an increase in the number of subjects in the nine to fourteen thousand dollar income level, from six (8.5 percent) before, to thirteen (18.3 percent) after. Before the infarct, there were no subjects with an income of less than

nine thousand dollars. However, after the infarct there is one subject (1.4 percent) in the five to nine thousand bracket and three (4.2 percent) with an annual income of less than five thousand dollars.

Of the fifty-six subjects who returned to work, fifty-two (93 percent) remained in the same income level; two (3.5 percent) incurred a decrease in income; and two (3.5 percent) showed an increase in income. However, for the fifteen subjects who did not return to work, thirteen (87 percent) showed a decrease in income; two (13 percent) indicated no change; and no one indicated an increase after the infarction. The data is in table 2.

TABLE 2
CHANGES IN INCOME LEVEL IN RELATION TO
POST-INFARCTION EMPLOYMENT STATUS

Status	Employed		Unemployed	
	Frequency	Percent	Frequency	Percent
No Change	52	93	2	13
Increase	2	3.5	0	0
Decrease	2	3.5	13	87
Total	56	100.0	15	100.0

N= 71

In summary, according to the data presented, the average subject for this study was a white married Catholic male between fifty-six and sixty-two years of age.

Educationally, he completed one to three years of college or vocational training and yielded an annual income between fourteen to twenty-four thousand dollars prior to his myocardial infarction and between nine to nineteen thousand after his infarction.

Summary of Findings

The data analysis is subdivided to present the findings of the study in a more meaningful manner. Each subdivision presents a summary of the data as it relates to that portion of the study. Tables are included in the appropriate subdivisions to aid in presenting the data in a concise manner.

The first subdivision presents the information obtained from the questionnaire. Portions of this data are presented according to the purpose of the study that relates to it. The purpose of determining pre-myocardial infarction employment status was the first purpose of this study. The data is in table 3. The Hollingshead Two-Factor Index of Social Position (Appendix F) was used to determine the occupational position for the seventy-one subjects. Thirteen (19 percent) of the subjects were in the first class, considered to be executives of large corporations; ten (14 percent) were in class two, lesser professionals; class three, considered administrative personnel, accounted

for fourteen (20 percent) subjects; eight (11 percent) were in class four, clerical and sales workers; the largest number of subjects, fifteen (21 percent) were in class five, skilled manual workers. The sixth class, machine operators and semi-skilled workers had eight (11 percent); the last class, seven, had three (4 percent) subjects. Class seven is described as unskilled workers.

TABLE 3
OCCUPATIONAL CLASS PRE- AND POST-INFARCTION

Occupational Class *	Pre-Infarct		Post-Infarct	
	Frequency	Percent	Frequency	Percent
1	13	19	13	23
2	10	14	8	14
3	14	20	11	20
4	8	11	9	16
5	15	21	9	16
6	8	11	5	9
7	3	4	1	2
Total	71	100	56	100

* Refer to Appendix F for classes
N= 71 Pre-Infarct N= 56 Post-Infarct

The Hollingshead Two-Factor Index of Social Position was again utilized to determine post-myocardial infarction occupational class for the fifty-six subjects

who returned to work. The data is in table 3. Class one remained the same, thirteen (23 percent) subjects; class two had a decrease of two, from ten to eight (14 percent); class three showed a decrease, fourteen to eleven (20 percent); class four showed an increase of one, from eight to nine (16 percent); class five showed the largest decrease, from fifteen pre-infarct to nine (16 percent) post-infarct. The number decreased from eight to five (9 percent) in class six; and from three to one (2 percent) for class seven. Fifteen (21 percent) subjects did not return to work at all and were not allocated to occupational classes for that reason. Therefore, there were decreases in all classes but one, where both increases and decreases would be expected.

The second purpose of the study was to determine post-myocardial infarction employment status. A total of fifty-six subjects (79 percent) returned to work. Fifteen (21 percent) did not return to work. Of the fifty-six subjects who returned to work, six (11 percent) returned to less than full-time employment.

Purposes six and seven were to identify how many post-myocardial infarction patients returned to their same job held prior to the infarct, and to identify how many subjects returned to different jobs. This data is in

table 4. The results showed that fifty-four subjects (96 percent) returned to their previous occupations, only two (4 percent) subjects changed occupations. The reason given in both instances was that the work was too strenuous. One subject worked as a cab driver prior to his infarct and as a dispatcher post-infarct. The second subject used to work as a cabinet maker and is now working as a salesman. Fifteen (21 percent) did not return to work.

TABLE 4
EMPLOYMENT STATUS POST-MYOCARDIAL INFARCTION

Employment Status	Same Job	Different Job	Not Employed	Total
Frequency	54	2	15	71
Percent	76	3	21	100

Purpose number three was to determine the time interval between the myocardial infarction and the subjects' return to work. The data in table 5 shows the time interval between the myocardial infarction and the subjects' initial return to work as well as the number of hours worked per week with initial return to work. The number of hours were categorized for part-time and full-time. The interval between the two is referred to

as slack full-time, more than twenty hours per week, but less than thirty-five hours per week. Fifteen (21 percent) did not return to work at all, and one subject was not able to give a specific number of hours worked per week due to his occupation. He is a college professor.

TABLE 5

INTERVAL FROM MYOCARDIAL INFARCTION TO INITIAL
RETURN TO WORK WITH THE NUMBER OF
HOURS WORKED PER WEEK

	Part- Time	Slack Full-time	Full- time	Total	Per- cent
2-4 weeks	1	2	6	9	17
5-10 weeks	6	7	12	25	45
11-16 weeks	1	10	10	21	38
Total	8	19	28	55	...
Percent	14	35	51	...	100.0

N= 55

The largest number of subjects, twenty-five (45 percent) who returned to work, returned within five to ten weeks. Twenty-one (38 percent) took a longer time to return to work, eleven to sixteen weeks; and nine (17 percent) took one month or less to return to work. Twenty-eight (51 percent) of the subjects returned to full-time work immediately and eight (14 percent) of the subjects returned to part-time work initially.

The time interval in relation to return to work full-time was correlated with the subjects' prior history of myocardial infarction and/or the occurrence of complications during hospitalization to determine the effect of these factors upon post-myocardial infarction employment status. This data is in table 6.

For the subjects who returned to work full-time, twenty-eight (57 percent) returned to work within seven to twelve weeks. The largest number, twenty-six (53 percent) subjects, returned to work full-time who had no prior history of myocardial infarction and encountered no complications during hospitalization. The rate of return to work decreased for subjects with a prior history of myocardial infarction and complications. Only one subject (2 percent) in the group with more than one myocardial infarction and complications returned to work full-time, and he did so within seven to twelve weeks after the infarct. One subject did not give a time interval, therefore the total for table 6 is forty-nine (N= 49).

