HOSPITALIZED POST MYOCARDIAL INFARCTION PATIENT'S

ANXIETY AND IMPLEMENTATION OF THE RELAXATION

RESPONSE NURSING INTERVENTION

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A THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE OF MASTER OF SCIENCE

IN THE GRADUATE SCHOOL OF THE

TEXAS WOMAN'S UNIVERSITY

COLLEGE OF NURSING

BY

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We hereby recommend that the   thesis   prepared under

our supervision by_____Mary Janeshutz_____

entitled _____"Hospitalized Post Myocardial Infarction Patients'

_____Anxiety and Implementation of the Relaxation Response

_____Nursing Intervention"_____

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be accepted as fulfilling this part of the requirements for the Degree of

_____Master of Science_____.

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DEDICATION

To my parents,

    for their unselfish love,

        encouragement, and strength

To my sister, Trish,

    for her support, caring,

        and wisdom

To Anna,

    for her friendship, guidance, and

        encouragement in helping an idea

        become a reality

and Mona M. Counts,

    who helped make the reality

        a window of the future.

ACKNOWLEDGEMENTS

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CHAPTER I

INTRODUCTION

Heart disease is the leading cause of death in the United States today (Gentry and Williams 1975, p. 1). In a civilized society, such as ours, success and progress exemplify the work ethic, encouraging the individual to take advantage of the opportunity to "get ahead" by fighting for his goals. In our constantly changing environment, man must learn to adjust to new situations and new roles that society dictates, to maintain an external equilibrium. The internal environment is seldom considered, however, and anxiety and stress continue to take their toll silently, until there is a breakdown in the system, a breakdown in health.

The result of stressful living causes an inborn reaction, which has been called the "fight-or-flight" response, and physiologically it requires a change in our behavior, an increase in blood pressure, heart rate, respiration, blood flow to the muscles, and metabolism. The chronic, repeated, elicitation of the "fight-or-flight" response may lead to heart attack and stroke (Benson 1976, p. 25). Anxiety is commonly associated with the pain of a myocardial infarction (M.I.), and this response is characterized by the fight-or-flight response (Gentry and Williams 1975, p. 1).

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The Relaxation Response may be a mechanism which counters the body's fight-or-flight response, returning the body to an internal equilibrium. Nurses' main goal is to help man return to and maintain an internal homeostasis and an optimal level of health.

Thus, it was the aim of this research to determine if hospitalized post M.I. patient's anxiety levels would be affected by the implementation of the Relaxation Response nursing intervention.

Statement of Problem

What relationship, if any, exists between hospitalized post myocardial infarction (M.I.) patient's anxiety and the implementation of the Relaxation Response nursing intervention?

Statement of Purposes

The purposes of this study were:

1. To determine the anxiety in hospitalized post M.I. patients before the implementation of the Relaxation Response nursing intervention

2. To implement the Relaxation Response nursing intervention in hospitalized post M.I. patients

3. To determine the anxiety in hospitalized post M.I. patients after the implementation of the Relaxation Response nursing intervention

4. To examine the relationship between hospitalized post M.I. patient's anxiety and implementation of the Relaxation Response nursing intervention

Background and Significance

Several studies have correlated the effects of psychosocial stress on the sympathetic nervous system (SNS) function, the cardiovascular function, and pathology. Anxiety and depression have been correlated with increased plasma norepinephrine levels (Gentry and Williams 1975, p. 44); physicians report an increased interest and awareness of emotions because of their effect on the cardiovascular system (Moss et al. 1977, p. 55).

Stress induced increases in the plasma catecholamines (epinephrine and norepinephrine), which cause an increase in the consumption of oxygen, have been correlated with anginal attacks (Raab 1971, p. 65). Platelet aggregation has been shown to occur after the infusion of norepinephrine in to the myocardial blood vessel of dogs, suggesting a possible role of stress induced increases in coronary atherosclerosis and myocardial infarction (Haft et al. 1972, p. 698). "Reduction of catecholamine secretion may be important to limit the size of an infarction and preserve ischemic areas of the myocardium" (Moss et al. 1977, p. 55).

Anxiety is associated with increased heart rate, increased myocardial oxygen consumption and increased blood

pressure-- all having deleterious effects on the patient with an M.I. (Moss et al. 1977, p. 55). In 1968, researchers at Harvard's Thorndike Memorial Laboratory conducted experiments utilizing biofeedback to measure the physiological effects of Transcendental Meditation (T.M.), and results showed a marked decrease in the body's oxygen consumption with the major physiological change being a decreased rate in metabolism. The hypometabolic state that occurred was found to be a restful state, with the opposite effects of the fight-or-flight response (Benson 1976, pp. 87-88).

The elicitation of the Relaxation Response by using T.M. as an adjunctive therapeutic tool, along with the pharmacological treatment of hypertension, was tested by Dr. Herbert Benson of Harvard (Benson 1976, p. 142). Baseline blood pressures were obtained six weeks before T.M. was begun; once the eighty-six subjects were regularly practicing the meditation twice a day, their blood pressures were randomly measured, but never while actively meditating. The results showed a statistically significant change in systolic and diastolic pressures. The decrease lasted as long as the subjects meditated regularly. After doing further studies with T.M., Benson identified four basic components which brought about the same physiological effects. He states that the "Relaxation Response serves as a natural way to counteract the increased sympathetic nervous system (S.N.S.) activity associated with the fight-or-flight response,"

indicating its usefulness in other disease processes where
there is increased S.N.S. activity as a factor in the develop-
ment of the disease (Benson 1976, pp. 144, 149).

