

THE EFFECTS OF RELAXATION THERAPY UPON THE ANXIETY
LEVELS OF CARDIAC PATIENTS

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We hereby recommend that the thesis prepared under

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TABLE OF CONTENTS

ACKNOWLEDGMENTS	iii
LIST OF TABLES	vii
CHAPTER	
1. INTRODUCTION	1
Problem of Study	4
Justification of the Problem	4
Theoretical Framework	7
Assumptions	9
Hypotheses	9
Definition of Terms	10
Limitations	12
Summary	12
2. REVIEW OF LITERATURE	14
Behavior Pattern Type A	14
Emotional Stress	17
Psychological Aspects of Myocardial Infarction	18
Anxiety and Physiological Disturbances	28
Relaxation Therapy	34
Summary	44
3. PROCEDURE FOR COLLECTION AND TREATMENT OF DATA .	46
Setting	47
Population and Sample	48
Protection of Human Subjects	50
Instruments	51
Data Collection	55
Treatment of Data	57
4. ANALYSIS OF DATA	59
Description of Sample	60
Findings	66
Summary of Findings	70

CHAPTER

5. SUMMARY OF THE STUDY	71
Summary	71
Discussion of Findings	73
Conclusions and Implications	76
Recommendations for Further Study	77
APPENDIX A: APPROVALS	78
APPENDIX B: INFORMED CONSENT	84
APPENDIX C: PATIENT PACKAGE	90
APPENDIX D: CHEST PAIN EPISODE DATA SHEET	96
APPENDIX E: RAW DATA	98
REFERENCES	101

LIST OF TABLES

Table

1.	Race and Marital Status Reported by 31 Myocardial Infarction Subjects Participating in the Control and Experimental Groups	61
2.	Educational Level Reported by 31 Myocardial Infarction Subjects Participating in the Control and Experimental Groups	62
3.	Occupation and Retirement as Reported by 31 Myocardial Infarction Subjects Participating in the Control and Experimental Groups	63
4.	Comparison of Anxiety Level Differences Using STAI of 31 Myocardial Infarction Subjects in the Control and Experimental Groups	64
5.	Site of Myocardial Infarct of 31 Myocardial Infarction Subjects Participating in the Control and Experimental Groups.	65
6.	Chest Pain Occurrences Crosstabulations in 31 Myocardial Infarction Subjects Participating in Control and Experimental Groups	66
7.	Analysis of Variance of the Pretest and Posttest Means of 31 Myocardial Infarction Subjects Participating in Control and Experimental Groups	67
8.	Variability of Cell Means and Standard Deviations Between Groups in a Study of 31 Myocardial Infarction Subjects.	68
9.	Chi-Square Analysis of Chest Pain Occurrences in a Study of 31 Myocardial Infarction Subjects in the Control and Experimental Groups	69

CHAPTER 1

INTRODUCTION

The prevalence of ischemic coronary heart disease establishes it as the number one cause of death and a major contributor to chronic illness. Thousands of individuals afflicted by this disease each year are admitted to the hospital with chest pains and subsequently diagnosed as having a myocardial infarction or unstable angina.

The rehabilitation phase for the ischemic cardiac patient is often filled with anxiety producing events. To maintain one's equilibrium against physiological and psychosocial stressors, it becomes necessary for the ischemic cardiac patient to develop a method of control to counteract the deteriorative effects of high anxiety upon the myocardium. If one is to reduce the complications from high anxiety, the ischemic coronary patient must be able to achieve upon demand both physical and mental relaxation.

An admission to the coronary care unit with the diagnosis of myocardial infarction or unstable angina is a life-threatening physiological situation that produces anxiety. Anxiety is a behavioral response to stress. Some researchers (Gentry & Haney, 1975; Rosen & Bibring, 1966; Scalzi, 1973) have concluded that the behavioral response

to a myocardial infarction follows a predictable course of onset. High anxiety, present in the initial post coronary admission period, is typical for the first 48 hours after admission. Anxiety again intensifies upon transfer out of the coronary care unit and then again upon discharge from the hospital. It is generally agreed that convalescent patients who do least well are at an emotional extreme, either completely unaware of any anxiety or in a state of panic.

The cardiac patient has been observed to utilize such behavioral responses as anxiety, denial, depression and aggressive sexual behavior. According to Scalzi (1973), the presence of anxiety is significant because it forms the basis for the development of other behavioral responses. For example, a person's perception of a situation determines his response to that situation. Following a myocardial infarction or angina attack, the physician usually recommends that the patient stop smoking, change dietary habits, or lose weight to decrease the incidence of recurring ischemic episodes. The patient may perceive these recommendations as a threat to his way of life or self-image; consequently these recommendations become anxiety producing. The presence of high anxiety associated with recommended lifestyle changes during the rehabilitation

phase can interfere with the patient making a positive adaptation to prescribed lifestyle changes (Carnes, 1971; Foster & Andreoli, 1970).

Studies (Rosenman, Friedman, Straus, Wurm, Kositchek, Hahn, & Werthessen, 1964; Russek & Russek, 1976) have linked physiological and psychological factors as contributors to the development of coronary heart disease. The interface of behavior, stress and environment upon other recognizable risk factors is being actively explored. Some researchers have proposed that anxiety can cause metabolic and hormonal changes in coronary patients which may initiate new chest pain episodes (Oliver, 1975; Vetter, Strange, Adams, & Oliver, 1974).

Some researchers (Benson, 1975; Benson & Klipper, 1976; Jacobson, 1964) have alluded to the possibility that therapeutic psychological and physiological changes in patients may be induced by the application and consistent practice of relaxation therapy. Relaxation therapy is a method of reducing anxiety without tranquilizers or other mind altering drugs. Instead, it is a learned technique that can be used to gain self-control at the time of stress. For the ischemic cardiac patient this may be of eminent value in the prevention of angina related to the presence of anxiety. The possibility that persistent anxiety in a

patient with myocardial infarction can deter successful rehabilitation leads to the importance of assessing the value of relaxation therapy training during the cardiac rehabilitation phase.

Problem of Study

The problem under investigation in this study was:
Do cardiac patients with myocardial infarction who practice relaxation therapy have lower anxiety levels than those cardiac patients who do not engage in relaxation therapy?

Justification of the Problem

Jenkins (1971) observed that anxiety and neuroticism appeared to precede the development of coronary disease, particularly angina pectoris, with greater frequency than one encountered in healthy control subjects. He also noted that the emergence of myocardial infarction or angina episodes further intensified the degree of anxiety in patients and tore down ego defenses.

Russek and Russek (1976) found that over one-half of the new cases of coronary heart disease identified were without physiological etiology. These findings give support to the linkage of coronary heart disease with psychosocial factors including prolonged emotional stress, Type A

behavior pattern, sociocultural mobility and stressful life events. In another study (Dellipiani, Cay, Phillip, Vetter, Colling, Donaldson, & McCormack, 1976) a patient's emotional reaction to coronary artery disease was not found to be entirely related to the physical diagnosis of ischemic coronary disease or the severity of the illness; but instead was related to the anxiety levels of the patient during convalescence following a myocardial infarction.

Janis' (1958) description of stressful events as a facet of psychological stress encapsulates the destructive force of anxiety as:

A physical danger capable of arousing emotional tension to an extraordinary high degree, disrupting habitual patterns of daily behavior, drastically impairing mental efficiency and producing distressing subjective states of painful, unpleasant effect. (p. 7)

Stress refers to pressure or strain upon an individual that is physical, emotional, mental or spiritual in nature. Ultimately, stress may produce inner conflict and anxiety and result in use of defense mechanisms (Becker, 1976). Hospitalization with an acute coronary event is stressful since it necessitates changes in daily life and activity (Volicer, 1973; Volicer & Burns, 1977).

Modern technology has made a biochemical connection between anxiety and increases in urinary excretion rate of adrenergic catecholamines, epinephrine and norepinephrine

(Gazes, Richardson, & Woods, 1959; Klein, Troyer, Thompson, Bogdonoff, & Wallace, 1968). It is generally accepted that adrenergic catecholamines cause a wasting of oxygen by the heart muscle that exceeds the oxidative energy requirements for mechanical work. These findings underline the inherent danger of anxiety precipitating further myocardial damage through the release of powerful vasoconstrictors. Thus, psychological stress can alter coronary circulation and in turn, myocardial vulnerability causes recurrent chest pains and ectopic rhythms.

Successful management and recovery from myocardial infarction and unstable anginal episodes will depend not only upon technology, but control of patients' anxiety as well. According to Dellipiani et al. (1976), patients who had high anxiety at the beginning of their illness and continued to demonstrate anxiety during the rehabilitation phase were less likely to return to work within a time span of four months. Furthermore, if they returned to work, performance was lower than previous levels of activity.

Benson (1975; Benson & Klipper, 1976) proposed since the environment is unlikely to become less complex and stressful, man must find within his own body a physiological means of dealing with the demands of 20th century life. Benson (1975) called this innate ability the relaxation response. The relaxation response is a relaxation technique

that when mastered enables one to become more able to cope with uncertainties and frustrations of life by controlling one's mind and body. Some of the physiological merits of the studies dealing with relaxation therapy include a decrease in blood pressure, decrease in heart rate, decrease in respiration rate, decrease in oxygen consumption and reduction of muscle tension (Benson & Klipper, 1976).

Published literature reviewed did not directly discuss the use of relaxation therapy by professional nurses to decrease anxiety in the cardiac patient. Therefore, this study was focused on relaxation therapy training and its effects upon anxiety and the prevention of chest pain for myocardial infarction patients who are in the rehabilitation phase of illness.

Theoretical Framework

Anxiety as presented by May (1977) is described as the apprehension that evolves from a threat to some value that one holds essential to his existence as a personality. Jacobson (1964) noted that anxiety caused excitation of the neuromuscular as well as the autonomic nervous system when a threat was perceived or efforts made toward avoidance of the threat. Three principles are essential to May's definition of anxiety, that of threat, value, and core of

personality. First, the threat may be to physical life such as the threat of death. The threat may also be to psychosocial factors such as the loss of freedom and meaningfulness, which may accompany lifestyle changes. Second, the value held by a particular individual is essential to his existence as a personality. The value identification one has is tied to his security as a personality. Third, anxiety attacks the core or foundation of the personality. The individual feels consumed by the threat and thereby powerless to take steps to determine toward which object the apprehension may be focused. The apprehension experienced depends on the individual's interpretation of the potential danger.

Two constructs, State Anxiety (A-State) and Trait Anxiety (A-Trait) (Spielberger, 1972; Spielberger, Gorsuch, & Lushene, 1970), validate the conceptual frame of reference for anxiety as described by May (1977). A-State is conceptualized as a situational emotional state or condition of an individual that varies in intensity and fluctuates over time. It is characterized by subjective perceived feelings of tension and apprehension and an increase in autonomic nervous system activity. Conversely, A-Trait describes individual differences in anxiety proneness. It comprises the difference of individuals to perceive a wide range of situations as threatening or dangerous, and the

tendency to respond to such threats with A-State reaction. A-Trait is a more stable cognitive appraisal of one's self-esteem.

May's (1977) theory of anxiety and Spielberger's (1972) concepts of A-State and A-Trait are both intricately related to the problem of study. Successful rehabilitation following hospitalization for a myocardial infarction is based upon both one's perception of control in regard to self and the presence of situational anxiety associated with illness and recovery.