The average time interval from the myocardial infarction to the initial return to work was analyzed in relation to the subjects' prior history of myocardial infarction and/or the incidence of complications and the number of hours worked per week initially. The purpose

TABLE 6

INTERVAL FROM MYOCARDIAL INFARCTION TO RETURN TO FULL-TIME WORK IN RELATION
TO PRIOR HISTORY OF MYOCARDIAL INFARCTION AND/OR COMPLICATIONS

	1MI/NC*	1MI/C*	>1MI/NC	>1MI/C	Total	Percent
6 weeks or less	4	3	2	0	9	18
7-12 weeks	16	9	2	1	28	57
13-18 weeks	3	3	1	0	7	15
19-28 weeks	3	1	1	0	5	10
Total	26	16	6	1	49	...
Percent	53	33	12	2	...	100

MI= Myocardial Infarction; NC= No Complications; C= Complications
>1= More than one

of this analysis was to determine the effect of these factors on the length of time from the myocardial infarction and the initial return to work and the number of hours worked per week.

The results of this analysis demonstrated that a prior history of myocardial infarction and/or complications did not appear to have any effect on the time interval to return to work part-time. The average time interval to return to work part-time regardless of history was eight to 8.7 weeks. The group with one myocardial infarction and complications, and the group with more than one myocardial infarction with no complications had an average time interval of 12.2 to 12.4 weeks respectively, for return to slack full-time work. Return to work for the group with one myocardial infarction and no complications was within 9.1 weeks for slack full-time work. A prior history of myocardial infarction and complications also appeared to have no effect on return to work full-time. The average time interval for fifteen subjects with one myocardial infarction and no complications was 9.9 weeks and 7.3 weeks for the ten subjects with one myocardial infarction and complications. For the three subjects with more than one myocardial infarction and no complications, the interval was seven weeks, and no one in the group

with more than one myocardial infarction and complications returned to full-time work initially.

The subjects were asked to state how long they had worked at their occupations before their myocardial infarction. The answers were combined for statistical analysis. Twenty-six (37 percent) of the subjects had worked at their occupations between twenty-one to thirty years; twenty (28 percent) had worked between eleven and twenty years; fourteen (20 percent) had been at the same occupation for thirty-one or more years; and eleven (15 percent) had been at their occupations for ten years or less.

Purpose number four of this study was to identify problems encountered by post-myocardial infarction patients in obtaining re-employment. The problems were grouped according to similarities as seen by the investigator. It was assumed that "stress", "anxiety", and "fear" could be grouped into a category of "emotional" problems. The problem of tiring more easily, having to take things slower and subsequent hospitalizations for phlebitis and embolus were combined with "pain" into a category of "physical" problems. Financial problems was the next category. This included the need to return to work earlier than recommended because of a poor financial situation. Two

subjects reported that they do not spend as much time in the field, but more time in the office. They were placed in an "other" category. Some subjects encountered more than one problem which accounts for the number exceeding fifty-six for a total. The results are in table 7.

TABLE 7

PROBLEMS ASSOCIATED WITH RETURN TO
WORK AND NON RETURN TO WORK

Problems	Employed		Problems	Unemployed	
	Freq.*	% **		Freq.*	% **
None	37	66	None	0	0
Physical	13	23	Physical	12	80
Emotional	5	9	Emotional	8	53
Financial	1	2	Financial	4	27
Other	2	4	Other	3	20
Total	58	104	Total	27	180

* Frequency ** Percent

N= 56 Employed

N= 15 Unemployed

Identification of the problems encountered by unemployed post-myocardial infarction patients was purpose number five of this study. The fifteen subjects who did not return to work all had multiple problems, accounting for a total larger than fifteen in table 7 where this data is presented.

Grouping of these problems were into the categories used for the grouping of problems associated with return to work: physical, emotional, financial, and other, according to similarities seen by the investigator. The physical problems encountered by these subjects included: weakness, surgery, cardiac catheterization, pain, inability to pass employment physical, and prior attacks. Among the emotional difficulties reported were: anxiety, depression, difficulty coping with illness, overprotection by family, and fear of another attack. Financially the subjects reported: no income, less money than used to have, and dependency on pension and/or disability benefits. Other problems included: difficulty following doctor's orders, stopping smoking, watching weight, and spouse not well.

Table 7 shows that thirty-seven (66 percent) of the subjects had no problems with return to work. However, thirteen (23 percent) reported physical problems with return to work. Of those subjects who did not return to work, twelve (80 percent) had physical problems and eight (53 percent) reported emotional difficulties. The problems of prior history of myocardial infarction and the incidence of complications with regard to the subjects post-myocardial infarction employment status are dealt with in a later analysis.

Purpose number eight of this study was to identify reasons for unemployment among post-myocardial infarction patients. The reasons were separated from the problems of these subjects in order to determine the cause or explanation for unemployment. The reasons were analyzed in the same groups as appeared on the questionnaire. This data is in table 8. Many subjects reported more than one reason for not returning to work, accounting for a total of more than fifteen (100 percent). Cardiac symptoms was a reason given by ten (67 percent) of the fifteen subjects who did not return to work. Eleven subjects (73 percent)

TABLE 8

REASONS FOR NOT RETURNING TO WORK AMONG POST-MYOCARDIAL INFARCTION SUBJECTS

Reasons	Freq- quency	Per- cent	Reasons	Freq- quency	Per- cent
Cardiac Symptoms	10	67	Employer's Advice	7	47
Chest Pain	11	73	Anxiety	4	27
Shortness of Breath	6	40	Depression	2	13
Other C.S. *	4	27	Personal	11	73
Physicians Advice	12	80	Other	9	60
** Subtotal	43	287	** Subtotal	33	220

* C.S. = Cardiac Symptoms ** Subtotals=
Frequency Total: 76 N= 15

reported to have chest pain, and six (40 percent) reported shortness of breath, and four (27 percent) reported "other" cardiac symptoms as their reason for unemployment. For the most part, the "other" cardiac symptoms were complaints of weakness on exertion. The advice of the subjects' physician not to return to work was a reason given by twelve (80 percent) subjects. Seven subjects (47 percent) were advised by their employer not to return to work. Anxiety was reported by four (27 percent) subjects and depression was a reason given by two (13 percent) subjects. Personal reasons were cited by eleven (73 percent) of the subjects, and nine (60 percent) reported other reasons for not returning to work. Personal reasons and other reasons included: family pressure, prior attacks, a preference to retire, access to early social security benefits, and the desire not to return to the stress that the subjects associated with their occupation.

The next subdivision is the analysis of the data obtained from the review of the medical files. This analysis shows that fifty three (75 percent) of the subjects had no previous history of myocardial infarction and eighteen (25 percent) of the subjects had a prior history of myocardial infarction at the time of this study.

The frequency for site of infarction was also analyzed. Three (4 percent) subjects had multiple sites: one had an inferior and subendocardial infarction, one had an anterior and subendocardial infarction, and one had a posterior and inferior-lateral infarct. The remaining subjects were listed as single sites. The results show that twenty-six (37 percent) subjects had an inferior wall infarct; ten were anterior wall infarcts (14 percent); seven (10 percent) subjects had inferior-lateral wall infarctions; six (8 percent) subjects' sites were anteroseptal; five (7 percent) were posterior; and two (3 percent) were subendocardial. The site of infarction was not specified on the record for five (7 percent) of the subjects. Of the remaining seven (10 percent) subjects, one subject each accounted for the following sites: posterior-lateral, intra-lateral, inferior-posterior, lateral, inferior-antrolateral, anterior-inferior and anteroseptal-lateral.