> The physiological changes that occur (with anxiety)
> appear to be related to increased sympathetic nervous
> system activity. Metabolic rate is increased, increasing
> the need for tissue perfusion. This need is met by an
> increased heart rate and increased force of myocardial
> contractions (Gentry and Williams 1975, p. 73).

Since anxiety is a reaction to hospitalization for
an acute M.I., it is important for nurses to know how to help
the person withstand the stressful experience of an M.I.
through "knowledgeable assessment of coping and skillful
therapeutic intervention" (Gentry and Williams 1975,p. 75).
With the evidence of a high correlation between anxiety, stress,
and illness, teaching patients how to relax, as a nursing inter-
vention, is consistent with nurses' goal of returning man to
his optimal level of wellness. The following questions are
therefore examined:

Questions

1. Was the anxiety in hospitalized post M.I. patients
   determined before implementation of the Relaxation
   Response nursing intervention?

2. Was the Relaxation Response nursing intervention
   implemented?

3. Was the anxiety of the hospitalized post M.I.
   patient determined after implmentation of the
   Relaxation Response nursing intervention?

4. Was the relationship between hospitalized post
M.I. patient's anxiety and the implementation
of the Relaxation Response nursing intervention
examined?

Definition of Terms

Relaxation Response nursing intervention: Planned
implementation of the Relaxation Response protocol, which
is described under "tool."

Hospitalized post M.I. patient: Any male diagnosed
having an M.I. as evidenced by EKG changes and/or serum
enzymes. (Due to the institution where the data were going to
be collected, where the majority of patients are males, only
males were used for this study.

Anxiety: A state in which the individual experiences
feelings of uneasiness or dread and becomes ready to take
action -- fight-or-flight, as measured by the scores on the
State-Trait Anxiety Inventory.

Relaxation Response: A physiological response to
the protocol, measured by a decreased respiratory rate,
oxygen consumption, and carbon dioxide elimination.

Limitations

The following information (1. and 2.) was obtained
by the investigator from the patient and described.

1. Age, education, culture, race, economic class, and
marital status

2. Number of previous hospitalizations, times in the particular hospital setting and hospitalizations for an M.I.

3. The amount of cardiac rehabilitation teaching patient has had

4. Physiological and environmental stressors

5. Compliance to proposed nursing intervention

6. Hawthorne Effect

7. Research carried out in one setting

8. Patient's perception of his health status

9. Concern about death

Delimitations

1. Male patients only

2. Day teaching was begun - Day 6 post M.I.

3. Patient must understand verbally and be able to write the English language

4. Patient had no diagnosed psychiatric disorders

5. Patient had no sedatives or hypnotics two hours previous to implementation of the nursing intervention

Assumptions

1. All responses were truthful

2. All participants learned the teaching protocol

3. Patient participation in the Relaxation Response protocol produced relaxation

4. The investigator administered identical information to each patient

Summary

The Profession of Nursing is concerned with man and maintaining his well being. Assisting him to learn to decrease stress and anxiety is a major goal, as stress has been identified as another major risk factor in the development of coronary artery disease (C.A.D.).

The preceding chapter explored the factors of stress and anxiety and their influence on the incidence of heart disease and a technique which may counteract the body's fight-or-flight response. The purpose of the research, definition of terms, limitations, delimitations, and assumptions of the study are discussed.

The following chapters will discuss: Chapter 2, the relationship between stress, anxiety and heart disease, and the physiological effects of the relaxation response technique, an indepth review of the technique, how it was developed, and its application to nursing action.

Chapter 3 explains the procedure for data collection and statistical treatment of data, the setting, characteristics of the population, the tool used to measure anxiety, and how data were collected. Analysis of data is explained in Chapter 4.

Chapter 5, the final chapter, contains the summary, conclusions, implication, and recommendation for further research.

CHAPTER II

REVIEW OF LITERATURE

Heart disease and stress are linked together more
and more as time and research continue. The following chapter
will review these areas: Theories of stress, theories of
anxiety, heart disease, stress, and anxiety; the Relaxation
Response and Transcendental Meditation; and nursing action,
stress, and heart disease.

Stress is a component of everyday life, and change
experienced by the organism poses a potential threat by up-
setting the equilibrium that man is constantly struggling to
maintain. If no alternative can be found or the problem
solving method involves more time and energy than normal,
anxiety, tension, and feelings of guilt and hopelessness
arise (Caplan 1964, p. 38).

Theory of Stress

Hans Selye (1956) defines stress as a "state manifest
by a specific syndrome which consists of all the non-
specifically induced changes within a biologic system"; stress
consists of change, as well as adaptation to change (Selye
1956, p. 54). It is the body's response to factors that act
on the individual. Stressors are defined as stimuli that
produce tension, have potential for causing disequilibrium,

a situational or maturational crisis, or the experience of stress within an individual's life (Selye 1950, p. 12). Selye describes a defense mechanism, which he calls the General Adaptation Syndrome (G.A.S.), that is characterized by specific chemical changes and is a response instituted by the body when under stress. The G.A.S. has three components:

1. Alarm Reaction: the body responds by increasing the production of glucocorticoids and mineralo-corticoids, by stimulating the adrenals from the pituitary.

2. Stage of Resistance: the full potential of adapt-ation is achieved at this point, or the next stage follows.

3. Stage of Exhaustion: if the stressor is too great to overcome and is applied for a long period of time, exhaustion of the organism and ultimately death occur.