Assumptions

The following assumptions were made for the purpose of this study:

1. Anxiety levels vary between individuals and within individuals.
2. Individuals' anxiety levels are dependent upon the perception of control maintained by that individual.
3. Psychosocial factors which cause anxiety contribute to the development of complications.

Hypotheses

For the purpose of this study the following hypotheses were tested:

1. State anxiety levels of patients with the diagnosis of myocardial infarction will decrease

following implementation of therapeutic relaxation training.

2. Patients receiving relaxation therapy will have fewer chest pain episodes than the patients not receiving relaxation therapy.

Definition of Terms

The following nominal and operational definitions of terms were used for the study:

1. Acute phase--the stage of illness that includes the days confined to the coronary care unit or medical intensive care unit.
2. Anxiety--a behavioral response to stress. It is the apprehension set off by a perceived threat to some value that the individual holds essential to his existence as a personality (May, 1977).
3. Anxiety, State--a temporary emotional state characterized by subjective, consciously perceived feelings of apprehension, and increased autonomic nervous system activity (Spielberger, 1972). It was measured by test scores on the self-evaluation questionnaire, STAI Form X-1. The range of possible scores may vary from a minimum of 20, low anxiety, to a maximum score of 80, high anxiety.

4. Cardiac patient--a patient whose diagnosis is myocardial infarction and is hospitalized in the coronary care unit, medical intensive care unit or intermediate recovery unit.
5. Chest pain episode--the occurrence of chest pain which is reported to the nursing staff and recorded in the patient record. It was measured by the prescribed use of rest or nitroglycerin tablets sublingual to alleviate the discomfort. A tally of pain episodes was made for each subject throughout his participation in the study.
6. Myocardial infarction--the necrosis of a segment of heart muscle due to narrowing and occlusion in the coronary arteries circulation caused by atherosclerosis, thrombus, or coronary spasm documented by electrocardiography or cardiac enzymes; the diagnosis entered on the patient's record by a licensed medical doctor.
7. Rehabilitation phase--the stage of illness beginning immediately following the acute phase. It will begin with the transfer of the patient from the intensive care setting to the intermediate recovery unit and continue after discharge for three months.
8. Relaxation therapy--a specific technique for producing muscular and mental relaxation. Each subject was instructed by the researcher for three daily sessions

sessions from a taped script and the following four daily sessions were patient initiated from a taped script.

Limitations

Variables which were not controlled but may influence the outcome of this study were:

1. Previous hospital admissions with the diagnosis of myocardial infarction may increase the anxiety levels of participants in the study.
2. A subject may enter the study with varied knowledge of his condition and adaptation to lifestyle changes which may increase the anxiety levels of the participants.
3. The small sample size and use of a nonrandom sampling technique taken from an inpatient population in a federally operated hospital preclude generalization to other patient populations.

Summary

The problem under investigation and the variables of the study were identified. Justification of the problem was supported by a preliminary search of the literature. May's theory of anxiety and Spielberger's construct of A-State anxiety were combined for the conceptual framework of the study. The assumptions and hypotheses were formulated and nominal and operational terms of the study were

defined. The limitations of the study were also identified.

Chapter 2 contains a review of literature, while the procedure for collection and treatment of data is presented in Chapter 3. An analysis of data is found in Chapter 4. A summary of the study, which includes a discussion of findings, conclusions, implications, and recommendations, is presented in Chapter 5.

CHAPTER 2

REVIEW OF LITERATURE

An understanding of anxiety and its destructive forces in the myocardial infarction patient is vital to providing quality nursing care. Numerous studies have affirmed the presence of anxiety in patients with an acute myocardial infarction (MI) while in the coronary care unit (CCU). Various studies have also confirmed the contribution that anxiety in late rehabilitation makes in the poor recovery of post myocardial infarction patients.

The extent to which anxiety inhibits cardiac rehabilitation is a multidisciplinary concern of medicine, psychology, psychiatry, sociology and nursing. This review of literature will focus on anxiety in coronary artery disease and relaxation therapy. The discussion will include behavior pattern Type A, emotional stress, the psychological aspects of myocardial infarction and anxiety as a precipitator of cardiac dysfunction. Relaxation therapy as an adjunct to the treatment regimen of the cardiac patient will also be discussed.

Behavior Pattern Type A

The increase in the incidence of coronary heart disease in patients who do not exhibit classical risk factors have

led to studies of the relationship between emotions, behavior and coronary heart disease. Empirical studies provided data that demonstrate an increase in risk of coronary heart disease development before age 50 in individuals with a particular personality type (Friedman, 1969; Friedman & Rosenman, 1960; Jenkins, 1971; Rosenman, 1975, 1976; Rosenman, Friedman, Straus, Wurm, Kositchek, Hahn, & Werthessen, 1964; Russek & Russek, 1976; Russek & Zohman, 1971). Rosenman (1975) stated that there is a Type A behavior pattern, and this behavior pattern has the "dominant, major determining role in the rising incidence of coronary disease" (p. 697). Behavior pattern Type A is frequently described as the coronary prone personality. Type A individuals have attributes such as extreme competitiveness, impatience, compulsiveness, ambition for achievement, aggressiveness, and overt time consciousness. Certain physical qualities such as restlessness, tense energetic movements, explosive speech, tense facial musculature, and deep irregular breathing rhythm with occasional heaving sighs also characterize the Type A individual (Jenkins, 1971; Rosenman, 1975, 1976).

Zyzanski (1975) reported that the Type A behavior pattern is associated with the atherosclerotic process in the development of coronary artery disease. In a study of 95 male subjects who completed psychological tests (the

Jenkins Activity Survey), and underwent angiography, 55 of the subjects had two or more coronary vessels obstructed 50% or greater. The subjects scored higher on all four scales of the survey: Type A behavior, speed and impatience, job involvement, and hard driving conscientiousness. Those subjects with the greatest amount of vessel obstruction scored highest on the anxiety scale as well.

Blumenthal (1975) reported similar findings associating Type A behavior pattern with coronary angiograms which demonstrated coronary heart disease. The sample was comprised of 85 Type A subjects, 55 Type B subjects and 26 intermediate subjects. Behavior patterns, hemodynamic, and angiographic data were collected on the 156 patients. The degree of coronary involvement was more severe and extensive in the Type A patients than in the intermediates or Type B patients.

The Helsinki Policeman Cardiovascular study (Siltanen, Lauroma, Nirkko, Punsar, Pyörölä, Tuominen, & Vanhala, 1975) was conducted with a three-group sample selected from 1,326 policemen. Group A was comprised of 41 healthy males without any clinical evidence of coronary heart disease. Group B was comprised of 40 males presenting only EKG signs of coronary heart disease, while Group C was comprised of 40 males with symptoms as well as EKG signs of

coronary heart disease. Sixty-six behavioral, social, and physiological variables were compared between groups. The attributes most frequently described as indicative of the coronary type personality included aggressiveness, anxiety, ambition, and seclusiveness.

Emotional Stress

Some investigators cited emotional stress as a primary reason for the development of coronary heart disease. Russek and Russek (1976) stated that the one mechanism which links psychological factors to coronary heart disease hinges upon the ability of the individual to master emotional stress. The authors proposed that sociocultural mobility and stressful life events are responsible for the bombardment of emotional stresses with which patients must deal. Dreyfuss, Shanan and Sharon (1966) observed that men with coronary heart disease viewed their environment as more conflict laden, the outcome of their actions more unclear and their achievements as having less certainty of success.

Myocardial infarctions have been related to life stress occurrences in a number of studies. Theorell and Rahe (1971) investigated the occurrence rate of life changes during the six months to one year period prior to the onset of myocardial infarction in a sample of 54 male subjects. Forty-four of the subjects were inpatients with a recent

myocardial infarction, 27 who had no previous history of heart disease and 27 who had prior coronary heart disease. The remaining subjects were healthy matched controls drawn from close relatives and friends of the myocardial infarction subjects. The life change instrument used in the study was the Schedule of Recent Experience (SRE). The SRE is a self-administered questionnaire that documents the presence or absence of 42 possible changes in a subject's psychosocial background of work, home, economics, personal habits, marriage, family, community, social relationships and recreation over the past two years.

The findings demonstrated evidence of life events building up prior to the myocardial infarction. Subjects with a positive history of coronary disease demonstrated a buildup that peaked in the second year prior to the infarction and a later peak which tended to coincide with the experienced cardiac symptoms. The subjects with no previous coronary heart disease also showed a buildup of life events during the two years before their myocardial infarctions. The healthy control subjects exhibited no life change buildup (Theorell & Rahe, 1971).

Psychological Aspects of Myocardial Infarction

Byrne (1981) pointed out that within the individual who sustains a myocardial infarction, two distinct threats

emerge. These threats include: (1) that of impending death, and (2) prolonged physical disability and invalidism. Carnes (1971) reported the threat of death was related to fear of a recurring heart attack; helpless dependency, inactivity and incapacity threatens one's self-image. Anxiety is the most common feeling experienced by coronary patients (Cassem & Hackett, 1977). Since the myocardial experience precipitates sudden changes that severely disrupt the psychosocial and environmental balance of an individual (Pranulus, 1975), emotional adjustment is considered to be the core in stabilizing the social and psychological risk factors in patients with heart disease (Segers & Mertens, 1977). Behavioral or coping mechanism responses to myocardial infarction include anxiety, denial, and depression (Cassem & Hackett, 1971; Foster & Andreoli, 1970; Scalzi, 1973).

The psychological responses generated by a myocardial infarction during hospitalization have been studied in various patient-oriented studies. Discussion of these will be organized by pertinent variables identified in these studies.

Anxiety

Cassem and Hackett (1977) identified anxiety as the most common feeling experienced by coronary patients. Their

findings were based on a study of 145 psychiatric consultation requests for patients admitted to the CCU. Referrals were initiated by staff nurses and physicians after the development of a potentially fatal complication of a myocardial infarction. The four most frequent reasons for referral were listed as anxiety ($n=47$), depression ($n=44$), management of behavior ($n=30$), and hostility ($n=12$). Consultations for anxiety were most frequently requested on days 1 and 2 in the CCU, depression consultations peaked on days 3 and 4, and management referrals including denial, inappropriate behavior, and hostile-dependent conflicts peaked on day 2 and again to a lesser degree on day 4 (Cassem & Hackett, 1971, 1977).

A study by Philip, Cay, Vetter, and Stuckey (1979) supported by the findings of Cassem and Hackett's (1971, 1977) studies found that anxiety tends to be highest on admission to the CCU. Philip et al. (1979) studied serial measurements of anxiety levels in a group of 55 myocardial infarction patients admitted to a CCU and later transferred to a general ward. Anxiety was measured in each patient soon after admission to the CCU, and on the general ward on the 1st, 4th, 7th, and 10th days following transfer. Their findings suggested that anxiety was present to a degree throughout hospitalization following a myocardial infarction.

The expanded time span for the study also showed that anxiety, although high on transfer from the CCU to a general ward, was lowest prior to discharge. An additional unexpected finding was that patients who showed high anxiety in the middle of their hospital stay were atypical of the anxiety pattern of myocardial infarction. It was proposed that these patients may require a rehabilitation program which is more intense than the rehabilitation program given to the "typical" myocardial infarction patient.

Controversy evolved as to the degree of anxiety associated with discharge of myocardial infarction patients from the hospital. The controversy was reflected in an earlier study of 131 myocardial infarction patients from a sample of 203 myocardial infarction and ischemic heart disease patients previously treated in a CCU before transfer to a general ward. It was found that anxiety levels tended to increase near discharge when anxiety was serially measured on the 1st, 4th, 7th, and 10th day on the general ward (Dellipiani, Cay, Philip, Vetter, Colling, Donaldson & McCormack, 1976). One possible explanation for this discrepancy in discharge anxiety may be found in the variations in anticipated joy of homecoming of the sample subjects (Wishnie, Hackett, & Cassem, 1971).