The complications encountered by the subjects during hospitalization have been grouped for ease in analysis and presentation. The total is more than seventy-one since some subjects suffered more than one complication. Forty-three (60 percent) subjects suffered no complications; sixteen (23 percent) had ventricular complications; six (8 percent) had sinus node complications; five (7 percent) had

(7 percent) subjects had angina; three (4 percent) had cardiac catheterizations; and three (4 percent) had open heart surgery. Two (3 percent) subjects had either a temporary or permanent pacemaker inserted; pulmonary complications affected two (3 percent) of the subjects; and one (1 percent) had an atrial complication. Four (6 percent) of the subjects' complications were not classified in the above categories. These complications were: one case of nodal rhythm; one case of hypertension; one case of increased temperature; and one case of prolonged left shoulder pain. The analysis for no complications during hospitalization, one complication, and more than one complication is as follows: forty-three (60 percent) had no complications, fourteen (20 percent) had one complication, and the same number (14) had more than one complication during hospitalization.

Information enabling the investigator to determine the social class of the subjects was also obtained. The social class of the subjects was established with the use of the Hollingshead Two-Factor Index of Social Position (Appendix F). Eleven subjects were in class one; (15 percent); sixteen (23 percent) in class two; class three had the largest number, twenty-one (29 percent) of

the subjects; class four was next with nineteen (27 percent) subjects; and class five had four (6 percent) subjects.

An analysis of the subjects' history of myocardial infarction and complications during hospitalization to the days spent in the hospital was also done. The results are: for the group with one myocardial infarction and no complications the average hospital stay was thirteen days based on twenty-nine patients, the group with one myocardial infarction and complications had an average stay of fifteen days for twenty-four patients, the group of subjects with a prior history of myocardial infarction but no complications had an average stay of only nine days based on thirteen patients and for the five subjects who had a prior history of myocardial infarction and also had complications, the average stay was seventeen days.

The relationship of age to prior history of myocardial infarction and complications was also analyzed. Subjects under the age of forty-one numbered five (7 percent) for no prior history of heart attack or complications, and two (3 percent) had no prior history of myocardial infarction and complications. No one in that age group fell into either of the other two categories. Subjects between the ages of forty-one and fifty showed an

incidence of nine (13 percent) subjects in the group of one myocardial infarction and no complications; six (8 percent) in the group of one myocardial infarction and complications; and three (4 percent) in the group with more than one myocardial infarction and no complications. That age group had no one in the group with more than one myocardial infarction and complications. Between the ages of fifty-one and sixty-two there were fifteen (21 percent) subjects in the one myocardial infarction and no complications group; sixteen (23 percent) were in the group with one myocardial infarction and complications; ten (14 percent) in the group of more than one myocardial infarction and no complications; and five (7 percent) in the group with more than one myocardial infarction and complications. This analysis shows that of the total sample of seventy-one subjects, seven (10 percent) were under forty-one years of age; eighteen (25 percent) were between forty-one and fifty; and forty-six (65 percent) were fifty-one to sixty-two years of age.

The third subdivision presents the Chi Square Contingency Table Analysis. Chi Square is a nonparametric test of significance for data expressed in frequencies. When the data is arranged in contingency tables, the null hypothesis is that there is no relationship

between the variables. In cases like this Chi Square is referred to as a test of independence (Siegel 1956).

Chi Square was used to test the null hypothesis at the 0.05 level of significance. Fisher's Exact Probability Test was used as an alternative to Chi Square when the frequencies were small, also at the 0.05 level of significance.

The factors of education, religion, age, and marital status were analyzed against the rate of employment and unemployment after myocardial infarction. Certain categories were combined for statistical analysis.

Significant differences in the educational levels of employed and unemployed groups were found and are in table 9. The data demonstrated that for subjects with less than high school education, four (6 percent) were employed and four (6 percent) were unemployed. Of the eighteen (25 percent) subjects who completed high school, thirteen (18 percent) were employed and five (7 percent) were unemployed. For the forty-five (63 percent) subjects who had some college or a college degree, thirty-nine (55 percent) were employed and six (8 percent) were unemployed. The Chi Square value for this table was 6.12 with a probability value of 0.047 ($p \leq 0.05$). It was concluded that educational level has a direct effect on the employment

status of post-myocardial infarction patients. The higher the educational level, the higher are the chances of the subject returning to work. Therefore the null hypothesis that no relationship existed between educational level and post-myocardial infarction employment status was rejected.

TABLE 9

EDUCATION AND POST-MYOCARDIAL
INFARCTION EMPLOYMENT STATUS

Education	Employed	Unemployed	Total
Less than high school	4 (6%)	4 (6%)	8 (12%)
High school	13 (18%)	5 (7%)	18 (25%)
Some college or college degree	39 (55%)	6 (8%)	45 (63%)
Total	56 (79%)	15 (21%)	71 (100%)

N= 71

The religious affiliation for the subjects were twenty-eight (40 percent) employed and eleven (16 percent) unemployed Catholics. Due to small frequencies, the Jewish and Protestant values were combined. Those results were twenty-seven (38 percent) employed and four (6 percent) unemployed. One subject did not answer the question of religion. These results are shown in table 10. It was concluded that a borderline relationship existed between a subjects' religious affiliation and employment

status after a myocardial infarction. Catholics were less likely to be employed. Using Fisher's Exact Probability Test, the probability value for this data was 0.103 ($p \geq 0.05$). Therefore the null hypothesis that a relationship does not exist between religious affiliation and post-myocardial infarction employment status was retained.

TABLE 10
RELIGION AND POST-MYOCARDIAL INFARCTION
EMPLOYMENT STATUS

Religion	Employed	Unemployed	Total
Catholic	28 (40%)	11 (16%)	39 (56%)
Jewish and Protestant	27 (38%)	4 (6%)	31 (44%)
Total	55 (78%)	15 (22%)	70 (100%)

N= 70

The null hypothesis that a relationship does not exist was rejected for the factor of age and employment status. For subjects under the age of fifty-one, (34 percent) twenty-four were employed and one (1 percent) was unemployed. For those subjects between the ages of fifty-one and sixty-two, thirty-two (45 percent) were employed and fourteen (20 percent) were unemployed after a heart attack. This data is displayed in table 11. The Chi Square value for this data was 5.32 and the

probability value was 0.021 ($p \leq 0.05$) and it was therefore concluded that age has a relationship with the return to work of the post-myocardial infarction patient. The younger the subject, the more likely he is to be employed. Statistics for the patients' age with relation to prior history of myocardial infarction and complications during hospitalization are found on page

TABLE 11

AGE AND POST-MYOCARDIAL INFARCTION
EMPLOYMENT STATUS

Age	Employed	Unemployed	Total
Under 51 years	24 (34%)	1 (1%)	25 (35%)
51-62 years	32 (45%)	14 (20%)	46 (65%)
Total	56 (79%)	15 (21%)	71 (100%)

N= 71

The null hypothesis that a relationship does not exist was retained for the factor of marital status and employment status. The data is in table 12. For married subjects, fifty-four (76 percent) were employed and fourteen (20 percent) were unemployed. For the unmarried subjects, two (3 percent) were employed and one (1 percent) subject was unemployed. Using Fisher's Exact Probability Test the probability was 0.515 ($p \leq 0.05$).