If the stressor in the alarm stage is prolonged or severe enough, the "adaptive" chemicals may become excessive or insufficient, causing the organism to become target for disease; Selye terms these "diseases of adaption" (Selye 1956, p. 56). The response is holistic and involves physiological and psychological components that mobilize the body for re-action (Bower 1977, p. 39).

Theories of Anxiety

Freud (1920, p. 353) stated that anxiety is part of the self preservation instinct and is "innate in every human being." His second theory of anxiety places emphasis on ego function; the ego perceives the danger, the perception arouses anxiety, and in order to avoid anxiety, the ego represses the impulses and desires that may lead to danger. Therefore, the anxiety creates the repression versus the repression creating the anxiety, as hypothesized in his first theory (Freud 1933, p. 119). The trend in Freud's theories moves from a description of anxiety as a conversion of libido to a description of the individual perceiving a danger and utilizing libido (energy) in coping with the danger (May 1950, p. 124).

Horney holds the viewpoint that the anxiety occurs "prior to the instinctual drives"; the factors Freud terms "instinctual drives," she holds to be a product of anxiety themselves (Horney 1945, pp. 12-13). Impulses and desires do not become "drives" except when motivated by anxiety. The basic question within her theory is, "What is endangered by the threat which provokes anxiety?" (Horney 1945, p. 13). Conflict is stressed as the source of anxiety and not viewed as simply the ego versus the id.

Fromm claims that the "particular needs that are relevant to understanding the personality and its difficulties" are not instinctual but are the results of all the conditions under

which we live (Fromm 1939, p. 78). The normal reaction, therefore, to the instinctual needs are not anxiety producing in themselves, but the person's perception of the need.

Any threat to the physiological component of the organism is perceived as such, and according to the above theories, creates anxiety. Heart disease represents an immediate threat to life, as it is associated with sudden death (Aguilera and Messick 1974, p. 86); this threat in itself is anxiety producing, leading to increased stress for the individual.

Heart Disease, Stress, and Anxiety

"Stress makes a significant contribution to the pathogenesis of not only hypertension, but also hypertension's most serious complication, cardiac disease" (Bloomfield 1975, p. 18).

As research continues, stress appears as another major risk factor in coronary artery disease (Slay 1976, p. 329). Emotional and sensory stresses play a prominent role in coronary disease; clinical and experimental evidence show the overproduction of catecholamines and adrenocortical steroids from these stresses to be potentially cardiotoxic. Raab states that myocardial cells are more susceptible to necrosis during prolonged periods of stress, due to the increased cortisol levels; anxiety and anger increase sympathetic tone and thus cause the local release of norepinephrine within the myocardium and epinephrine from the adrenal medulla. Both of these catecholamines

increase myocardial oxygen consumption (Raab 1966, p. 554), and have been shown to increase the automaticity at ectopic sites, precipitating arrythmias (Skinner et al. 1975, p. 666). The constant elicitation of the fight-or-flight response that occurs with situations dictating change or behavioral adjustment by the organism, increases the possibility of the individual developing high blood pressure (Benson 1976, p. 67). Elevated blood pressure and heart rate were found in subjects after performing tasks ranging from simple to difficult and were anxiety producing; the results showed the cardiovascular system's response to mobilize for fight-or-flight, which somatically was not carried out (Obrist 1976, p. 103).

"It is not surprising that many heart conditions are found accompanying anxiety, since the heart in everyone is directly sensitive to emotional stress" (May 1950, p. 70). Russek and Russek (1976) studied emotional stress as a factor in coronary heart disease and found at the time of their M.I., 91 percent of 100 patients were holding down two or more jobs, as compared with only 20 percent of the healthy controls, working more than sixty hours a week or experiencing unusual insecurity, discontent or frustration in relation to employment. In a previous questionnaire survey, it was found that ischemic heart disease was more prevalent in occupational categories where there were reported tensions created by routine demands of the job (Russek and Russek 1976, p. 63).

They also found social and cultural mobility to be factors
in heart disease; a study done by Kaplan et al. (1971) re-
vealed the prevalence of coronary heart disease among low
status persons who had moved upward in social status to be
twice that of those who had remained at the same level. Thus,
a major change of occupation, place of residence (moving into
an unfamiliar social environment), and discrepancies between
culture of origin and the current cultural situation can
increase the risk of heart disease.

Jenkins found anxiety and depression to be associated
with the risk of developing angina and possibly an M. I.
(Jenkins 1971, p. 250). A study conducted in Israel measured
anxiety of patients with coronary artery disease and those
without; results revealed higher scores for the patients with
coronary artery disease (Medale 1968, p. 789). A
study measuring anxiety by urine and plasma catecholamines
showed increased levels for patients that had had a heart
attack indicating physiologically, an increase in anxiety
(due to sympathetic stimulation)(Januszewics et al. 1968,
p. 345). Patients reported a great emotional trauma or
mounting stress days or weeks prior to the attack. Meltzer
(1977) questioned his M.I. patients over several years as
to what they think precipitated their heart attack, and
50 percent to 70 percent mentioned an emotional upset.
Most post M.I. patients will experience a "moderate
or moderately severe anxiety reaction or depression"

(Meltzer et al. 1977, p. 59). Froese et al. (1974) found anxiety levels in acute M.I. patients to be highest the first two days after the infarct, with a decrease between the third and seventh days and increasing again right before discharge (Froese et al. 1974, p. 420).

In summary, anxiety has shown to be deleterious to the patient with an acute M.I. due to the increased myocardial oxygen consumption, heart rate, and blood pressure (Moss et al. 1977, p. 55), and an increase in blood lactate production (Pitts 1969, p. 69).