Denial and Anxiety

Other behavioral responses may coexist in the presence of anxiety. According to Cassem and Hackett (1971) the defense mechanism of denial emerges strongly by the second day after a myocardial infarction. Denial is thought to be effective in reducing one's perception of a threat by failure to accept the diagnosis of the myocardial infarction or its significance (Scalzi, 1973).

Froese, Hackett, Cassem, and Silverberg (1974) assessed objectively measured denial in the same patient at different points in time during the course of hospitalization following a myocardial infarction. The sample was comprised of 36 randomly selected patients in the Coronary Care Unit (CCU); 27 were male and 9 were female. Ages ranged from 39 to 69 years. The patients were rated by the investigators using the Hackett-Cassem Denial Scale and the Holland-Sgroi Anxiety-Depression Scale at six intervals during their hospitalization. Deniers were consistently rated as less anxious than nondeniers. In addition, deniers showed a significant reduction in anxiety by the third to fourth day of the CCU stay. This reduced anxiety remained significant through days 8 to 10. Conversely, nondeniers remained anxious longer, showing no significant reduction in anxiety scores until days five to seven, about the time of transfer

from CCU. Pre-discharge levels of anxiety increased toward admission levels of anxiety for both groups.

Gentry, Foster, and Haney (1972) studied denial and situational anxiety in 16 myocardial infarction patients followed for five days in CCU. Based on their complaints of fear and apprehension during their CCU stay, half of the group was classified as deniers and the other half as nondeniers. Nondeniers reported day 1 anxiety levels below that of normal nonstressed subjects. Self-ratings of general health status obtained during the five days in CCU revealed that nondeniers as a group characterized themselves as more anxious and in poorer current health on day 5 than deniers on day 1 only hours after their CCU admission.

Anxiety and Depression

Froese et al. (1974) also determined that anxiety and depression ratings would differ at various times during the hospital course for deniers and nondeniers. Cay, Vetter, Philip and Dugard (1972) assessed psychological factors including anxiety and depression as patients' reactions to their illness and rehabilitation. The sample was comprised of 203 male patients who had a myocardial infarction and were transferred to one of six general wards for convalescence. Anxiety occurred less often in patients who had a previous myocardial infarction compared with those patients

who were currently experiencing their first myocardial infarction. Patients with a previous myocardial infarction were more likely to be depressed on admission with a second myocardial infarction. Upon discharge the patients who were more socially withdrawn had a more difficult convalescence which did not compare with physical severity of the illness, for example, patients with more severe social problems had less severe heart attacks. Psychosocial factors experienced were thought by the investigators to decrease the degree of adjustment acquired during rehabilitation.

Selected Attribute Variables and Anxiety

Many sociodemographic variables are cited as contributing to a patient's adaptation to a myocardial infarction. Patients' psychological response to myocardial infarction was the focus of study by Rosen and Bibring (1966). The sample was comprised of 50 male patients 35 to 67 years of age. They compared specific variables such as age, social class, and prior cardiac status. These greatly affected their degree of anxiety, depression, and cooperation with the medical regimen while in the CCU. The investigators noted that the patients in their 50s had higher anxiety levels than the younger patients with a myocardial infarction. White-collar employed patients hospitalized with their first myocardial infarction also had higher

anxiety levels in comparison to the blue-collar employed patients. Higher anxiety levels were noted in all patients suffering a second myocardial infarction, regardless of social class.

Croog and Levine (1969) looked at the effects of social and psychological variables upon patients' perceptions of illness development. They also included awareness of symptoms that caused patients to seek medical care as well as perceptions of events that occurred during the course of recovery, such as "did your physician explain or discuss your illness with you?" The study was conducted at 26 area hospitals and included 250 males. The subjects were in the second week of recovery from a first myocardial infarction and had no previous serious health problems. The findings indicated that the more educated patient was more likely to list emotional tension or stress as contributing to the etiology of his heart attack. He also was able to decipher chest pain from gastrointestinal symptoms as premonitory symptoms. Of the 29% of the patients who maintained that their physician had not discussed their illness with them, more than 68% had less than a high school education. This indicated that even patterns in perception of communication with the physician varied by social status. The lower the educational level of the patient, the higher the percentage

of patients likely to report that their physician had not discussed their case with them. According to the investigators, the perception of communication with the physician may be related to the physician including topics of prime concern to the patient.

Anxiety in Convalescence

Several investigators have confirmed that emotional problems including high anxiety seriously hamper rehabilitation from a myocardial infarction. Wynn (1967) studied emotional distress in 400 males convalescing from a myocardial infarction who had not returned to work. Continued emotional distress and invalidism were found in 50% of the patients who remained unemployed for more than six months after their myocardial infarction. Two of the primary causes were inadequate explanation and reassurance and inadequate planning of rehabilitation and future work. Patients' personalities and fears induced by hospital treatment or physicians were other major contributors to the continued emotional distress and invalidism. Wynn concluded that proper management depended on the nature of the illness, pattern of medical management, and the patients' personality traits.

Acker (1978) reported that the social background of the patient often determined the success or failure of

rehabilitation. The spouse and other family members often speed up, delay or prevent the return to a normal lifestyle. The reaction of an individual to heart disease and rehabilitation will depend, to a great extent, on his previous methods of coping with stress or the development of new stress management techniques. According to Cay (1978), posthospital rehabilitation programs following a myocardial infarction may be indicated to restore lifestyle normalcy and emotional adjustment. Approximately 40 to 50% of postmyocardial infarction patients returned to work within three months, while 80 to 90% of those who participated in a rehabilitation program returned to work within three months.

Wrzeńniewski (1977) found that high anxiety not only appeared in the acute phase after a myocardial infarction but existed for several months or years into convalescence. The study was based on the investigation of general and specific anxiety in 105 myocardial infarction patients before and after a post hospitalization rehabilitation program. The control group was comprised of 63 employed men free of coronary heart disease and 34 employed, physically active, rheumatic fever patients. The general anxiety in the myocardial infarction patients was higher before the rehabilitation program than the general anxiety of both control groups. The experimental subjects were exposed to

a rehabilitation program comprised of physical rehabilitation, psychotherapy, and drug therapy. The results showed that the general anxiety of the myocardial infarction patients had decreased to no significant difference when compared to the controls. Before and at the end of rehabilitation there was a significant positive correlation between general and specific anxiety.

Anxiety and Physiological Disturbances

Anxiety, although accepted as a normal component of a patient's reaction to an acute myocardial infarction, results in increased sympathetic arousal which is often symptomatically uncomfortable and potentially dangerous (Cassem & Hackett, 1977). Discussion in this section will include some of the biochemical characteristics of anxiety and alterations in the cardiac electrical mechanism caused by anxiety.

Biochemical Characteristics of Anxiety

Numerous physiological indicators of anxiety are described in the literature and some of the cardiac symptoms include: (1) tachycardia, (2) palpitations, (3) irregular, skipped heart beats, (4) hypertension, and (5) chest pains (Ack, Bulger, Creson, Kimball, Lipinski, Talley, & Weiss, 1978; Foster & Andreoli, 1970). According to Andrus

(1975) in his review "Emotional Factors and Cardiac Function," the "constellation of neurophysiological processes" (p. 581) which affect the cardiovascular system results from stimulation of the sympathetic or parasympathetic receptor fibers of the autonomic nervous system.

It has been documented in the literature than an increase in stimulation in the adrenergic receptors of the sympathetic nervous system causes an increase in urinary and plasma catecholamine. The result is an increase in oxygen consumption by the cardiac muscle that exceeded the oxidative energy requirement for mechanical work by the heart. In the patient with myocardial infarction or ischemic heart disease, this can further stress the myocardium and cause chest pain to occur (Andrus, 1975; Gazes, Richardson, & Woods, 1959; Klein, Troyer, Thompson, Bogdonoff, Wallace, & Durham, 1968).

The phenomenon was demonstrated by Gazes et al. (1959) in one of the earlier studies. Plasma catecholamine levels were studied in 13 patients with an acute myocardial infarction and a matched sample of 12 patients with angina pectoris, and 7 normal subjects. Blood specimens for plasma catecholamine determinations were drawn from the myocardial infarction patients while in the CCU at 36 and 72 hours. Level determination specimens were obtained before and

after exercise using a double 2-step Master's test. When the patients with angina developed pain before completion of the required exercise, the specimens were obtained at that point. The findings of this clinical study showed marked increases in the norepinephrine levels of all the myocardial infarction patients within the first 36 hour period when compared to those after 72 hours. The epinephrine levels, although variable, were elevated in the majority of the myocardial infarction patients. In all 13 myocardial infarction patients, the initial levels of norepinephrine were significantly greater ($p < .001$) than the angina and normal control subjects. The increase in catecholamines in the myocardial infarction sample correlated positively to the time span associated with high anxiety as documented with CCU admissions (Cassem & Hackett, 1971, 1977; Philip, Cay, Vetter, & Stuckey, 1972).

In addition to increases in plasma catecholamines, other studies demonstrated increases in plasma-concentrations of various metabolites including cortisol, glucose, and fatty acids present when the patients experienced severe stress (Oliver, 1975; Vetter, Strange, Adams, & Oliver, 1974). The data suggested that the mechanism by which psychological stress affects the myocardial infarction patient detrimentally is by increased adrenocortical and adrenergic activity.

The relationship of anxiety and adjustment following an acute myocardial infarction was studied by Klein, Garrity, and Gelein (1974). The sample was comprised of 37 myocardial infarction patients. Ratings of the patients' anxiety, fear, hostility, depression, and positive feelings were completed by the nurses engaged in their care. Patterns formed by the behavioral factor scores divided the patients into adjustment and nonadjustment groups. Concomitant 8-hour urine collections were measured for total volume and their content of creatinine, norepinephrine, and epinephrine. Epinephrine/creatinine ratios were higher on days three to five in the nonadjustment than in the adjustment group. The findings suggested that successful coping is reflected in both behavior and catecholamine and/or creatinine patterns.

Garrity and Klein (1975), in a follow-up of this earlier study, were concerned with factors influencing mortality after a myocardial infarction. Forty-eight patients were divided into adjustment and nonadjustment groups based on the completion of observational checklists, yielding positive behavior and behavioral disturbance scores. They found a greater six-month mortality rate among those patients showing increased unresolved emotional distress during the acute phase after myocardial infarction than

among those with less unresolved emotional distress. During the six-month period following discharge, 12 (25%) of the 48 patients died, 10 (41%) of the 24 subjects were in the nonadjusted group, and 2 (8%) of the 24 subjects were in the adjusted group. A multiple regression analysis with mortality as the dependent variable showed that infarct and behavioral pattern of adjustment had independent predictive value on outcome survival following a myocardial infarction.

Anxiety and Alterations in Cardiac Electrical Mechanism

Overstimulation of the cardiovascular system can cause secondary systemic hypertension, tachy-arrhythmias, and sudden death from ventricular fibrillation (Eliot & Forker, 1976). Precipitation of ventricular fibrillation in the normal and diseased hearts of man and animals from sustained anxiety has been reported in the literature (Lown, Temte, Reich, Gaughn, Regestein, & Hai, 1976; Verrier & Lown, 1978).