TABLE 12

MARITAL STATUS AND POST-MYOCARDIAL
INFARCTION EMPLOYMENT STATUS

Marital Status	Employed	Unemployed	Total
Married	54 (76%)	14 (20%)	68 (96%)
Not Married	2 (3%)	1 (1%)	3 (4%)
Total	56 (79%)	15 (21%)	71 (100%)

N= 71

An analysis for complications during hospitalization was also performed. Results showed a borderline relationship. The data showed that for subjects with no complications, thirty-seven (52 percent) were employed and six (8 percent) were unemployed. For the subjects with one or more complication during hospitalization, nineteen (27 percent) were employed and nine (13 percent) were unemployed. The data is shown in table 13. The

TABLE 13

COMPLICATIONS AND POST-MYOCARDIAL
INFARCTION EMPLOYMENT STATUS

	Employed	Unemployed	Total
Complications, one or more	19 (27%)	9 (13%)	28 (40%)
No Complications	37 (52%)	6 (8%)	43 (60%)
Total	56 (79%)	15 (21%)	71 (100%)

N= 71

Chi Square value for this data was 2.38 and the probability was 0.123 ($p \leq 0.05$) and it was therefore concluded that complications or the lack of complications had a directional, but not quite significant effect on the subjects' employment status. Those subjects without complications were more likely to return to work.

A similar analysis was performed with the factor of myocardial infarction history and employment status. This data is in table 14. For subjects with one myocardial infarction, forty-six (65 percent) were employed and seven (10 percent) were unemployed. For the subjects with a history of more than one myocardial infarction, ten

TABLE 14

MYOCARDIAL INFARCTION HISTORY AND POST-MYOCARDIAL
INFARCTION EMPLOYMENT STATUS

* MI History	Employed	Unemployed	Total
One MI	46 (65%)	7 (10%)	53 (75%)
More than one MI	10 (14%)	8 (11%)	18 (25%)
Total	56 (79%)	15 (21%)	71 (100%)

*MI= Myocardial Infarction N= 71

(14 percent) were employed and eight (11 percent) were unemployed. The null hypothesis that no relationship existed was rejected for this set of data. It was

concluded that a prior history of myocardial infarction had a direct effect on the subjects' post-infarction employment status. Therefore, subjects with a prior history of myocardial infarction had less chance of returning to work. The Chi Square value for this data was 6.13 and the probability was 0.013 ($p \leq 0.05$).

The length of time that a subject worked at an occupation prior to his infarct was also analyzed. For subjects who had worked ten years or less, ten (14 percent) were employed, and one (1 percent) was unemployed. For the group who had worked between eleven and twenty-five years, twenty-nine (41 percent) were employed and three (4 percent) were unemployed. For the subjects who had worked twenty-six years or more, seventeen (24 percent) were employed and eleven (15 percent) were unemployed. This data is in table 15. The Chi Square value for this data was 9.15 and the probability was 0.010 ($p \leq 0.05$). The null hypothesis that no relationship existed was rejected and it was concluded that a relationship exists between the length of time at an occupation and a subjects' post-myocardial infarction employment status. Subjects who had worked eleven or more years were more likely to return to work.

TABLE 15
LENGTH OF TIME AT OCCUPATION AND POST-
MYOCARDIAL INFARCTION
EMPLOYMENT STATUS

Length of time at Occupation	Employed	Unemployed	Total
Ten years or less	10 (14%)	1 (1%)	11 (15%)
11-25 years	29 (41%)	3 (4%)	32 (45%)
26 years or more	17 (24%)	11 (15%)	28 (39%)
Total	56 (79%)	15 (21%)	71 (100%)

N= 71

Finally, it was determined that the social class of the subjects also had a significant relationship with the subjects' employment status after a myocardial infarction. Because of small frequencies, the subjects in classes one, two, and three were combined. The results were: forty-two (59 percent) were employed, and six (8 percent) were unemployed. Classes four and five were also combined, showing that fourteen (20 percent) were employed and nine (13 percent) were unemployed. The Chi Square value for table 16 was 5.14 with a probability of 0.023 ($p \leq 0.05$). Therefore, it was concluded that the chances of returning to work were greater for those subjects in classes one, two, and three and the null hypothesis that no relationship existed for this data was rejected.

TABLE 16

SOCIAL CLASS AND POST-MYOCARDIAL
INFARCTION EMPLOYMENT STATUS

Social Class	Employed	Unemployed	Total
Classes one, two, three	42 (59%)	6 (8%)	48 (67%)
Classes four and five	14 (20%)	9 (13%)	23 (33%)
Total	56 (79%)	15 (21%)	71 (100%)

N= 71

Summary

A demographic profile of the subjects in this study was presented. Statistical analysis relating to the purposes of this study was also presented.

The analysis of data obtained from this retrospective study demonstrated that fifty-six (79 percent) of the seventy-one subjects in this study returned to work after a myocardial infarction. Only two (3 percent) subjects changed occupations.

Chi Square Contingency Table Analysis and Fisher's Exact Probability Test were used to test the null hypothesis that no relationship existed between variables at the 0.05 level of significance. The null hypothesis was rejected for the variables of education, social class, age, length of time at an occupation and myocardial

infarction history. It was concluded that these variables did have a relationship with the post-myocardial infarction subjects' employment status ($p \leq 0.05$). A borderline relationship was found to be present for the variables of religion and complications during hospitalization. The null hypothesis was retained for the factor of marital status. It was concluded that no relationship existed between this variable and post-myocardial infarction employment status.

CHAPTER V

SUMMARY, CONCLUSIONS, IMPLICATIONS, RECOMMENDATIONS

Introduction

This chapter contains a summary of the entire study. The conclusions are an exposition of the possibilities produced from the study. The implications for this study identify all the significant elements derived from the results of the study and are directed to the appropriate audience. The final section contains the recommendations for further study.

Summary

The retrospective study undertaken in this research project was an investigation to determine the employment status of post-myocardial infarction patients.

The instruments for this study were developed by the investigator. The population first received a letter explaining the study and requesting their written consent for participation. A letter, demographic data sheet, and a two page questionnaire were mailed to the subjects who had given written consent. The instruments were pretested and reviewed by a panel of experts prior to administration.

A total of three hundred and eighteen letters requesting participation were mailed. Consent for participation was recieved from one hundred and ten subjects. Four were returned with a note that the patient had expired. Of the one hundred and six potential sample, seventy-one subjects returned the completed research packet.

Analysis of the data via Chi Square Contingency Table Analysis and Fisher's Exact Probability Test at the 0.05 level of significance rejected the null hypothesis for the variables of: education, age, social class, length of time at an occupation, and myocardial infarction history. It was concluded that a relationship existed between these variables and the post-myocardial infarction subjects' employment status. A borderline level of significance existed between the variables of religion and complications during hospitalization with regard to the subjects' employment status. The null hypothesis was retained for the factor of marital status.

The data analysis also demonstrated that fifty-six (79 percent) of the seventy-one subjects, returned to work after a myocardial infarction and only two subjects had to change occupations. Utilizing frequency occurrences and percentages, a demographic profile of the subjects was also presented. The complete statistical analysis of

the data obtained via a review of the medical files as well as that relating to the purposes of the study was also presented.

Conclusions

The following conclusions were derived from this study:

1. Not returning to work after a myocardial infarction decreases a subject's annual income.

2. The highest incidence of myocardial infarction and unemployment after myocardial infarction was among skilled manual workers.