Transcendental Meditation and the Relaxation Response

Researchers at Harvard Medical Unit in Massachusetts and at University of California at Irvine examined the physiological effects of Transcendental Meditation (T.M.) and found the effects produced were the opposite of those experienced with anxiety. There was (1) decreased oxygen consumption, (2) decreased carbon dioxide elimination, (3) decreased respirations, (4) decreased blood pressure, (5) decreased heart rate, (6) decreased blood lactate concentration, (7) increased skin resistance, and (8) an intensification of alpha waves on the E.E.G. These measures all reflect a relaxed, wakeful state (Benson and Wallace 1970, p. 90).

Physiologically, the state produced by T.M. is distinct from other relaxed states, such as sleep and hypnosis. During the practice of T.M., oxygen consumption drops within the first five to ten minutes; with sleep, the decrease occurs only after

several hours, and there is no change with hypnosis. Skin
resistance increases with sleep, but on a much smaller scale
than seen in T.M. (Benson and Wallace 1972, p. 89). Orme-
Johnson (1973) found meditators to be more stable by measuring
autonomic indices of stress -- Galvanic Skin Response (GSR)
and GSR habituation (Orme-Johnson 1973, p. 341).

The E.E.G. pattern during meditation showed a
difference from sleep; there were no slow (Delta) waves or
sleep spindles, but alpha wave activity predominated with a
tendency of decreasing frequency (Wallace 1970, p. 1751). The
patterns during hypnosis take the form characteristic of the
mental state that has been suggested to the subject (Benson
and Wallace 1970, p. 89).

Zen and Yoga, which are practiced to achieve a "higher"
consciousness through a fully relaxed and rested body and a
fully awake and relaxed mind, use techniques that require
rigorous discipline and lengthy training. T.M. is one widely
practiced Yoga technique, developed by Maharishi Mahesh Yogi,
that requires little training, is easily learned and does not
require or involve any specific beliefs or life style. It is
a well standardized technique and enabled the scientists to
carry out large scale studies under fairly uniform conditions.
Further research revealed four essential components that ren-
dered the hypometabolic state produced with T.M. and other
forms of meditation and relaxation practices. They are

(1) a mental device, (2) a passive attitude, (3) decreased muscle tonus, and (4) a quiet environment. During the practice of this new relaxation technique, Benson and Beary (1974) found oxygen consumption to decrease by 13 percent, carbon dioxide production decreased 12 percent, and respiratory rate decreased 4.6 breath/minute, below control values. The study revealed a decrease of blood lactate, heart rate, and blood pressure. These results indicate a decrease in sympathetic nervous system (SNS) activity; it is representative of a hypometabolic state, the opposite of the fight-or-flight response (elicited under stressful conditions), that is associated with an increase in SNS activity and a hypermetabolic state. Thus, the chronic activation of the defense mechanism in the hypothalamus (fight-or-flight response), results in higher cholesterol levels in the blood to be maintained, increased concentration of circulating catecholamines and clotting mechanisms are adversely affected (Russek and Russek 1976, p. 66). Therefore, it appears that "the relaxation response serves as a natural way to counteract increased SNS activity associated with the fight-or-flight response" (Benson 1976, p. 149), characteristic of the response to stress. Since stress can produce anxiety (Bower 1977, p. 39) and anxiety is a natural response to the acute phase of illness and hospitalization (Holub et al. 1975, p. 767), it is imperative that nurses recognize and intervene to prevent the organism from experiencing a breakdown or further breakdown of the system.

Nursing Action, Stress, and Heart Disease

"Nursing is a process that promotes health, prevents illness, and helps develop behaviors for handling stress" (Bower 1977, p. 42). Nursing action is directed toward the goal of helping the individual cope effectively with the environment (Bower 1977); to assist him in maintaining a maximum level of total wellness by purposeful interventions that are aimed at reducing stress factors and conditions that affect or could affect the client's functioning at his optimal level (Neuman 1975, p. 99).

Viewing man in a holistic manner, nurses must know and be aware of the factors influencing the individual in his reaction and adaptation to stress; this is necessary to carry out the nursing process (Sundeen 1975, p. 138). Nursing action evolves around the interpersonal relationship, as it is the way through which the nursing process is executed. The helping relationship, as described by Rogers (1961), has been used to describe the focus of nursing intervention; it describes behavior that assists the client to grow, develop, mature, and cope with life -- to adapt (Rogers 1961, pp. 39-40).

Stress is identified repeatedly in the literature as a major factor in the development of heart disease, due to its effect on the cardiovascular system. Elicitation of the Relaxation Response has been proven to counteract the physiological effects of stress, reducing the "wear and tear" on the body.

In view of the information and research presented, the effect of the elicitation of the Relaxation Response on the post M.I. patient, measured by anxiety levels, was investigated.

The following chapter presents the methodology for collection of data; included are the setting, population, and tools used.

CHAPTER III

PROCEDURE FOR COLLECTION OF DATA

A descriptive study was utilized to determine if
the Relaxation Response nursing intervention was reflected
in anxiety levels of hospitalized post M.I. patients. Before
implementation of the study, permission was obtained for the
thesis committee, the Texas Woman's University Human Rights
Committee, the agency, and the participants involved. Per-
mission was evidenced by their signatures on VA Form 10-1086
(See appendix). Data were anticipated to be collected from
March 1 to March 31, 1978; however, data were collected from
March 15 to April 15, 1978.