Verrier and Lown (1978) demonstrated, in an animal study of induced ventricular fibrillation, that exposure to a psychological stressful environment in the presence of coronary artery disease may provoke ventricular arrhythmias. A dog with induced partial coronary occlusion was exposed for six days to two different environments, a cage where the animal was left free to move about at will and a Pavlovian

sling. In the sling the animal received a shock across the chest at the end of each three-day experimental period. In the cage a current of $32 \text{ MA} \pm 5$ would elicit extrasystoles but no ventricular tachycardia or ventricular fibrillation. In the sling, the mean threshold was decreased to $17 \text{ MA} \pm 2$. The sling condition consistently provoked ventricular tachycardia and ventricular fibrillation. The lowered threshold effect disappeared when the animal was returned to the non-stressed cage environment. These findings indicated that psychological stress can profoundly reduce the threshold for ventricular fibrillation. This suggested that the erratic discharge of electrical impulses such as with premature ventricular contractions (PVCs) during the vulnerable period of the cardiac cycle may produce lethal-like arrhythmias. In part, this may be attributed to hyperventilation, a frequent physiological accompaniment of anxiety. A three-minute period of rapid exaggerated breathing may result in marked increase of blood pH, decrease in CO_2 , and a decrease in serum potassium level (Andrus, 1975).

Emotional related situations including severe anxiety, hyperventilation, and sudden fright have been associated with abnormal deviations in the electrocardiograms of normal subjects without evidence of coronary heart disease (Marriott, 1960). The effect of emotions on the

electrocardiogram (EKG) of patients with and without coronary heart disease was presented by Sigler (1967). The sample was comprised of psychiatric patients who had a traumatic experience. The protocol for each patient included a resting EKG, the recall of a psychic trauma and a repeat EKG in the same position. The repeat EKG was compared to the resting EKG. In the presence of coronary heart disease, the EKG changes were variable. The repeat EKG demonstrated the development of ectopic ventricular contractions, often multifocal in origin. Depressions of the ST-segment and changes in the T-waves suggested ischemia. In addition, the EKG showed the development of transient bundle branch block patterns in patients with previous normal intraventricular conduction, as well as the alteration in direction of the QRS complexes in some leads. The findings suggested that the recall of disturbing experiences revived the stored up experience in the subconscious, causing stimulation of the vago-sympathetic area in the hypothalamic region of the brain and producing an excitatory process which affected the heart.

Relaxation Therapy

Relaxation therapy employs the conscious use of relaxation techniques which counteract the effects of psychological stress. According to Benson and Klipper

(1976) psychological stress, including anxiety, elicits a "flight or fight" response (p. 23), which causes increases in blood pressure, respiratory rate, heart rate, metabolism, and muscle blood flow due to increased sympathetic tone. Benson and Klipper (1976) proposed an induction of a hypometabolic state, the "relaxation response" (p. 73), as a therapeutic counterbalance for the "flight or fight" response. The relaxation response is an involuntary response which causes a reduction in the activity of the sympathetic nervous system. This seemingly represents a hypothalamic response. The relaxation response is characterized by a decrease in blood pressure, respiratory rate, heart rate, oxygen consumption by the tissues and a reduction in muscle tension. Discussion will be inclusive of approaches and situational use.

Approaches to Relaxation Therapy

Several authors (Benson, 1975; Benson & Klipper, 1976; Benson, Kotch, & Crassweller, 1977) pointed out that secular techniques such as transcendental meditation (TM) and other relaxation techniques including progressive relaxation may produce the physiological effects characterized by the relaxation response. Progressive relaxation according to Jacobson (1964) consists of instructing patients to tense

and relax various muscle groups in the body as a method of combating tension and anxiety.

One of the chief aims of some of the clinical studies using relaxation therapy is mind control in the treatment of anxiety. For example, Benson, Frankel, Apfel, Daniels, Schniewind, Nemiah, Sefneos, Crassweller, Greenwood, Kotch, Arns, and Rosner (1978) investigated the effectiveness of two nonpharmacological relaxation techniques on anxiety reduction. The sample, comprised of 32 patients with anxiety neurosis, was divided into a relaxation therapy group and a hypnotic therapy group. Each groups was subdivided on the basis of patient responsiveness to relaxation therapy or hypnotic therapy treatment. The four treatment groups studied included patients with "moderate-high responsivity" to relaxation therapy, "low responsivity" to relaxation therapy, "moderate-high responsivity" to hypnotic therapy and "low responsivity" to hypnotic therapy. The anxiety of each patient group was evaluated by psychiatric assessment, psychological testing, physiological assessment, and self-report. The patients were instructed to practice the assigned technique daily for eight weeks.

The findings indicated no difference between the two techniques as to therapeutic effectiveness. Psychiatric assessment revealed an improvement of 34% while self-report indicated 63% patient improvement. Patients who had

"moderate-high responsivity," regardless of technique, showed significant improvement on the psychiatric assessment ($p < .05$). A decrease in the average systolic blood pressure from 126.1 mm mercury to 122.5 mm mercury over the eight week period was reported. Patients in the "moderate-high responsivity" groups had greater decreases in systolic blood pressure and greater improvement by psychiatric assessment (Benson et al., 1978).

Transcendental meditation (TM) is another method of relaxation employed in the reduction of anxiety. A study by Zuroff and Schwarz (1978) compared this method of relaxation with a conventional muscle relaxation technique in the reduction of trait anxiety. Sixty undergraduate volunteers, 30 males and 30 females, were randomly assigned to receive training in TM, muscle relaxation technique, or a control group of no treatment. Measurements of anxiety were made using Zuckerman's 1960 Adjective Checklist (ACL) scale of self-report and the Behavioral Anxiety Measure (BAM) developed by Rehm and Marsten in 1968 to supplement the self-report measure of trait anxiety (cited in Zuroff & Schwarz, 1978). Subjects were tested at four intervals: before training, immediately after the training, the midpoint of therapy, and at the end of nine weeks following therapy. The TM and muscle relaxation training consisted of group

lectures, individualized instructions, and group meetings. The subjects were to practice at home for 20 minutes twice a day. The control subjects were given no training in relaxation, neither were they asked to alter their lifestyles. Psychiatric assessments were made in five areas: background and personality variables, expectancies, extent of arousal reduction, psychological maladjustment, and trait anxiety. The results indicated a downward trend in anxiety across all groups with a greater decrease reflected in the TM group. Female subjects consistently reported greater anxiety than male subjects. Also, female subjects in the control group had consistently higher anxiety scores than females in the meditation or relaxation groups. The researchers concluded that the TM technique of relaxation was superior to the technique of muscle relaxation. This was in opposition to the previously reported findings of Benson et al. (1977) who concluded that hypnotic state techniques and muscle relaxation techniques were equally effective because, ultimately, both caused the relaxation response.

Russell and Lent (1977) conducted a study focusing on cue-controlled relaxation. This method of treatment combated anxiety by enabling the patient to achieve relaxation in response to a self-induced cue word. Self-control is

restored by subvocalizing a cue word, for example "calm," following recognition of anxiety signals created by a particular anxiety producing experience. The patients were trained in muscle relaxation using a conventional muscle relaxation technique (Bernstein & Borkovec, 1973, as cited in Russell & Lent, 1977). Once the subject was relaxed, a subvocalized cue word was synchronized with each breath for a total of 40 breaths and cue words. The findings suggested that a greater dimension of anxiety control over anxiety-eliciting stimuli may be obtained by some patients with the inclusion of such a desensitization technique.

Tamez, Moore, and Brown (1978) studied the control of residual tension and anxiety by examining the effect of progressive relaxation training on the frequency of intake of pro re nata medications for the relief of tension. The investigators also compared live and taped instructions for effectiveness of training in the technique of relaxation. The target population was short-term hospitalized psychiatric patients on minor tranquilizers and sedatives. From this population, 60 patients were randomly assigned to one of three groups: Group A was the control group, Group B received live instructions of the relaxation training technique, while Group C received taped instructions.

The dependent variables monitored were the frequency of intake of pro re nata (PRN) medications, and the changes

in blood pressure, pulse, and respiration, with the pre and postinstructions of the relaxation training. Variables also monitored included changes in scores on the Taylor Manifest Anxiety Scale, and changes in scores on the Minnesota Multiphasic Personality Index pre and postinstructions. The amount of medication taken by each of the subjects in all three groups prior to the study was approximately the same (Tamez et al., 1978).

Following the study, comparisons of the three groups indicated no significant differences in the number of medications taken per day. Therefore, the first hypothesis of reducing the frequency of intake of PRN medications through the use of relaxation training was not supported. However, the investigators pointed out that from the beginning of the study through the training period the number of PRN medications had decreased to such frequency that there was little probability for further reduction following relaxation training. Tamez et al. (1978) cited factors, such as removal of subjects from their regular routine with hospitalization, placement in a protective environment, and exclusion of subjects who required unusually large amounts of medication, as contributing to the decrease in the number of PRN medications.

Tamez et al.'s (1978) second hypothesis, live instructions would provide better training for relaxation

technique learning than taped instructions, was supported. Group B which received live instructions showed more favorable results than Group C which had taped instructions. The physiologic variables measured in Group B and Group C showed a significant decrease, but there was no significant decrease in these variables in Group A. The medication intake was minimal in Group B and Group C during the six days of treatment. The medication intake did increase, however, following the sixth treatment day. The investigators stated this increase possibly occurred because of the dependency characteristics prevalent in subjects who experienced high anxiety states. Due to the variability in anxiety scores on the two psychological tests there was no consistent trend to indicate the greater effectiveness of either test.

Relaxation Therapy and Situational Use

Relaxation therapy may be used in and out of clinical settings to assist patients with reducing stress factors which help to alleviate, control, and prevent health problems. Morris (1979) adapted a muscle relaxation technique which consisted of tensing and relaxing seven groups of muscles. The patient was instructed to tense each group of muscles for 10 seconds and relax them for 60 seconds, progressing from the arms and hands to the legs and feet. It

was emphasized that the technique was a form of mental hygiene that provided a method of coping with tension and stress. Morris (1979), a clinical specialist in an out-patient department, acclaimed the merits of relaxation therapy. It helped obese patients control their weight when used in conjunction with a diet and behavior modification and helped diabetics reduce elevated blood sugars caused by stress. Some control of hypertension in patients using a relaxation technique was also reported.

Using a conventional muscle relaxation technique, Benson, Alexander, and Feldman (1975) studied the induction of the relaxation response as a method of controlling premature ventricular contractions (PVCs). The sample was composed of 11 stable confirmed ischemic heart disease patients who were known to have frequent PVC activity based on interpretations of holter monitor recordings. After four weeks of evoking the relaxation response twice daily, two 24-hour periods of holter recordings were obtained and compared to the prerelaxation data.

The findings showed a decrease in daily PVC activity in 8 of the 11 patients, while a more substantial decrease in the PVCs occurred in 5 of the patients. There was a significant decrease in PVC activity during the hours of sleep. An exercise test after regular relaxation response elicitation showed a reduction in PVCs during the exercise

in one patient and a decrease in PVCs in the recovery phase following exercise in three patients. Seven of the patients demonstrated no change in PVC activity with exercise. The decrease in frequency of the PVCs was stated to be in response to the relaxation response because each patient had documented heart disease of at least one year duration. Benson et al. (1975) hypothesized that the relaxation response decreased sympathetic nervous system activity, the mechanism which caused the decrease in the PVCs. This hypothesis was supported, PVCs which normally decrease during sleep with the decrease in sympathetic tone, further decreased after the regular elicitation of the relaxation response. The researchers concluded that the relaxation response was a safe nonpharmacological means of decreasing PVCs. Furthermore, decreasing PVCs possibly decreased the probability of sudden death from uncontrolled PVC activity in the ischemic heart disease patient.