3. Initially, a majority of subjects returned to full-time work within five to ten weeks after the myocardial infarction. Of those who returned, most returned to their previous occupations. This conclusion agrees with previous studies.

4. Return to full-time work for the majority of subjects with their first myocardial infarction and no complications during hospitalization was between seven and twelve weeks. This was, on the average, two weeks longer than for subjects in the other groups.

5. A prior history of myocardial infarction and/or complications during hospitalization had no effect on the time interval for return to part-time work.

6. The majority of subjects in this study reported no problems associated with return to work. However, for those subjects who encountered problems, the two most common problems reported were "physical" and "emotional"

7. The subjects who did not return to work all had multiple problems and multiple reasons for not returning to work

8. The most common site of infarction for subjects in this study was the inferior wall.

9. The majority of subjects in this study suffered no complications while hospitalized. Subjects between the ages of fifty-six and sixty-two had a higher incidence of complications during hospitalization than younger subjects.

10. For subjects with a prior history of myocardial infarction and no complications during hospitalization, the average hospital stay was considerably shorter than for the other three groups of subjects.

11. Most of the subjects in this study were in the middle social class position, class three.

12. The higher the educational level, the more likely the subject is to return to work.

13. The chances are better for a subject under

the age of fifty to return to work, than a subject over the age of fifty.

14. A prior history of myocardial infarction significantly decreases the subjects chances of returning to work

15. Subjects who had worked for eleven years or more were more likely to return to work.

16. Subjects in social classes one, two, and three have a greater opportunity for employment after a myocardial infarction.

17. Those subjects who did not suffer complications during hospitalization for their myocardial infarction had a greater chance of re-employment

18. For this study, Catholics were less likely to return to work.

19. A subjects' marital status did not effect the rate of return to work after a myocardial infarction.

It is also concluded that the results of this study will contribute to the body of knowledge needed to effectively and efficiently identify those cardiac patients most likely to have problems, especially with regard to post-myocardial infarction employment status. These results should help to reduce unemployment among myocardial infarction patients.

Implications

The results of this study have implications for all nurses involved in the care of the myocardial infarction patient. This study will not only add to the body of scientific nursing knowledge, it will facilitate the administration of total patient care by professional nurses. By identifying the factors relating to unemployment among myocardial infarction patients the nurse may improve and expand her role as teacher and counselor to the patient. The nurse should be better able to assess and evaluate the patient's responses to his illness and assist him in problem identification. This enables the nurse to assist the patient in alleviating the problems and stress associated with re-employment, and in the utilization of effective coping mechanisms. Ferres (1975) cited that lack of proper instruction for the patients post-infarction period has accounted for unemployment. It is the nurse's responsibility to provide the education about heart disease and possible alterations in lifestyle to the patient and his family.

The industrial nurse can be of further assistance to the myocardial infarction patient returning to work. By assisting him in the identification and alleviation of potential on the job stresses. The industrial nurse

can also be of help to the employer by providing them with counseling and education about the myocardial infarction patients to correct the misconception of employers about myocardial infarction patients and work. A better understanding of the patient with a myocardial infarction by the employer, provided by the industrial nurse, should help to alleviate the hesitancy of employers to hire or rehire a patient who as had a myocardial infarction.

The health care agency can facilitate this education process by employing nurses who are knowledgeable, interested, and prepared to provide education to cardiac patients and their families. This program should not be limited to the hospital phase of illness, but should include the post-hospital phase as well. Specific to the post-hospital phase is the patient's gradual increase in activity and, when possible, eventual return to work.

The results of this study also have implications for nursing educators. Preparation of a professional nurse to teach the cardiac patient and his family about his illness and the difficulties in the post-infarction period regarding employment status, is the responsibility of nursing educators. The curriculum should also prepare nurses to recognize and meet the learning needs of the

other health team members in reaction to the patients' post-infarction period.

The difficulties and problems faced by cardiac patients in the post-infarction period regarding their employment status have been identified in this study. These factors need to be taken into consideration when designing a program of cardiac rehabilitation. The results of this study should also assist the rehabilitation team in the identification of those subjects who would benefit from the rehabilitation process.

Recommendations

Return to work after a myocardial infarction is only one aspect of the patient's recuperative process. However, the rate of unemployment among these patients is sufficiently high to warrant investigation of the causes and solutions. With this in mind and in conjunction with the data analysis of this study, the following recommendations are submitted:

1. To strengthen the validity of this study, it is recommended that this study be repeated using a larger sample and an improved form of the present instrument. The following improvements are suggested:

- a. Income level be constructed to be more specific

- b. For questions dealing with a time interval, should replace open-ended questions
 - c. Change "Cardiac Symptoms" to read "Physical Symptoms"
 - d. Also utilize similar categories for those subjects who returned to work and for those who did not return to work
 - e. That the consent and research packet be sent at the same time to improve the return rate
2. The study should be repeated in a different geographical locale
 3. The families of myocardial infarction patients be studied in the post-infarction period to determine the needs of the families
 4. A study be done to determine the type and availability of follow-up programs for the post-myocardial infarction patient as developed by the industrial nurse
 5. A study be done to determine the effect of cardiac teaching by nurses in reducing the rate of unemployment of post-myocardial infarction patients
 6. A study be done to determine the criteria utilized by industry for employing or not employing the post-myocardial infarction patient
 7. A study be done to determine the criteria

utilized by physicians when return to work is recommended and when return to work is not recommended.

This completes the section on recommendations. It is hoped that these studies will one day be carried out by nurses interested in the research process, the results of which will serve to improve the quality of care rendered to cardiac patients.

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APPENDICES

MEDICAL RECORD DATA SHEET

- Patient No.____ 1. Adm. Date____ 2. Disch. Date____
3. Address:_____
4. Primary Diagnosis:_____
5. Final Diagnosis:_____
6. Site of Infarct:_____
7. Marital Status: _____Single _____Married
_____Widowed _____Divorced _____Separated
8. Age:_____ 9. Length of Hospitalization (days)_____
10. Employed prior to infarct: _____Yes _____No
11. Occupation prior to infarct:_____
12. Other Physiological Conditions: _____Yes _____No
a. Hypertension_____ b. Diabetes_____ c. Renal_____
d. Other_____
13. Complications during hospitalization: _____Yes _____No
If yes:_____
14. Previous history of MI: _____Yes _____No
If yes:_____
1. Consent form mailed:_____
2. Consent to participate: _____Yes _____No
3. Research Packet mailed:_____
4. Research Packet returned: _____Yes _____No
5. Comments:

Demographic Data Sheet

Directions: For each of the following characteristics check the one that most nearly describes you.

Marital Status: a) Married b) Single c) Divorced
d) Widowed e) Separated

Religion: a) Catholic b) Protestant c) Jewish
d) Other (Specify)

Race: a) White b) Black c) Oriental
d) Latin American e) Other (Specify)

Age: a) 25-30 b) 31-35 c) 36-40 d) 41-45
e) 46-50 f) 51-55 g) 56-62

Educational Level (please indicate highest level completed):

- a) Under 7 years of school
- b) 7-9 years of school
- c) 10-11 years of school (part high-school)
- d) High school graduate
- e) 1-3 years of college (also business schools)
- f) Four year college graduate
- g) Master's or higher degree

Income level (Patient's income only). Indicate your income before and after your heart attack.