Setting

The setting for the study was a federally supported
hospital in Central Texas with an eight bed coronary care unit
and a thirty-seven bed cardiovascular medical ward. The
standard procedure for M.I. patients admitted to the CCU is
transfer to the cardiovascular medical floor, once they are
stabilized. This usually occurs by the patient's sixth day.
The majority of the patients admitted to the hospital have a
mean educational level of the sixth grade, are married, and
"blue collar workers."

Population

The anticipated sample for this study was the first thirty post M.I. patients. Twelve individuals met the sample selection criteria; however, only three consented to participate. Reasons given for not participating in the study are given in Chapter 4.

Tool

The following tools were utilized in this study:

1. The State-Trait Anxiety Inventory (STAI), developed by Speilberger, Gorsuch, and Lusene, 1970.

> It has been demonstrated that scores on the A-State scale increase in response to various kinds of stress and decrease as a result of relaxation training (Speilberger 1966, p. 3).

There are two parts to this test; both are entitled "Self-Evaluation Questionnaire." Form X-1 measures state anxiety, which is a transitory state of anxiety; Form X-2 measures trait anxiety which is basic personality characteristics (Speilberger 1966, p. 13).

The forms are designed for self administration and there is no time limit. The average time, however, for college students is 6-8 minutes to complete each test and less than fifteen minutes to complete both. Less educated persons require ten to twelve minutes per test, and twenty minutes for

both.   The range of scores on each test goes from
a minimum of twenty (least anxiety) to a maximum
of eighty (highest anxiety) (Speilberger, Gorsuch
and Lushene 1970, p. 4).

Reliability

The test-retest reliability correlations for
A-trait scales is relatively high. A study that in-
volved undergraduate college students tested under
varying circumstances on three different occasions
exhibited ranges from .73 to .86. The A-state
scale was low, ranges from .16 to .54, which can be
expected when the circumstances of stress vary. The
alpha coefficient measuring internal consistency
provides "a more meaningful index of the reliabil-
ity of A-state scales than test-retest correlations.
Alpha coefficients for the STAI scales were computed
by formula K-R 20 as modified by Cronback (1951) for
the normative" data obtained on three groups of stu-
dents. The ranges for the reliability coefficient
were from .83 to .92 for the A-state and .86 to .92
for A-trait. Therefore, the internal consistency is
reasonably good   (Speilberger, Gorsuch and Lushene
1970, pp. 9-10).

Validity

Construct validity of the A-state scale is
shown in a study involving 977 undergraduate

college students under NORM conditions and under EXAM conditions. The mean scores under each condition were reported for each of the 20-item A-state scale and for each separate item. Under EXAM conditions, the mean score was higher than the NORM. All but one item significantly discriminated between these conditions for the males, and all of the items were significantly higher in the exam condition for the females (Speilberger, Gorsuch, and Lushene 1970, pp. 10-11).

Concurrent validity for the A-trait scale showed correlations between the STAI and the IPAT Anxiety Scale (Cattell and Scheier, 1963) and the Taylor Manifest Anxiety Scale (TMAS) to be .75 to .83. These three tests have been concluded to be alternate measures of A-trait anxiety.

The participant's understanding of the instructions also involves validity. He must know that on one test he should answer how he feels "now," and on the other, "how he generally feels." It is recommended that state anxiety be measured first, since this can be influenced by the "emotional atmosphere that may be created" if the trait scale is given first (Speilberger, Gorsuch, and Lushene 1970, p. 4). These recommendations will be insured by the investigator.

2. The Relaxation Response protocol as identified
by Herbert Benson:

a. Sit quietly in a comfortable position.

b. Close your eyes.

c. Deeply relax all your muscles, beginning at
your feet and progressing up to your face.
Keep them relaxed.

d. Breathe through your nose. Become aware of
your breathing. As you breathe out, say the
word "ONE" silently to yourself. For example,
breathe IN...OUT, "ONE"; IN...OUT, "ONE"; etc.
Breathe easily and naturally.

e. Continue for ten to twenty minutes. You may
open your eyes to check the time, but do not
use an alarm. When you finish, sit quietly for
several minutes, at first with your eyes opened.
Do not stand up for a few minutes.

f. Do not worry about whether you are successful
in achieving a deep level of relaxation. Main-
tain a passive attitude and permit relaxation
to occur at its own pace. When distracting
thoughts occur, try to ignore them by not dwell-
ing upon them and repeating "ONE." With practice
the response should come with little effort.
Practice the technique once or twice daily, but

not within two hours after any meal, since
the digestive processes seem to interfere with
the elicitation of the relaxation response.
(This protocol is slightly modified for use in the
study and is identified in the appedix.)

Validity and Reliability

Herbert Benson et al. (1974) developed the
technique using components of Zen and Yoga medi-
tation, Western prayer methods, and secular relax-
ation practices. The practice of this technique
creates a physiological response of a hypometabolic
state. Seventeen subjects were studied -- ten fe-
males and seven males. Ages ranged from eighteen
to thirty-seven, the mean being twenty-four. Re-
sults showed a decrease in oxygen consumption by
13 percent; the mean control was 258.9 ml/min.
During the Relaxation technique, oxygen consumption
was 225.4. Sitting quietly with eyes closed failed
to produce significant changes.

Carbon dioxide production decreased from a mean
control of 242.4 ml/minute to 214.1, a decrease of
12 percent.

Respiratory rate decreased from a mean control
of 15.7 breath/minute to 11.1 breaths/minute, a de-
crease of 4.6 breath/minute. (Beary et al. 1974).