Benson, Rosner, Marzetta, and Klemchuk (1974) studied hypertensive patients to illustrate the decrease in blood pressure effect of the relaxation response. The sample was comprised of 14 antihypertensive drug therapy patients. The average systolic blood pressure was 145.6 mm mercury and the diastolic blood pressure was 91.9 mm mercury. During a control period, the blood pressure of the patients did not

vary significantly from day to day. Transcendental meditation was the relaxation technique used to elicit the relaxation response. After 20 weeks of regularly eliciting the relaxation response, without changes in antihypertensive drug therapy, there was a decrease in the average systolic blood pressure to 135 mm mercury and a decrease in the diastolic blood pressure to 87.0 mm mercury. The findings suggested that transcendental meditation was an effective relaxation technique for evoking the relaxation response. It was also suggested that some hypertensive patients may be able to reduce the cost of antihypertensive drug therapy if the relaxation response was elicited with daily practice.

In summary, the studies of Benson et al. (1974, 1975) demonstrating premature ventricular contraction control and blood pressure reduction, used different relaxation techniques as the method of decreasing muscular tension. Nevertheless, sympathetic nervous system activity was decreased with the elicitation of the relaxation response. The relaxation response can be successfully induced if the basic components of a mental device, a passive attitude, decreased muscle tone, and practices are maintained.

Summary

The recognition of anxiety as a psychological stress with physiological manifestations in patients with coronary

artery disease and myocardial infarction was supported in the literature. There was congruency as to the mechanisms which potentially may lead to further cardiac dysfunction in the presence of acute myocardial infarction and coronary artery disease. Decreasing the level of anxiety in patients with an acute myocardial infarction, through the implementation of relaxation therapy, can have strong implications for better lifestyle adjustment during the rehabilitation phase. The reduction of anxiety with relaxation therapy offers a coping mechanism for the handling of stress. Relaxation therapy as a coping skill developed against tension and emotional stress depends on the needs of the individual patient.

CHAPTER 3

PROCEDURE FOR COLLECTION AND TREATMENT OF DATA

The relationship between the independent variable, relaxation therapy, and the dependent variable, anxiety, was investigated by means of an experimental study design. This design is recommended by Polit and Hungler (1978) for studies of scientific investigation in which observations are made and data collected according to a set of well defined criteria in order to infer cause-and-effect relationships. In the experimental study, randomization is necessary because the investigator manipulates and controls the independent variable. Results obtained by the experimental research method are more meaningful and generalizable when interpreting causality.

A two-group before and after experimental design was used for this study. Group 1, the control group, received no relaxation training while Group 2 received relaxation training. To measure the anxiety levels, the State section of the STAI (Form X-1) was administered to each patient at the beginning of his participation in the study. In addition, patients in Group 2 were given relaxation training and allowed time to become proficient with the technique. At the end of the allocated period, patients in each group

needed due to patient demands. An LVN is assigned to the evening shift five days per week.

Patient teaching classes are held in the step-down unit as a regular part of the rehabilitation program for the myocardial infarction patient. The professional nurse, dietitian, and social worker are primarily responsible for the classes. Topics of discussion include etiology of coronary disease, risk factors, modifiable risks of each patient, dietary needs, medications, and conceivable lifestyle changes because of the coronary disease. A portion of the patient education classes was conducted by a graduate doctoral student performing a concurrent study with the cardiac patients.

The medical staff for the cardiology section is composed of the CCU director, a cardiology fellow, a resident, and two interns. The patients in the CCU and step-down unit are divided between the two interns and the resident and fellow serve as teachers and supervisors of medical practice. The CCU director heads the medical team and influences some of the policies affecting nursing practice.

Population and Sample

There are approximately 45 to 50 patients admitted to the Coronary Care Unit each month. From this number, approximately one-third have the diagnosis of myocardial

infarction. Each patient was transferred to the step-down unit from the CCU after being stabilized for two or more days. The average hospitalization in the step-down unit for myocardial infarction patients was 10 to 14 days.

The criteria for selection of subjects included the following:

1. All participants were able to read, write, and speak English.
2. Patients were between the ages of 30 and 70 years.
3. Only those patients who were alert and whose disease process would allow the researcher to obtain demographic information, administer the State section of the STAI (Spielberger, Gorsuch, & Lushene, 1970), and teach a relaxation method were included in the study.
4. Patients with diagnosed behavioral disorders, chronic organic brain syndrome or psychiatric illness were excluded from the study.
5. Patients already regularly engaged in relaxation therapy were excluded from the study.

A total of 31 subjects was taken from those cardiac patients with the diagnosis of acute myocardial infarction who met the specified criteria. Group assignment began with a coin toss to randomly assign the first subject to either the experimental or control group. Following randomization

of the first subject, the following 13 subjects who fulfilled the specified criteria were placed in the control group. The experimental group, consisting of 17 subjects, was formed after data collection had terminated with the control group subjects. Subjects fulfilling the selection criteria were then placed in the experimental group. Drop-outs prior to six days of participation were replaced in the groups.

Protection of Human Subjects

Written permission to implement the study was obtained from Texas Woman's University and the Research and Development Committee at the participating hospital. Permission to include subjects in the study was obtained from the cardiology unit director and the primary physician (Appendix A).

After the selection of each subject, the investigator explained the procedure to be followed, associated risks, and alternative courses of action. Anonymity was assured. A code number was used to identify each subject. The master code list was kept separate from the other data. Upon completion of the study the master code list was destroyed. The subjects were asked to sign two informed consent forms: one form was developed by the investigator, while the second form was required by the participating hospital

(Appendix B). Before the research began, every subject was informed that he could withdraw from the study at any time. Furthermore, each subject was informed that his care would not change regardless of whether or not he chose to participate in the study. Each subject was informed that if inadvertent injury occurred as a result of participating in this study, medical care was to be provided by the participating hospital but not by the school.

Instruments

Relaxation therapy training (Appendix C), the independent variable, was adapted from the method described by Benson and Klipper (1976). The relaxation training taped script was a modified style of Jacobson's (1964) tension control which incorporates the use of muscle relaxation and mental meditation. The relaxation therapy training produces the Relaxation Response, an involuntary response that causes a reduction in the activity of the sympathetic nervous system (Benson, 1975; Benson & Klipper, 1976).

The reliability of the relaxation training was based on its physiological effects in case presentations conducted at Beth Israel Hospital in New York City and Thronthike Memorial Laboratory at Harvard University. A test-retest method verified that regular evoking of the Relaxation Response significantly decreased blood pressure, heart rate,

respiratory rate and decreased oxygen consumption (Benson, 1975; Benson & Klipper, 1976).

State anxiety levels of cardiac subjects were measured by the A-State section of the State-Trait Anxiety Inventory (STAI, Form X-1) (Appendix C). The STAI, developed by Spielberger, Gorsuch, and Lushene (1970) is a two-part self-administered test entitled Self-Evaluation Questionnaire. Two distinct anxiety concepts are measured by the self-report scales of the State anxiety (A-State) and Trait anxiety (A-Trait). Spielberger et al. (1970) conceptualized state anxiety (A-State) as

a transitory emotional state or condition of the human organism that is characterized by subjective, consciously perceived feelings of tension and apprehension, and heightened autonomic nervous system activity.
(p. 3)

Spielberger et al. (1970) characterized Trait anxiety (A-Trait) as "relatively stable individual differences between people in the tendency to respond to situations perceived as threatening with elevation in A-State intensity" (p. 3).

The STAI consists of 40 short items divided into two subscales, A-State and A-Trait. For the purpose of this study only the STAI A-State (Form X-1) was used. The STAI A-State instructs subjects to indicate how they feel "at the moment." It consists of 20 statements with responses

entered on a 4-point Likert-type scale. The range of possible scores for the STAI A-State varies from a minimum of 20, low anxiety, to a maximum of 80, indicating high anxiety. A separate scoring key is available for each subscale. If a subject omits one or two items on the A-State scale, a calculated full scale score can be obtained by computation (Spielberger et al., 1970). Items are presented in substantively counterbalanced order relative to anxiety. The scoring key reverses the direction of nonanxiety items so that a high score suggests high State anxiety (Dreger, 1978).

The reliability of the STAI can be noted in the test-retest correlations for the A-Trait and A-State scales in sampled undergraduate college students. During the test-retest interval, the subjects were exposed to a brief period of relaxation training, a difficult intelligence test, and a film depicting accidents which result in serious injury or death (Spielberger et al., 1970). The test-retest correlations for the A-Trait ranged from $r = .73$ to $.86$, while those for the A-State scale ranged from $r = .16$ to $.54$. The low scores of the A-State reflected the influence of the uniqueness of the situation existing at the time of testing. To measure the reliability of the A-State scale, the more transitory anxiety state, an alpha coefficient was computed for normative samples (Spielberger et al., 1970).

The alpha reliability of the A-State scale was $\underline{r} = .92$ for the normative sample of college males immediately following a distressing film. For the same sample, the alpha reliability was $\underline{r} = .89$ when it was administered after a brief period of relaxation training (Spielberger et al., 1970). According to Spielberger et al. (1970), both the A-State and A-Trait scales have a high degree of internal consistency.

Concurrent validity of the STAI was established by high correlations for both college students and neuropsychiatric patients with the IPAT Anxiety Scale, Taylor Manifest Anxiety Scale, and the Affect Adjective Checklist. For 126 college women, coefficients respectively were $\underline{r} = .75, .80, \text{ and } .52$ (Spielberger et al., 1970). Dreger (1978) noted that the revised STAI is one of the best standardized tests for anxiety measurement.

A demographic profile (Appendix C) containing pertinent personal, social, educational and health history was completed by each subject at the beginning of the study. A chest pain episode data sheet (Appendix D) on each subject was maintained by the researcher during the study. Each day of data collection, the hospital records were examined for the occurrence of chest pain, the duration of the pain, and the medication or treatment employed to alleviate the pain.

A comment section was used to collect information as to electrocardiographic (EKG) changes or readmission to CCU.

Data Collection

Two weeks prior to data collection, briefing sessions were held with the nursing and medical staff assigned to the unit. The objectives of these sessions were to provide information about the proposed study and to elicit the staff's cooperation in collecting data regarding chest pain occurrences for each patient in the study (Appendix D). A total of three 30-minute sessions were offered, but attendance at only one session was requested.

Sample assignment began with a coin toss in order to place the first subject into a group. Group 1, the control group, was first formed as a result of this coin toss and the next 13 subjects were placed in this group. After discharge of the last control subject, Group, 2, the experimental group, was formed. Seventeen subjects were included in the experimental group.

The CCU and MICU were surveyed daily for patients having the diagnosis of myocardial infarction. Within 24 hours after transfer from the CCU, the patient was contacted individually about participation in the research study. The availability of potential subjects for study participation

was based upon the transfer of the patient from the CCU to the step-down unit.

An oral explanation of the study was given each prospective subject. Anonymity was assured each patient and informed consent was obtained. Assignment to the experimental or control group depended upon the time period in which the patient was admitted to the step-down unit. One group was formed at a time. Only subjects in the experimental group participated in the relaxation training exercises.