<u>BEFORE</u>	<u>AFTER</u>	<u>BEFORE</u>	<u>AFTER</u>
___ Under \$5,000	___	___ \$29,001-\$34,000	___
___ \$5,000-\$9,000	___	___ \$34,001-\$39,000	___
___ \$9,001-\$14,000	___	___ \$39,001-\$44,000	___
___ \$14,001-\$19,000	___	___ \$44,001-\$49,000	___
___ \$19,001-\$24,000	___	___ \$49,001 +	___
___ \$24,001-\$29,000	___	___ other (Specify) _____	___

These questions refer to your employment before your heart attack. Please answer all of the following:

1. Were you self-employed: _____ Yes _____ No
2. Occupation _____
3. Length of time at this occupation _____
4. Number of hours worked per week _____

QUESTIONNAIRE

Directions: These questions refer to your employment after your heart attack. If you are presently employed (working) please answer the questions on page 1. If you are presently unemployed (not working) please answer the questions on page 2.

A. Please answer all of the following:

1. Are you presently: a) _____ employed (working)
b) _____ unemployed (not working) c) _____ self-employed
2. How long after your heart attack did you return to work _____
3. Are you presently employed in:
a) _____ the same job as before your heart attack or:
b) _____ a different job
4. If your job is different, how is it different _____
5. Why did you change your job _____
6. What is your present occupation _____
7. How long have you worked at your present job _____
8. When you first returned to work, how many hours per week did you work _____
9. Have you returned to full-time work (35-40 hrs/wk)
a) _____ Yes If yes, how long after your heart attack was full-time work resumed _____
b) _____ No If no, how many hours are you working _____
10. State problems, if any, that you might have had with your return to work _____

Please feel free to add any comments that you feel might be important to this study.

Thank you for your participation in this study.

This page is for those presently unemployed (not working).

B. Please answer all of the following that apply to you:

1. Date of unemployment _____
2. Did you work at all since your heart attack:
a) _____ Yes b) _____ No
3. If yes to number 2:
a) How long did you work _____
b) What was your occupation _____
c) Why did you stop work _____
4. If you have not worked at all since your heart attack, please answer the following: (check all that apply to you):
a) _____ Cardiac symptoms (check all that apply)
 1) _____ Chest pain
 2) _____ Shortness of breath
 3) _____ Other (please explain) _____

b) _____ Doctor's Advice (please explain) _____

c) _____ Employer's Advice (please explain) _____

d) _____ Anxiety (please explain) _____

e) _____ Depression (please explain) _____

f) _____ Personal Reasons (please explain) _____

g) _____ Other Reasons (please explain) _____

Please feel free to add any comments that you feel might be important to this study.

Thank you for your participation in this study.

Dear Sir,

My name is Donna L. Anderson. I am a registered nurse from New York working on my Master's degree at Texas Woman's University. One of the requirements for this degree is to complete a research project.

My research topic relates to cardiac patients and their employment status. Your answers to certain questions would be very helpful in my research efforts. They would not only enable me to complete my research, but would also assist other cardiac patients in their return to work. Your participation in this project is completely voluntary. You are in no way required to participate. It will in no way affect your present employment or any benefits you may be receiving.

This investigation requires that you give your written consent in order to participate. If you choose to participate in this investigation, please sign the enclosed form and return it to me in the envelope provided. I must receive your consent by .

Once I receive your written consent for participation, you will receive a research packet containing a demographic data sheet and a questionnaire along with a letter explaining what to do with the forms. The questions are short and it will take approximately twenty minutes to answer them. There will be absolutely no way to identify you on the forms or the envelope. Your identity will remain anonymous, even to me, in the report of this study.

Thank you very much for reading this letter. I hope that you will choose to participate because your information will be very useful.

Sincerely,

Donna L. Anderson R.N.

Dear Sir,

I am a graduate nursing student at Texas Woman's University. I am studying the employment status of cardiac patients. I would appreciate you filling out the enclosed demographic data sheet and questionnaire.

When you have completed the forms, please return them to me before in the envelope provided.

Please note that the forms need not be signed and your replies will be kept anonymous, even to me. Thank you very much for your participation.

Sincerely,

Donna L. Anderson R.N.

COMMENT SHEET

Demographic Data Sheet: Comments:

Questionnaire: Comments: Section A:

Section B:

Section C:

Other:

May I use your name in the final draft of the thesis?
_____ Yes _____ No

Thank you again for your assistance.

TEXAS WOMAN'S UNIVERSITY

Human Research Committee

Name of Investigator: Donna Lynne Anderson Center: Dallas

Address: 26 East Fenimore Street
Valley Stream
New York 11580

Dear Ms. Anderson:

Your study entitled Employment Status of Post-Myocardial Infarction Patients

has been reviewed by a committee of the Human Research Review Committee and it appears to meet our requirements in regard to protection of the individual's rights.

Please be reminded that both the University and the Department of Health, Education and Welfare regulations require that written consents must be obtained from all human subjects in your studies. These forms must be kept on file by you.

Furthermore, should your project change, another review by the Committee is required, according to DHEW regulations.

Sincerely,



Chairman, Human Research
Review Committee
at Dallas

TEXAS WOMAN'S UNIVERSITY
COLLEGE OF NURSING
DENTON, TEXAS

DALLAS CENTER
1810 Inwood Road
Dallas, Texas 75235

HOUSTON CENTER
1130 M.D. Anderson Blvd.
Houston, Texas 77025

AGENCY PERMISSION FOR CONDUCTING STUDY*

THE ~~Agency~~ ~~_____~~

GRANTS TO Donna Lynne Anderson

a student enrolled in a program of nursing leading to a Master's Degree at Texas Woman's University, the privilege of its facilities in order to study the following problem:

Employment Status of Post-Myocardial Infarction Patients

The conditions mutually agreed upon are as follows:

1. The agency (~~may~~) (may not) be identified in the final report.
2. The names of consultative or administrative personnel in the agency (~~may~~) (may not) be identified in the final report.
3. The agency (wants) (~~does not want~~) a conference with the student when the report is completed.
4. The agency is (willing) (~~unwilling~~) to allow the completed report to be circulated through interlibrary loan.
5. Other: _____

Date December 1977

~~_____~~
Signature of Agency Personnel

~~_____~~
Signature of student

~~_____~~
Signature of Faculty Advisor

*Fill out and sign three copies to be distributed as follows: Original -- Student; first copy - agency; second copy - T.W.U. College of Nursing.

DALLAS CENTER
1810 Inwood Road
Dallas, Texas 75235

HOUSTON CENTER
1130 M.D. Anderson Blvd.
Houston, Texas 77025

THE ~~CONFIDENTIAL~~ ~~CONFIDENTIAL~~ ~~CONFIDENTIAL~~

GRANTS TO Donna Lynne Anderson

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5. Other:

Date December 1977

Signature of Agency Personnel

Signature of student

Signature of Faculty Advisor

*Fill out and sign three copies to be distributed as follows: Original -- Student; first copy -- agency; second copy -- T.W.U. College of Nursing.