The results of the study are very closely related to the findings of another investigation measuring the physiological response during the practice of T.M. The data of these investigations support the concept of the Relaxation Response, which is consistent with the response, that results in a decrease in S.N.S. activity. There are documented simultaneous findings of a hypometabolic state, a decrease in blood lactate, low blood pressures, slightly increased forearm blood flow, and a decrease in heart and respiratory rates (Wallace et al. 1971, p. 798).

In 1971, Wallace, Benson, and Wilson conducted a study researching the physiological effects of T.M., involving thirty-six subjects, ranging in ages from seventeen to forty-one years of age, with a mean age of twenty-four point one. Subjects included twenty-eight males and eight females. Results showed a decrease in oxygen consumption from 251.2 ml/minute to 211.4 ml/minute, a decrease of 17 percent.

Carbon dioxide elimination decreased from 218.7 ml/minute to 186.8 ml/minute.

Respiratory rate decreased approximately 3 breaths/minute.

Mean blood lactate concentration decreased from 11.4 to 8.0 mg./100 ml.

Average heart rate decreased by 3 beats/minute.

The similar physiological findings indicate that the hypo-metabolic state occurs with the elicitation of this technique and can be repro-duced.

It can, therefore, be seen that the same results are achieved physiologically by elicitation of the technique in both studies, establishing validity and reliability.

Data Collection

1. The hospitalized post M.I. paitent's anxiety was determined by the State-trait Anxiety Inventory on the sixth day post M.I.

2. The teaching of the Relaxation Response nursing intervention was implemented after administration of the STAI, on the sixth day post M.I. Days six, seven, and eight were chosen for teaching to be done; they have been identified as the days when the post M.I. patient is most attuned to learning (Guzzetta 1977). The energy requirements of the patient at the sixth day were determined by the Correctional Therapist of the agency and the over-seeing physician to be no greater than one metabolic equivalent (MET) (See appendix).

The protocol was taught by the investigator; it was proposed that the investigator would stay with the patient during the implementation of the technique for three consecutive days; however, to insure daily practice of the technique, twenty minutes a day, the investigator was with the patient every day during implementation of the Relaxation Response nursing intervention.

3. At the end of hospitalization, on the day before discharge, the patient was again administered the STAI, to measure anxiety.

Anticipated data collection time for each subject was fourteen days; due to the fact, however, that two out of the three subjects who consented to participate were assigned to a resident physician, the length of hospitalization totaled two weeks, versus the anticipated three weeks, as is generally the case with patients under the care of the staff physicians. The third patient was discharged on the eighteenth day post M.I. The length of time of data collection (elicitation of the Relaxation Response) was eight to twelve days, versus the anticipated fourteen days.

Treatment of Data

The anticipated level of significance was set at the $\alpha=.05$ level. It was anticipated that data would be analyzed utilizing a t-test, comparing the scores of state and trait anxiety before implementation of the Relaxation Response protocol and after the patient had been practicing the technique throughout hospitalization. Due to the sample size, however, data were analyzed with descriptive statistics only.

Summary

The participants of the study were administered the STAI before teaching of the protocol was begun, and the day before discharge, to measure the effects of the technique, as reflected by the STAI scores, indicating anxiety levels. Due to the sample size, descriptive statistics were utilized and will be described in the following chapter.

CHAPTER IV

ANALYSIS OF DATA

The purpose of this study was to describe the hospitalized post M.I. patient's anxiety, as measured by the STAI, before and after implementation of the Relaxation Response protocol. The sample size consisted of three participants, and the data, therefore, were analyzed using descriptive statistics only.

The present chapter includes reasons given by those patients who chose not to participate, patients' physician's encouragement to participate, demographic data, and the results of the scores.

TABLE 1

REASONS STATED FOR NOT PARTICIPATING IN
THE STUDY BY PERCENTAGE

Rationale	Number	Percent
1. "I'm too old to learn how" (the technique)	1	11.1
2. Religious beliefs	1	11.1
3. Did not want to participate at the time	1	11.1
4. Did not believe "anything" would help him to relax	1	11.1
5. Wanted to "think about it" and later refused	1	11.1
6. Verbalized, "I don't believe in that stuff"	2	22.2
7. No reason given	2	22.2
Total	9	99.9

Due to sample size, participants will be referred to as
#1, #2, #3.

TABLE 2

NUMBER OF PARTICIPANTS ENCOURAGED
BY PHYSICIAN

Participants	Percent
#1 Encouraged	33.3
#2 Encouraged	33.3
#3 Received no advice	33.3
Total	99.9

Demographic Data

TABLE 3

PARTICIPANTS' MEAN AGE

Participants	#1	#2	#3	$\overline{X}$
Age	55	61	66	60

TABLE 4

PARTICIPANTS' RACE BY PERCENTAGE

Participants	#1	#2	#3	Percentage
Race	*C	*C	*C	100.0

*C = Caucasian

TABLE 5

CHARACTERISTICS OF PARTICIPANTS' OCCUPATION
AND EDUCATION LEVEL

Participant	Occupation	Education Level
#1	Rancher	High School
#2	Owns Store	Eighth Grade
#3	Supply Mechanic	High School

TABLE 6

PARTICIPANTS' MARITAL STATUS BY
PERCENTAGES

Marital Status	Number	Percentage
Single	0	0
Married	3	100
Divorced	0	0
Widowed	0	0
Separated	0	0
Total	3	100

TABLE 7

PARTICIPANTS' INCOME LEVEL BY PERCENTAGES

Income	Number	Percentages
Under $5,000	1	33.35
$5,000 - 10,000	0	00.00
$10,000 - 20,000	2	66.65
Over $20,000	0	00.00
Total	3	100.00