The following protocol was used for collecting the study data. Each subject was individually contacted in his room the day after selection for the study. A packet containing the demographic profile and the STAI A-State (Form X-1) questionnaire was given each patient and 24 hours allowed to complete the forms. Each patient who had been assigned to the control group was thanked for his cooperation and informed he would be contacted in seven days, at which time the STAI A-State (Form X-1) questionnaire was readministered. Each patient in the experimental group was given individual and group demonstrations of a relaxation training exercise similar to the method used by Benson and Klipper (1976, pp. 162-163). A return demonstration was assessed each day over a three-day period. Between days

four through seven, a taped session was played and enacted by the patient at least once a day at his convenience for a 30-minute session. At the end of seven days of relaxation training, a posttest consisting of the STAI (Form X-1) questionnaire was administered.

A daily check of all patients in the study as to the frequency of occurrence of chest pain or cardiac arrhythmias was ascertained from the patient records and entered on the chest pain episode data sheet (Appendix D). This protocol was followed until 31 subjects had been included in the study. The control group consisted of 14 subjects, while the experimental group had 17 subjects.

Treatment of Data

After all the data had been collected, data analysis was accomplished by use of two statistical programs available through Texas Woman's University Research Department. These programs included Statistical Package for the Social Sciences (SPSS, 1982) and Biomedical Computer Programs (BMDP, 1979). Descriptive statistics such as the mean and the standard deviation (Polit & Hungler, 1978) were computed for the anxiety levels of both groups on pre and posttests. The two group before-after experimental design was used to measure possible differences between control and experimental groups, between pre and posttesting intervals, and

the interaction between these effects. The A-State anxiety test scores were subjected to a 2x2 analysis of variance. Chi-square, a nonparametric statistic, was used to test the differences in frequency of chest pain occurrences between the control and the experimental groups.

CHAPTER 4

ANALYSIS OF DATA

This study was conducted to determine the influence of relaxation therapy on anxiety levels in a group of cardiac patients who practiced relaxation therapy compared to a group of patients who did not practice relaxation therapy. It was hypothesized that state anxiety levels would be lower and chest pain occurrences fewer in those cardiac patients who practiced relaxation therapy as compared to those cardiac patients who did not practice relaxation therapy. The subjects were assigned to the control group or the relaxation group for comparison. The group that was formed first was determined by a coin toss. After the random assignment of the first subject to the control group, the next 13 subjects who fulfilled the sample selection criteria were sequentially assigned to the control group. Following the discharge of the last control subject, the experimental group was formed. Nineteen subjects who fulfilled the selection criteria were sequentially assigned to the relaxation therapy group. Two subjects were dropped from the relaxation therapy group analysis because posttests were not completed before discharge. Thirty-one subjects comprised the sample for analysis. Support or rejection

of the hypotheses was by comparison of the control and experimental group pre and posttest scores on the State-Trait Anxiety Inventory (STAI Form X-1) measurement of state anxiety, and by comparison of reported occurrences of chest pains between the groups.

Description of Sample

Of the 31 subjects in the sample, all were male with a diagnosis of an acute myocardial infarction. The control group was comprised of 14 subjects and the experimental group had 17 subjects. Caucasians were the largest racial group, 18 (58.0%) of the sample. Blacks accounted for the second largest racial group, 10 (32.3%). The majority of the subjects, 21 (67.7%), were married and the remaining 10 (32.3%) were either separated, widowed, divorced, or living with another but not married. Of the subjects, 6 (19.4%) lived alone (see Table 1).

The age range of the participants was 36 years. The youngest subject was 34 years old, while the oldest was 70 years of age. According to age, five (16.1%) were less than 50 years of age, with four (12.8%) below the age of 45 years. The age interval of 50-59 accounted for 12 (38%) of the sample while 60-69 comprised 13 (41%) of the sample. One (3.2%) subject was 70 years of age.

Table 1

Race and Marital Status Reported by 31 Myocardial
Infarction Subjects Participating in the
Control and Experimental Groups

Variable	Number	Percentage
<u>Race Status</u>		
White	18	58.0
Black	10	32.3
Latin American	2	6.5
Puerto Rican	<u>1</u>	<u>3.2</u>
Total	31	100.0
<u>Marital Status</u>		
Single	0	0.0
Married	21	67.7
Separated	2	6.5
Widowed	1	3.2
Divorced	3	9.7
Living with another but not married	<u>4</u>	<u>12.9</u>
Total	31	100.0

When education of the sample was examined, 12 (38.7%) had completed only high school grades 10 through 12, and 11 (35.4%) had attended college. College degrees were held by five (16.1%), and two (6.5%) had less than a sixth grade education (see Table 2).

The length of employment reported by the sample had a range of 47 years with 3 years as the least amount of time in an occupation. The maximum length of time in an

Table 2

Educational Level Reported by 31 Myocardial
Infarction Subjects Participating in the
Control and Experimental Groups

Variable	Number	Percentage
<u>Level of Education</u>		
Less than 6th grade	2	6.5
Grades 6-9	6	19.4
Grades 10-12	12	38.7
Less than 2 years college	5	16.1
2-3 years college	1	3.2
4 years college	4	12.9
More than 4 years college	<u>1</u>	<u>3.2</u>
Total	31	100.0

occupation was 50 years. Skilled-labor type jobs were held by 14 (45.2%) of the sample. Nonskilled-labor, professional, office and law enforcement jobs were held by the remaining 17 (54.8%) of the sample. There were 16 (51.6%) of the sample employed prior to hospitalization and 15 (48.4%) were retired (see Table 3).

Individual differences in state anxiety were measured in pre and posttests using the STAI (Form X-1) for all 31 of the subjects. A higher score indicated a greater state anxiety. The minimum score possible was 20 and the maximum

Table 3

Occupation and Retirement as Reported by 31 Myocardial
Infarction Subjects Participating in the
Control and Experimental Groups

Variable	Number	Percentage
<u>Occupation Types</u>		
Skilled Labor	14	45.2
Nonskilled Labor	7	22.6
Professional	5	16.0
Office	3	9.7
Law Enforcement	<u>2</u>	<u>6.5</u>
Total	31	100.0
<u>Retirement</u>		
0 years	16	51.6
1 year	3	9.7
2 years	3	9.7
3 years	0	0.0
4 years	2	6.5
5 years	3	9.7
6 years	0	0.0
7 years	0	0.0
8 years	2	6.5
9 years	0	0.0
10 years	<u>2</u>	<u>6.5</u>
Total	31	100.0

possible score was 80. For the combined groups, the mean of the scores on the pretest was 37. The minimum score obtained was 24 and the maximum score obtained was 53. The posttest scores reflected a mean of 34.5. The minimum score

obtained was 20 and the maximum score obtained was 71
(see Table 4).

Table 4

Comparison of Anxiety Level Differences Using STAI of
31 Myocardial Infarction Subjects in the
Control and Experimental Groups

Interval	Mean Scores	Standard Deviation	Standard Error
Pretest (<u>n</u> =31)	37.065	7.633	1.371
Posttest (<u>n</u> =31)	34.581	10.142	1.821

Of the sample, 20 (64.5%) had no previous cardiac admissions. One previous cardiac related admission was reported by seven (22.6%) subjects. The present admission was the second and fourth cardiac related admission for two (6.4%), and the tenth and twelfth admission for two (6.4%).

According to the location of the myocardial infarction and the frequency of occurrence, anterior wall involvement was the most common in 12 (38%) of the sample. An inferior wall involvement occurred in 11 (35%) of the sample (see Table 5).

During the intermediate care phase, chest pain episodes occurred in 10 (32.3%) of the 31 subjects. One episode of

Table 5

Site of Myocardial Infarct of 31 Myocardial Infarction
Subjects Participating in the Control and
Experimental Groups

Wall of Involvement	Number	Percentage
Anterior	12	38.0
Inferior	11	35.0
Posterior	3	9.7
Subendocardial	<u>5</u>	<u>16.1</u>
Total	31	100.0

chest pain was experienced by 6 (19.4%) of the 31 subjects participating in the sample, and 4 (12.9%) experienced two episodes of chest pain. Of those subjects who had chest pain episodes, seven (22.6%) were in the control group and three (9.7%) were in the experimental group (see Table 6).

Readmission to the CCU with an extension of the myocardial infarct because of the severity of the chest pain episode was required in three (9.5%) of the control subjects. No readmission to the CCU related to the occurrence of chest pain episodes was required in the experimental group subjects. Of the total sample, four (12.9%) of the control group and five (16.1%) of the experimental group experienced intermittent cardiac arrhythmias. No

Table 6

Chest Pain Occurrences Crosstabulations in 31 Myocardial
Infarction Subjects Participating in Control and
Experimental Groups

Group	Pain Episodes		Patients		Total
	1	2	With Chest Pain	Without Chest Pain	
Control	4	3	7 (22.6%)	7 (22.6%)	14
Experimental	2	1	3 (9.7%)	14 (45.2%)	17
Totals	6	4	10	21	31

subject required readmission to the CCU because of cardiac arrhythmias.

Findings

The hypotheses of the study were tested by statistical analysis. The first hypothesis of the study was: H_{01} -- There is no difference in state anxiety levels of patients with the diagnosis of myocardial infarction following implemented therapeutic relaxation training. A 2x2 analysis of variance used to test the hypothesis did not enable rejection of the null hypothesis. Therefore, there was no significant difference in the state anxiety levels of patients with the diagnosis of myocardial infarction following implemented therapeutic relaxation training when compared to the

group of cardiac patients which did not receive relaxation therapy, with $F(1, 29) = 4.04$, $p > .05$ (see Table 7).

Table 7

Analysis of Variance of the Pretest and Posttest Means of
31 Myocardial Infarction Subjects Participating in
Control and Experimental Groups

Source of Variance	<u>SS</u>	<u>DF</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Between Groups	0.06940	1	0.06940	0.00	0.9803
Error	3236.47899	29	111.60272		
Within Groups	70.23069	1	70.23069	1.45	0.2378
Interaction	195.39198	1	195.39198	4.04	0.0537
Error	1401.47899	29	48.32686		

The data presented are from the measurement of state anxiety as determined by the pre and posttest scores on the STAI-Form X-1 (see Appendix E). The maximum score possible was 80, signifying extreme anxiety and the minimum score possible was 20, indicating low anxiety existed. Each of the 31 subjects were administered two state anxiety tests, the initial a pretest and the second a posttest. The posttest was administered to the experimental group after seven days of relaxation training and to the control group after

seven days of no relaxation training. A 2x2 ANOVA was used to test the difference between groups. There was no significant difference from pre to posttests for either the control or experimental group with $F(1, 29) = 1.45$, $p > .05$ (see Table 7).

The lack of significant difference between the control group and the relaxation therapy group appears to indicate the two groups were homogeneous. The similarity between groups is reflected in the small differences in marginal cell mean scores, as depicted in Table 8.

Table 8

Variability of Cell Means and Standard Deviations
Between Groups in a Study of 31 Myocardial
Infarction Subjects

Group	Cell Means	Marginal	Standard Deviations
<u>Experimental</u> (n=17)			
Pretest	38.70	35.85	8.505
Posttest	33.00		7.474
<u>Control</u> (n=14)			
Pretest	35.07	35.78	6.132
Posttest	36.50		12.702

The second hypothesis tested was as follows: H_{02} -- Patients receiving relaxation therapy will have fewer chest pain episodes than the patients not receiving relaxation therapy. A chi-square computation was used to test the hypothesis and did not enable rejection of the null hypothesis. The computation of the chest pain occurrences was not found to be statistically significant, $\chi^2(1) = 3.677$, $p > .05$ (see Table 9).