TEXAS WOMAN'S UNIVERSITY

(Form A - Written presentation to subject)

Consent to Act as a Subject for Research and Investigation:

(The following information is to be read to or read by the subject)

1. I hereby authorize Donna Lynne Anderson
(Name of person(s) who will perform
procedure(s) or investigation(s)).
to perform the following procedure(s) or investigation(s):
(Describe in Detail) Mail a research packet containing
 1. A cover letter (with instructions)
 2. A questionnaire
 3. A demographic data sheet for me to fill out and return
2. The procedure of investigation listed in Paragraph 1 has been explained to the investigator.
to me by Donna L. Anderson (in a letter)
(Name)
3. I understand that the procedures or investigations described in Paragraph 1 involves the following possible risks or discomforts:
(Describe in detail) May alter the patient's perception of his present employment status.
4. I understand that the procedures and investigations described in Paragraph 1 have the following potential benefits to myself and/or others:
 1. Assist cardiac patients in their return to work.
 2. Assist the health team in management of cardiac patients with respect to return to work.
5. An offer to answer all of my questions regarding the study has been made. If alternative procedures are more advantageous to me, they have been explained. I understand that I may terminate my participation in the study at any time.

Subject's signature

Date

(If the subject is a minor, or otherwise unable to sign, complete the following)

Subject is a minor (age ___), or is unable to sign because:

Signatures (one required):

Father

Date

Mother

Date

Guardian

Date

TWO-FACTOR INDEX OF SOCIAL POSITION

August B. Hollingshead
Yale University

Brief Instructions

The two-factor Index utilized occupation and education. These factors are scaled and weighed individually, and a single score is obtained.

The educational scale is based upon the years of school completed by the head of the household. The scale values are as follows:

<u>Years of School Completed</u>	<u>Scale Value</u>
Professional (M.A.; M.S.; M.D.; Ph.D.; LL.B.)	1
Four-year college graduate (A.B.; B.S.; B.M.)	2
1-3 years college (also business school)	3
High school graduate	4
10-11 years of school (part high-school)	5
7-9 years of school	6
Under 7 years of school	7

The occupational scale is attached on a separate sheet. Its effective use is dependent on the precise knowledge of the head of the household's occupation. Occupational position has a factor weight of 7 and educational position a factor weight of 4. These weights are multiplied by the scale value for education and occupation of each individual or head of a household. The calculated weighed score gives the approximate position of the family on the overall scale. For example, John Smith is the manager of the Safeway Store; he completed high school and one year of business college. I would score him as follows:

<u>Factor</u>	<u>Scale Score</u>	<u>Factor Weight</u>	<u>Score X Weight</u>
Occupation	3	7	21
Education	3	4	12
Index of Social Position Score...			33

When the Index of Social Position score is calculated, the individual may be stratified either on the continuum of scores or into a "class". In the case of John Smith, I would rate him in a class III on the basis of the position he occupies on the continuum of scores, and the way the scores are grouped into classes.

The range of scores in each class on the two-factor Index follows:

<u>Class</u>	<u>I.S.P. Scores</u>
I	11-17
II	18-31
III	32-47
IV	48-63
V	64-77

The various combinations of scale scores for occupation and education are reproducible in the Guttman sense for there is no overlap between education-occupation combinations. If an individual's education and occupation are known, one can calculate his score. Conversely, if one knows an individual's score, he can calculate both occupational position and educational level.

We have made extensive studies of the reliability of scoring, and the validity of the Index on over one hundred variables in our Social Stratification and Psychiatric Disorders Study. We have also made studies of loss of precision in using the two-factor Index rather than the three-factor one of occupation, education, and ecological area of residence. We recommend the two-factor one in areas where ecological maps do not exist.

INDEX OF SOCIAL POSITION

A. B. Hollinshead
Yale University

SEVEN SOCIO-ECONOMIC SCALE POSITIONS

1. Higher Executives of Large Concerns, Proprietors, and Major Professionals.

a. Higher Executives (Value of corporation \$500,000 and above as rated by Dunn and Bradstreet).

Bank Presidents; Vice Presidents; and Assistant Vice-Presidents.

Businesses--Directors, Presidents, Vice-Presidents, Assistant Vice-Presidents, Executive Secretary, Research Directors, Treasurers

b. Proprietors (Value over \$100,000 by Dunn and Bradstreet).

Brokers
Contractors
Dairy Owners

Farmers
Lumber Dealers

c. Major Professionals.

Accountants (C.P.A.)
Actuaries
Agronomists
Architects
Artists, Portrait
Astronomers
Auditors
Bacteriologists
Chemical Engineers
Chemists
Clergyman (Professionally Trained)
Dentists
Economists
Engineers (College Grad.)
Foresters
Geologists

Judges (Superior Courts)
Lawyers
Metallurgists
Military, Comm. Officers,
Major and above
Officials of the
Executive Branch
of Government, Federal
State, Local, e.g.,
Mayor; City Manager,
City Plan Director,
Internal Revenue
Directors.

Physicians
Physicists, Research
Psychologists, Practicing
Symphony Conductors
Teachers, University, College
Veterinarians (Veterinary
Surgeons

2. Business Managers, Proprietors of Medium Sized Businesses, and Lesser Professionals.

a. Business Managers in Large Concerns (Value \$500,000 +)

Advertising Directors	Manufacturers Representatives
Branch Managers	Office Managers
Brokerage Salesman	Personnel Managers
Directors of Purchasing	Police Chief; Sheriff
District Managers	Postmaster
Executives Assistants	Production Managers
Export Managers, Int, Concern	Sales Engineers
Govt. Officials, minor, e.g.	Sales Managers, National
Internal revenue agents	Concerns
Farm Managers	Store Managers

b. Proprietors of Medium Businesses (Value \$35,000-

Advertising	Farm Owners
Clothing Store	Poultry Business
Contractors	Real Estate Brokers
Express Company	Rug Business
Fruits, Wholesale	Store
Furniture Business	Theater
Jewelers	

c. Lesser Professionals.

Accountants	Military Comm. Officers,
Chiroprpodists	Lts., Captains
Chiropractors	Musicians, (Symphony
Correction Officers	Orchestra)
Director of Community House	Opticians
Engineers (Not College Grad.)	Pharmacists
Finance Writers	Nurses
Health Educators	Public Health Officers
Labor Relations Consultants	(M.P.H.)
Librarians	Research Assistants, Univer-
	sity (Full-time)
	Social Workers
	Teachers, Elementary and
	High

3. Administrative Personnel, Owners Small Businesses, and Minor Professionals.

a. Administrative Personnel

Advertising Agents	Managers, Departments
Chief Clerks	Passenger Agents--R.R.
Credit Managers	Private Secretaries
Insurance Agents	Purchasing Agents

Sales Representatives
 Section Heads, Federal,
 State, and Local Govt.
 Offices
 Section Heads, Large
 Businesses and Industries

Service Managers
 Shop Managers
 Store Managers (Chain)
 Traffic Managers

b. Small Business Owners (\$6,000-\$35,000)

Art Gallery
 Auto Accessories
 Awnings
 Bakery
 Beauty Shop
 Boatyard
 Brokerage, Insurance
 Car Dealers
 Cattle Dealers
 Cigarette Machines
 Cleaning Shops
 Clothing
 Coal Businesses
 Contracting Businesses
 Convalescent Homes
 Decorating
 Dog Supplies
 Engraving Business
 Feed
 Finance Co., Local
 Fire Extinguishers
 5 cent and 10 cent
 Florist
 Food Equipment
 Food Products
 Foundry
 Funeral Directors
 Furniture

Garage
 Gas Station
 Glassware
 Grocery-General
 Hotel Proprietors
 Jewelry
 Machinery Brokers
 Manufacturing
 Monuments
 Music
 Package Store (Liquor)
 Paint Contracting
 Plumbing
 Poultry
 Real Estate
 Records and Radios
 Restaurant
 Roofing Contractor
 Shoe
 Signs
 Tavern
 Taxi Company
 Tire Shop
 Trucking
 Trucks and Tractors
 Upholstery
 Wholesale Outlets
 Window Shades

c. Semi-Professionals

Actors and Showmen
 Army M/Sgt.; Navy C.P.O.
 Artists, Commercial
 Appraisers (Estimators)
 Clergymen (Not Professionally
 Trained)
 Concern Managers
 Deputy Sheriffs
 Interior Decorators
 Interpreters, Courts
 Laboratory Assistants

Landscape Planners
 Morticians
 Oral Hygienists
 Photographers
 Physio-therapists
 Piano Teachers
 Publicity and Public
 Relations
 Radio, T.V. Announcers
 Reporters, Newspapers
 Surveyors

Title Searchers
Tool Designers
Travel Agents

Yard Masters, R.R.
Dispatchers, R.R. Train

c. Farmers

Farm Owners (\$20,000-\$35,000)

4. Clerical and Sales Workers, Technicians, and Owners of Little Businesses. (Value under \$6,000)

a. Clerical and Sales Workers

Bank Clerks and Tellers	Post Office Clerks
Bill Collectors	Route Managers
Bookkeepers	Sales Clerks
Business Machine Operators, Office	Sergeants and Petty Officers, Military Service
Claims Examiners	Shipping Clerks
Clerical or Stenographic Conductors, R.R.	Supervisors, Utilities, Factories
Employment Interviewers	Toll Station Supervisors
Factory Storekeepers	Warehouse Clerks
Factory Supervisors	

b. Technicians

Dental Technicians	Operators, P.B.X.
Draftsmen	Proofreaders
Driving Teachers	Safety Supervisors
Expeditor, Factory	Supervisors of Maintenance
Experimental Tester	Technical Assistants
Instructors, Telephone Co., Factory	Telephone Co. Supervisors
Inspectors, Weights, Sanitary	Timekeepers
Inspectors, R.R.; Factory	Tower Operators, R.R.
Investigators	Truck Dispatchers
Laboratory Technicians	Window Trimmers (Store)
Locomotive Engineers	

c. Owners of Little Businesses (\$3,000-\$6,000)

Flower Shop	Newstand
Grocery	Tailor Shop

d. Farmers

Owners (\$10,000-\$20,000)

5. Skilled Manual Employees

Auto Body Repairers	Loom Fixers
Bakers	Machinists (Trained)
Barbers	Maintenance Foremen
Blacksmiths	Linoleum Layers (Trained)
Bookbinders	Masons
Boilermakers	Masseurs
Brakemen, R.R.	Mechanics (Trained)
Brewers	Millwrights
Bulldozer Operators	Moulders (Trained)
Butchers	Painters
Cabinet Makers	Paper hangers
Cable Splicers	Patrolmen, R.R.
Carpenters	Pattern and Model Makers
Casters (Founders)	Piano Builders
Cement Finishers	Piano Tuners
Cheese Makers	Plumbers
Chefs	Policemen, City
Compositors	Postmen
Diemakers	Printers
Diesel Shovel Operators	Radio, T.V., Maintenance
Electricians	Diesel Engine Repair and
Engravers	Maintenance (Trained)
Exterminators	Repairmen, Home Appliances
Fitters, Gas; Steam	Rope Splicers
Firemen, City	Sheetmetal Workers (Trained)
Firemen, R.R.	Shipsmiths
Foremen, Construction, Dairy	Shoe Repairmen (Trained)
Gardners, Landscape (Trained)	Stationary Engineers
Glass Blowers	(Liscensed)
Glaziers Gunsmiths	Stewards, Club
Gauge Makers	Switchmen, R.R.
Hair Stylists	Tailors (Trained)
Heat Treaters	Teletype Operators
Horticultrists	Toolmakers
Linemen; Utility	Track Supervisors, R.R.
Linotype Operators	Tractor-Trailer Trans.
Lithographers	Typographers
Locksmith	Upholsterers (Trained)
	Watchmakers
	Weavers
	Welders
	Yard Supervisors, R.R.

Small Farmers

Owners (under \$10,000)
 Tenants who own farm equipment

6. Machine Operators and Semi-Skilled Employees.

Aides, Hospital	Practical Nurses
Apprentices, Electricians,	Pressers, Clothing
Printers, Steamfitters,	Pump Operators
Toolmakers	Recievers and Checkers
Assembly Line Workers	Roofers
Bartenders	Set-Up Men, Factories
Bingo Tenders	Shapers
Building Superintendents	Signalmen, R.R.
Bus Drivers	Solderers, Factory
Checkers	Sprayers, Paint
Coin Machine Fillers	Steelworkers (Not skilled)
Cooks, Short Order	Stranders, Wire Machines
Delivery Men	Strippers, Rubber Factory
Dressmakers, Machine	Taxi Drivers
Elevator Operators	Testers
Enlisted Men, Military Service	Timers
Filers, Benders, Buffers	Tire Moulders
Foundry Workers	Trainmen, R.R.
Garage and Gas Station	Truck Drivers (General)
Attendants	Waiter-Waitresses (Better
Green house Workers	Places)
Guards, Doorkeepers,	Weighers
Watchman	Welders, spot
Hairdressers	Winders, Machine
Housekeepers	Wiredrawers, Machine
Meat Cutters and Packers	Wine Bottlers
Meter Readers	Wood Workers, Machine
Operators, Factory Machines	Wrappers, Stores and
Oilers, R.R.	Factories

Farmers

Smaller tenants who own little equipment

7. Unskilled Employees.

Amusement Park Workers	Farm Helpers
(Bowling Alleys, Pool	Fishermen (clam diggers)
Rooms)	Freight Handlers
Ash Removers	Garbage Collectors
Attendants, Parking lots	Grave Diggers
Cafeteria Workers	Hod Carriers
Car Cleaners, R.R.	Hog Killers
Car Helpers, R.R.	Hospital Workers, Unspecified
Carriers, Coal	Hostlers, R.R.
Counter men	Janitory (sweepers)
Dairy Workers	Laborers, Construction
Deck Hands	Laborers, Unspecified
Domestics	

7. Unskilled Employees (continued)

Laundry Workers	Stevedores
Messengers	Stock Handlers
Platform Men, R.R.	Street Cleaners
Peddlers	Unskilled Factory Workers
Porters	Truckmen, R.R.
Roofer's Helpers	Waitresses--"Hash Houses"
Shirt Folders	Washers, Cars
Shoe Shiners	Window Cleaners
Sorters, Rag and Salvage	Woodchoppers
Stagehands	

Relief, Public, Private

Unemployed (No occupation)

Farmers

Share Croppers