Table 9

Chi-Square Analysis of Chest Pain Occurrences in a Study of 31 Myocardial Infarction Subjects in the Control and Experimental Groups

χ^2	Minimum f_E	Ratio of Valid Cells with f_E	df	p
Raw 3.677	4.516	1:14	1	0.0552
Corrected 2.346			1	0.1256

Chest pain occurrences in the control group totaled 7 (22.6%) of the sample of 31 subjects and 3 (9.7%) required readmission to the CCU because of an extension of the infarct. The chest pain occurrences in the relaxation group totaled three (9.7%) of the sample and none of the subjects had an extension of the infarct or required

readmission to the CCU. However, 21 (67.8%) of the sample had no chest pain.

Summary of Findings

The hypotheses of the study were as follow: (1) state anxiety levels of patients with the diagnosis of myocardial infarction will decrease following implementation of therapeutic relaxation training, and (2) patients receiving relaxation therapy will have fewer chest pain episodes than the patients not receiving relaxation therapy. Both hypotheses were not supported. When comparing cell mean scores pre and posttest, no differences were found between the relaxation therapy group and the control group.

CHAPTER 5

SUMMARY OF THE STUDY

Based on the theory of anxiety developed by May (1977) and the construct of A-State anxiety developed by Spielberger (1972), this study was conducted to determine if cardiac patients with an acute myocardial infarction who practiced relaxation therapy had lower anxiety levels than those cardiac patients who did not engage in relaxation therapy. A two-group before-after experimental design was used for the study.

Two hypotheses were examined based on the problem of the study. The first hypothesis was that state anxiety levels of patients with the diagnosis of myocardial infarction will decrease following implementation of therapeutic relaxation training. The second hypothesis was that patients receiving relaxation therapy will have fewer chest pain episodes than the patients not receiving relaxation therapy.

Summary

The sample for the study was taken from patients with a myocardial infarction in the early rehabilitation phase on a step-down cardiology unit, in a large federally-operated,

comprehensive treatment, teaching medical center located in southeastern Texas. Thirty-one subjects were assigned to one of two groups after the order of formation for the experimental and control groups was decided by a coin toss. The control group was formed first and consisted of 14 subjects, while the experimental group consisted of 17 subjects.

The independent variable, relaxation therapy training, was taught to the experimental group using seven taped sessions. The first three sessions were researcher-directed and the remaining four sessions were patient-initiated. The control group received no relaxation training. The dependent variable, state anxiety, was measured by the differences in pretest and posttest scores on the State-Trait Anxiety Inventory (STAI, Form X-1) (Spielberger, Gorsuch, & Lushene, 1970).

The first hypothesis found no significant difference in the state anxiety levels of patients with the diagnosis of myocardial infarction following implemented therapeutic relaxation training. The second hypothesis found no significant difference in the frequency of chest pain episodes in cardiac patients who practiced relaxation therapy when compared to cardiac patients who did not receive relaxation therapy.

Discussion of Findings

Relaxation therapy was found to be of no statistical significance in decreasing the state anxiety levels of cardiac patients in the early rehabilitation phase following a myocardial infarction. Since the situational (A-State) anxiety levels were measured by the self-report method in this study, a more objective measurement of anxiety may have shown a statistically significant association with relaxation therapy. None of the patients ever verbalized objection to the STAI Form X-1, but some responses to items of the test may not have accurately represented their feelings. Froese, Vasquez, Cassem, and Hackett (1974) found that patients using the STAI complained of the items being inappropriate or "too psychological."

The range of A-State anxiety scores for both groups in the study, pretest 24 to 53 and posttest 20 to 71, showed that some of the patients expressed virtually little anxiety, while others had comparably higher anxiety. In this study, the relaxation trained group had an A-State anxiety mean cell score, pretest 38.70 and posttest 33.0. The scores obtained were lower than the scores obtained by Gentry, Foster, and Haney (1972) for their nondenier group, in a study of deniers and nondeniers of anxiety of postmyocardial infarction patients. Gentry et al. (1972) reported a

mean cell score pretest 47.75 and posttest 39.50 in the nondeniers of anxiety group.

The presence of other behavioral responses, such as denial, were not assessed in this study. Therefore, the degree that denial may have been responsible for variation in anxiety scores in some patients is unknown. Hackett, Cassem, and Wishnie (1968) found an inverse relationship between denial and anxiety. Froese, Hackett, Cassem, and Silverberg (1974) in a study of patients with myocardial infarction also reported that deniers were less anxious than nondeniers. In addition, Froese et al. (1974) reported that second myocardial infarction patients had higher anxiety levels than patients with a first myocardial infarction. These reported findings may have contributed to the moderate range of scores presented in this study because it was revealed that 64.5% of the subjects had not previous cardiac related admissions.

The standard deviation of the cell mean scores for the experimental group (pretest 8.505, posttest 7.474) when compared to the standard deviation of cell mean scores of the control group (pretest 6.132, posttest 12.702) showed more consistency in subjects who practiced relaxation. Meanwhile, the subjects in the control group reflected a higher variability with a wider range in anxiety scores. The results of

this study were inconsistent with the findings of Benson (1975) and Benson and Klipper (1976) in the control of anxiety with relaxation practiced on a daily basis. However, the effectiveness of relaxation on controlling anxiety may be more evident in a larger sample.

The hypothesis of fewer chest pain occurrences in the relaxation group than in the control group was not statistically supported. This study indicated that of 10 patients who had recurrent chest pain episodes during the early rehabilitation phase, 7 (70%) were in the control group and 3 (42.8%) required readmission to the CCU with an extension of the original myocardial infarct site. These results tended to suggest that increases in sympathetic nervous system activity, as with anxiety, were related to chest pain episodes in cardiac patients.

According to May (1977), anxiety is the apprehension that evolves from a perceived threat to a value one holds necessary to his existence. Spielberger's (1972) construct of state anxiety (A-State) was conceptualized as a situational emotional state experienced by an individual that varied in intensity and over time. The findings with the test measuring anxiety indicated varying intensity of anxiety present after a myocardial infarction. However, the results of this study did not statistically support

the use of relaxation therapy with this sample of cardiac patients.

Conclusions and Implications

Conclusions from this study are listed below:

1. Relaxation therapy training was not shown to statistically decrease the state anxiety levels of cardiac patients.
2. Relaxation therapy training was not shown to statistically decrease the frequency of chest pain occurrences in postmyocardial infarction patients.

The implications for this study are:

Relaxation therapy training was not found to decrease state anxiety levels or decrease frequency of chest pain episodes in this study. It was reported in the literature that relaxation training required diligent practice (Benson et al., 1976, 1978). Practice sessions were usually twice daily rather than once daily (Benson et al., 1976, 1978). A time span longer than seven days may be required to demonstrate competence with the relaxation training and measure its effects as a therapeutic intervention.

The relaxation therapy in this study utilized a tape recording for the training sessions. The therapeutic effectiveness of the specific relaxation tape may need to

be established with other classifications of patients than cardiac patients.

Recommendations for Further Study

Based on the results of the study, the following recommendations for further study are made:

1. A replication of the study using a larger sample of myocardial infarction patients should be done.
2. A replication of the study extending the practice sessions to twice daily and increasing the participation in the study to two weeks to increase competency with the relaxation technique should be undertaken.
3. The use of additional instruments which may be effective in identifying other behavior responses accompanying anxiety would be of interest.
4. Further investigation into the psychophysiological behaviors including anxiety should be one of the areas of study by nursing to enhance the quality of patient care. Few nurses have a definite regimen for dealing with anxiety other than with tranquilizers or other medications. Since nurses spend more time with the patients than other health professionals, they are in a unique position for developing these research studies and designing nursing interventions to decrease anxiety.

APPENDIX A
APPROVALS

CONSULTING PSYCHOLOGISTS PRESS INC.
577 COLLEGE AVENUE
PALO ALTO, CALIFORNIA 94306

Ms. Ona Pryor
6210 Tierwester Street
Houston, TX 77021

In response to your request of April 14, 1982 permission is hereby
granted you to

use the State Trait Anxiety Inventory, which you have purchased,
in gathering data for your Master's thesis in nursing at Texas
Woman's University.

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CONSULTING PSYCHOLOGISTS PRESS INC.

By Peggy Ferris
Peggy Ferris, Permissions Editor
Date 4/23/82

April 30, 1982

Ms. Ora N. Pryor, R.N.
TWU Graduate Student

Dear Ms. Pryor:

This is to confirm my approval has been granted to you to conduct a research study upon the cardiology step-down unit, as you requested, for your master's thesis.

The study entitled "The Effects of Relaxation Therapy Upon the Anxiety Levels of Cardiac Patients", may have its sample taken from the population of convalescing myocardial infarction and unstable angina patients hospitalized within the cardiology step-down unit.

A handwritten signature in dark ink, appearing to read "Alfredo C. Montero".

Alfredo C. Montero, M.D.
Director, Coronary Care Unit

TEXAS WOMAN'S UNIVERSITY
COLLEGE OF NURSING
DENTON, TEXAS 76204

DALLAS CENTER
1810 INWOOD ROAD
DALLAS, TEXAS 75235

HOUSTON CENTER
1130 M. D. ANDERSON BLVD.
HOUSTON, TEXAS 77030

AGENCY PERMISSION FOR CONDUCTING STUDY*

THE Veterans Administration Medical Center - Houston, Texas

GRANTS TO Ora N. Pryor, R.N., BSN
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:

THE EFFECTS OF RELAXATION THERAPY UPON THE ANXIETY LEVELS
OF CARDIAC 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: May 27, 1982

Ora N. Pryor

Signature of Student

Mary Donaldson-Lind


Signature of Agency Personnel

Carolyn M. Adams

Signature of Faculty Advisor

* Fill out and sign three copies to be distributed as follows: Original-Student; First copy - agency; Second copy - TWU College of Nursing.

/bc

REPORT OF SUBCOMMITTEE ON HUMAN STUDIES	Project or Program Title The Effects of Relaxation Therapy upon the Anxiety Levels of Cardiac Patients.	Number
Principal Investigator's Name Ora N. Pryor	VA Facility VAMC	
Institution of Subcommittee VAMC	Date of Review May 20, 1982	
This subcommittee has reviewed the above described project with respect to the rights and safety of the human subjects. The following are our findings:		
1. Risks (check one)		
<input checked="" type="checkbox"/> The planned research involves little foreseeable risk and the subjects safety is adequately protected unless the plan is modified.		
<input type="checkbox"/> The foreseeable risk is justified by the potential benefit to the subjects or by the anticipated benefit to society and the plans include adequate and appropriate measures to reduce the risk insofar as feasible.		
<input type="checkbox"/> The risk is justified but further measures seem advisable to protect the subject, including _____		
<input type="checkbox"/> The risk seems greater than can be justified by the research as planned and the project or program is not approved as presented.		
2. Information for the Subject (check one)		
<input checked="" type="checkbox"/> The information to be given the subjects (or their legal representatives) is complete and accurate enough for them to reach a valid decision concerning participation in the research.		
<input type="checkbox"/> The information for the subjects as presented is incomplete or defective in that _____		
3. Consent Method (check one)		
<input type="checkbox"/> The format and manner of obtaining informed consent from the subjects (or their legal representatives) is satisfactory.		
<input type="checkbox"/> The method of obtaining informed consent is defective in that _____		
4. Further Comments		
Recommendation (check one)		
<input checked="" type="checkbox"/> The project or program be approved as submitted.		
<input type="checkbox"/> The plan or protocol be revised in keeping with our comments and resubmitted		
<input type="checkbox"/> The proposal as described be rejected.		
Facsimile of VA Form 10-1223	SIGNATURE OF CHAIRMAN  SIDNEY E. CLEVELAND, Ph.D.	

TEXAS WOMAN'S UNIVERSITY
Box 23717 TWU Station
Denton, Texas 76204

HUMAN SUBJECTS REVIEW COMMITTEE

Name of Investigator: Ora N. Pryor Center: Houston
Address: 6810 Tierwester Street Date: 05-13-82
Houston, Texas 77021

Dear Ms. Pryor

Your study entitled THE EFFECTS OF RELAXATION THERAPY UPON THE ANXIETY
LEVELS OF CARDIAC PATIENTS

has been reviewed by a committee of the Human Subjects 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 typically require that signatures indicating informed consent be obtained from all human subjects in your studies. These are to be filed with the Human Subjects Review Committee. Any exception to this requirement is noted below. Furthermore, according to DHEW regulations, another review by the Committee is required if your project changes.

Any special provisions pertaining to your study are noted below:

Add to informed consent form: No medical service or compensation is provided to subjects by the University as a result of injury from participation in research.

Add to informed consent form: I UNDERSTAND THAT THE RETURN OF MY QUESTIONNAIRE CONSTITUTES MY INFORMED CONSENT TO ACT AS A SUBJECT IN THIS RESEARCH.

The filing of signatures of subjects with the Human Subjects Review Committee is not required.

Other:

☒ No special provisions apply.

Sincerely,


Chairman, Human Subjects
Review Committee

at Houston Center

APPENDIX B
INFORMED CONSENT

Oral Presentation

All Prospective Patients

Hello, I am Ora Pryor, a graduate student, and I attend Texas Woman's University. As partial fulfillment of the university for a Master's Degree in Nursing, I am conducting a research study. The study is to provide learning as to the feelings of patients during recovery because if these feelings are known, in the future, new light may be shed which may help nurses, help patients deal with their feelings. The study is interested in your self-evaluation of your feelings which exist during your recovery.

This is a voluntary participated study and your participation, or refusal of the study does not affect the treatment you are receiving or will receive during your hospitalization. Your doctor has okayed my talking with you but only you can decide if you wish to participate.

Your doctor will not be made aware of your feelings, unless you request me to tell him. Your feelings will not be shared with other members of the staff. You will not be named in the study, a code number will be referred to as the means of identifying the participants. The code list will be kept strictly confidential, and separate from the other study material. The code list will be destroyed as soon as the study is completed.

Are you interested in participating in this study?

Interested Participants

Your participation in the study will require that you fill out a form that answers questions, about yourself, marital status, education, job, and other admissions because of your heart. It will also be necessary for you to take a test that may describe your feelings by marking the answer you feel describes them best. It will take approximately 30 minutes to complete both forms. You will be included in the study for seven days but if at any time you wish to be dropped from the study, let me know. There is no penalty to you if you wish to be dropped.

I will be unable to answer particular questions about the test during the study but just prior to your discharge, any questions you may have will be answered. I would appreciate it if you did not discuss the test or your answers with other patients in the unit. I will be contacting others and I don't want anyone to feel that he must answer in a particular way, other than how one honestly feels.

Control Group

I don't foresee any harm that may result from the study other than "public embarrassment" if the code is broken and the name and test answers can be matched. If injury occurs you will continue to be treated at the hospital but the university cannot be held responsible for medical treatment or compensation.

Are you willing to participate in this study? I will need you to sign two consent forms.

Experimental Group

As a part of being included in the study, a program in relaxation training is required. This relaxation training will teach you how to relax your muscles and mind. I will train you on the "how to do" relaxation by taking you through the program and watching your technique. After three days I will furnish a tape, and cassette recorder, and you can play the relaxation script and perform it daily, for the next four days.

I foresee the risks of possible fatigue from having to sit in a chair for 30 minutes once a day for the session. Personal embarrassment may result from inexperience with the relaxation exercise. Public embarrassment may result if the code on the test can be broken and names and tests can be matched. If an injury should occur you will receive the needed medical care from the hospital, but the university will not be responsible for medical care or compensation.

Are you willing to participate in this study? I will need you to sign two consent forms.

TEXAS WOMAN'S UNIVERSITY

CONSENT FORM FOR RESEARCH AND INVESTIGATION

I _____ hereby give my consent to participate as a subject for research and investigation. I have received an oral description of this study including an understandable explanation of the procedures and their purpose, any associated risks or discomforts and a description of the possible benefits. I understand that any questions I may have which arise out of the study will be answered completely before my discharge from the hospital. I further understand that my name will not be used in any release of the data and I have been assured that I may withdraw from the study at any time without jeopardizing my care.

Signature (Patient) Date

Signature (Witness) Date

CERTIFICATION OF STUDY EXPLANATION

This is to certify that I have given to the above individual an explanation of the research study, its risks and potential discomforts.

Principal Investigator Date

WITNESS Date

APPENDIX C
PATIENT PACKAGE

DEMOGRAPHIC PROFILE

Patient Number _____

1. Age _____
2. Sex _____
3. Race _____
4. Marital Status (Please circle one)
 - a. Single
 - b. Married
 - c. Separated
 - d. Widowed
 - e. Divorced
 - f. Living with, not married
5. Education (Check highest completed)
 - a. Less than 6th grade _____
 - b. 6th-9th grade _____
 - c. 10th-12th grade _____
 - d. Less than 2 years college _____
 - e. 2-3 years college _____
 - f. 4 years college _____
 - g. More than 4 years college _____
6. Occupation _____
7. How long have you done this type of work? _____
8. Are you retired? _____ How long? _____
9. Number of previous admissions because of your heart _____
10. Date of last admission _____

SELF-EVALUATION QUESTIONNAIRE

Developed by C. D. Spielberger, R. L. Gorsuch and R. Lushene

STAI FORM X-1

DATE _____

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then blacken in the appropriate circle to the right of the statement to indicate how you *feel* right now, that is, *at this moment*. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

	NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
1. I feel calm	①	②	③	④
2. I feel secure	①	②	③	④
3. I am tense	①	②	③	④
4. I am regretful	①	②	③	④
5. I feel at ease	①	②	③	④
6. I feel upset	①	②	③	④
7. I am presently worrying over possible misfortunes	①	②	③	④
8. I feel rested	①	②	③	④
9. I feel anxious	①	②	③	④
10. I feel comfortable	①	②	③	④
11. I feel self-confident	①	②	③	④
12. I feel nervous	①	②	③	④
13. I am jittery	①	②	③	④
14. I feel "high strung"	①	②	③	④
15. I am relaxed	①	②	③	④
16. I feel content	①	②	③	④
17. I am worried	①	②	③	④
18. I feel over-excited and "rattled"	①	②	③	④
19. I feel joyful	①	②	③	④
20. I feel pleasant	①	②	③	④



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HOW TO BRING FORTH THE RELAXATION RESPONSE

1. A Quiet Environment

Choose a quiet, calm environment with as few distractions as possible..

2. A Mental Device

To shift the mind from externally oriented thought, there should be a constant stimulus: a sound, word, or phrase repeated silently or aloud, such as the word "ONE".

3. A Passive Attitude

Distracting thoughts are to be disregarded. You should not worry about how well you are performing the technique.

4. A Comfortable Position

A comfortable position is necessary so that there is no undue muscle tension. You should be comfortable and relaxed.

INDIVIDUAL RELAXATION

(ADAPTED FROM JACOBSON 1964 BY KEITH REVEL)

This is individual relaxation practice. This is an aid to help you focus attention on muscle groups. The tight tense feelings you have as you move these muscles and the sensation you experience as you let go of all that tension and experience deep relaxation.

Get in a comfortable position preferably in bed with both arms by your side. You may sit in a chair with both feet on the floor with hands in the lap.

Phase I - Close your eyes. Take in a breath of air and slowly release it noticing how warm and relaxing it feel. Again take a deep breath. (The patient is observed for a few breaths. The breathing should be rhythmic and observably slow). Feeling very warm and relaxed...focus attention on your right arm...the right hand, lower arm and bicep...hold your arm out at 45 degrees...Making a fist notice tension as muscles tense and stretch...Now relax your lower arm and let the tension flow out of your right arm, hand and bicep,...Notice how calm and smooth the muscles feel...Very loose... Very comfortable. Focus the attention on your left hand, arm, and bicep... hold your arm out at 45 degrees.. Making a fist notice the muscles as they tense and stretch..Now relax your lower arm...Let it float down to the bed. Focus your attention on your face...Squinch the eyes...tighten your forehead. Clench your jaw... Now relax...Feel at ease...Like a wave of smooth calming relaxation. Next, focus attention on your neck, shoulder, and upper back. Pull your shoulders up and move your head slightly from side to side...

Let go of all the tension in the neck...Let all the tension flow out of this area, the neck, the shoulders, the back...Turn your attention to the abdomen As you hold a breath in notice the tension...Now let your breath out...Smooth and relaxed very rhythmically. Focus on your right leg, calf, thigh, and foot...Notice the tension in the buttocks as you lift the foot and leg a few inches...Feel the muscles pull...Now lower the foot and leg back to the bed...Notice the difference as they now are on the bed...Very smooth and without tension. Now the left calf, thigh and foot lift them a few inches...Notice the tension...Put them back on the bed...Let them go loose and relax.

Phase II- Now you are breathing very smooth... very rhythmically...Let yourself enjoy the sensation...Very comfortable...Very easy...Very effortless. Probably more relaxed than ever before.

Phase III- Now open your eyes and remember the calm feeling you have experienced. Remember to practice. The more you practice, you will have skill at reproducing the experience.

APPENDIX D
CHEST PAIN EPISODE DATA SHEET

CHEST PAIN EPISODE SHEET

DATE/TIME	DAY OF STUDY	CHEST PAIN OCCURRENCE	DURATION	REST/ MEDICATION	COMMENTS

APPENDIX E

RAW DATA

PRETEST SCORES OF THE COMBINED RELAXATION AND CONTROL GROUPS
ON THE STATE TRAIT ANXIETY INVENTORY FORM X-1

Pretest Score	Number of Subjects	Percentage
24	1	3.2
25	2	6.5
27	1	3.2
28	1	3.2
29	1	3.2
32	1	3.2
34	7	22.6
35	2	6.5
37	1	3.2
38	1	3.2
39	1	3.2
40	3	9.7
41	1	3.2
42	1	3.2
43	1	3.2
45	1	3.2
46	1	3.2
47	1	3.2
49	1	3.2
51	1	3.2
53	<u>1</u>	<u>3.2</u>
Total	<u>31</u>	<u>100.0</u>

POSTTEST SCORES OF THE COMBINED RELAXATION AND CONTROL GROUPS
ON THE STATE TRAIT ANXIETY INVENTORY FORM X-1

Posttest Score	Number of Subjects	Percentage
20	2	6.5
24	2	6.5
26	1	3.2
27	1	3.2
28	2	6.5
30	2	6.5
31	4	12.9
32	2	6.5
33	1	3.2
34	1	3.2
36	3	9.7
37	1	3.2
38	1	3.2
39	1	3.2
40	2	6.5
41	1	3.2
45	1	3.2
47	1	3.2
54	1	3.2
71	<u>1</u>	<u>3.2</u>
Total	31	100.0

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