TABLE 8

NUMBER OF PREVIOUS HOSPITALIZATION, NUMBER
OF HOSPITALIZATIONS FOR AN M.I.,
AND NUMBER OF HOSPITALIZATIONS
AT THE AGENCY

Participant	Previous	M.I.	Agency	Total
#1	3	0	0	3
#2	3	0	0	3
#3	2	0	2	2

Test Scores

TABLE 9

THE STATE ANXIETY SCALE FOR
PRE-AND POST-TESTS

State
Anxiety
Score

40
39
38
37
36
35
34
33
32
31
30
29
28
27
26
25
24
23
22
21
20

Pre-test
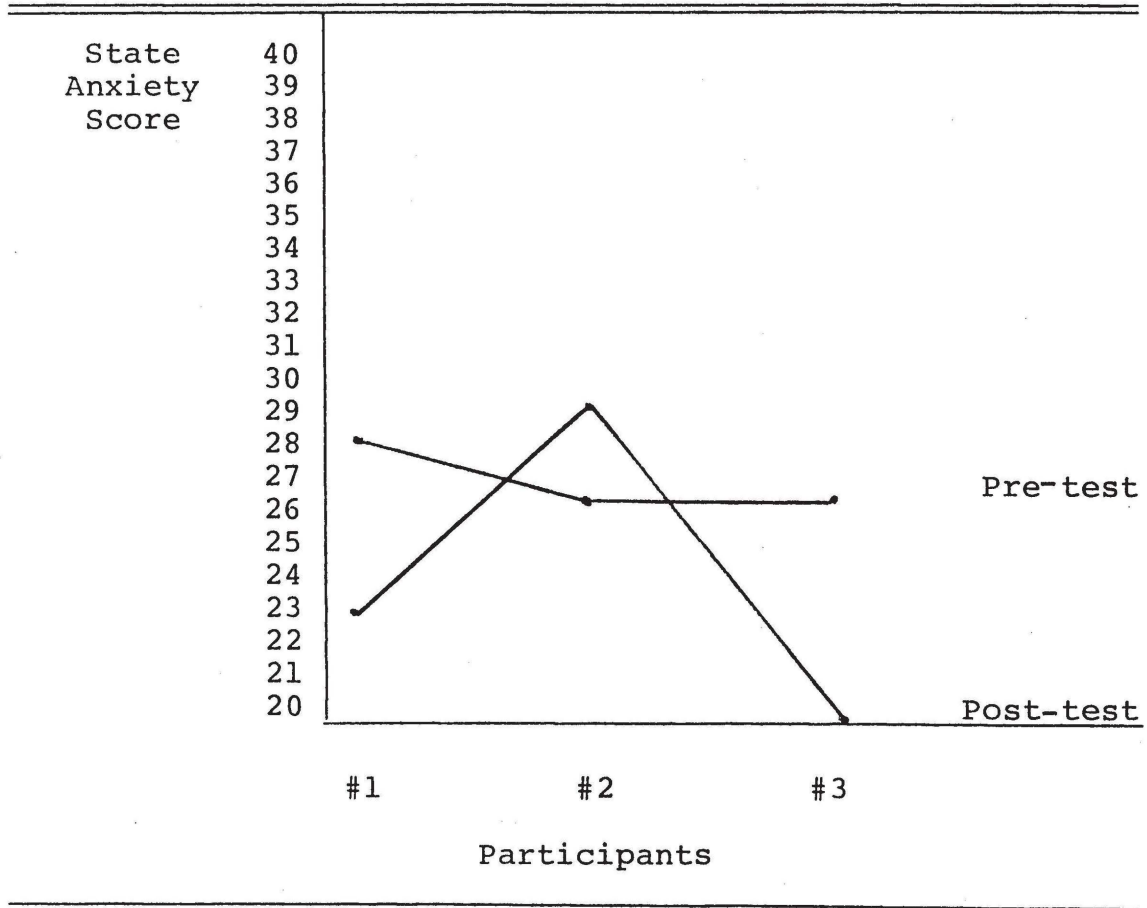
Post-test

#1   #2   #3

Participants

TABLE 10

TRAIT ANXIETY SCORES FOR PRE- AND POST-TESTS

38
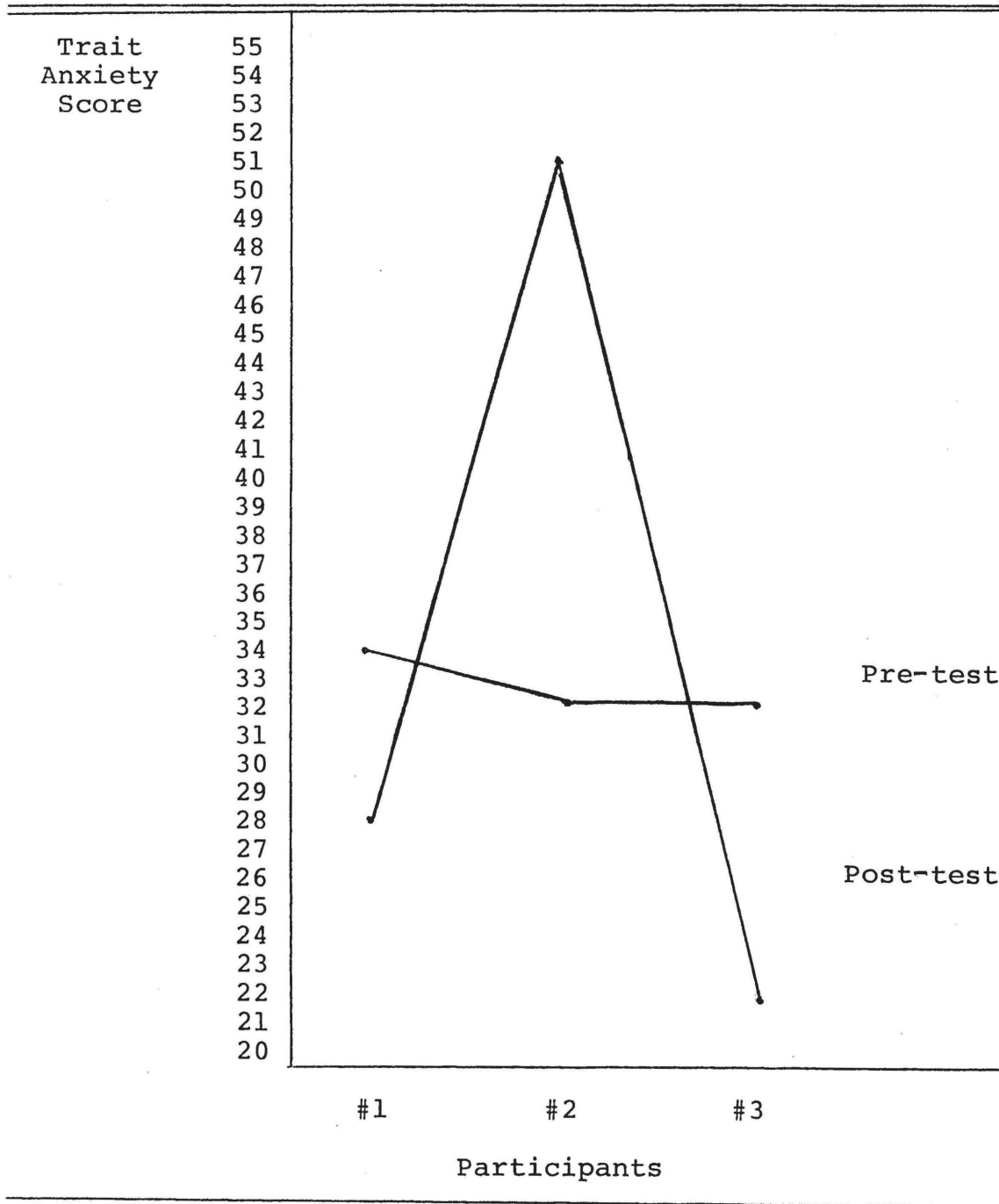
TABLE 11

MEAN SCORES FOR STATE AND TRAIT ANXIETY

Before/After
State

Before/After
Trait
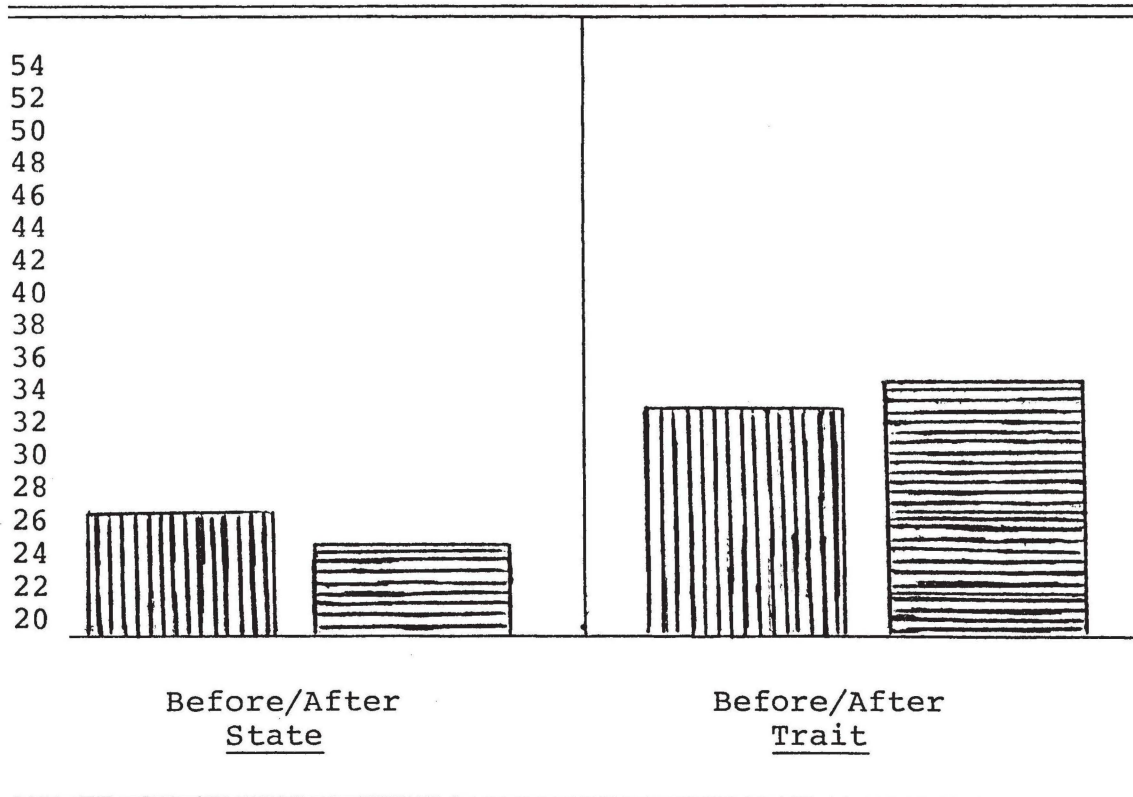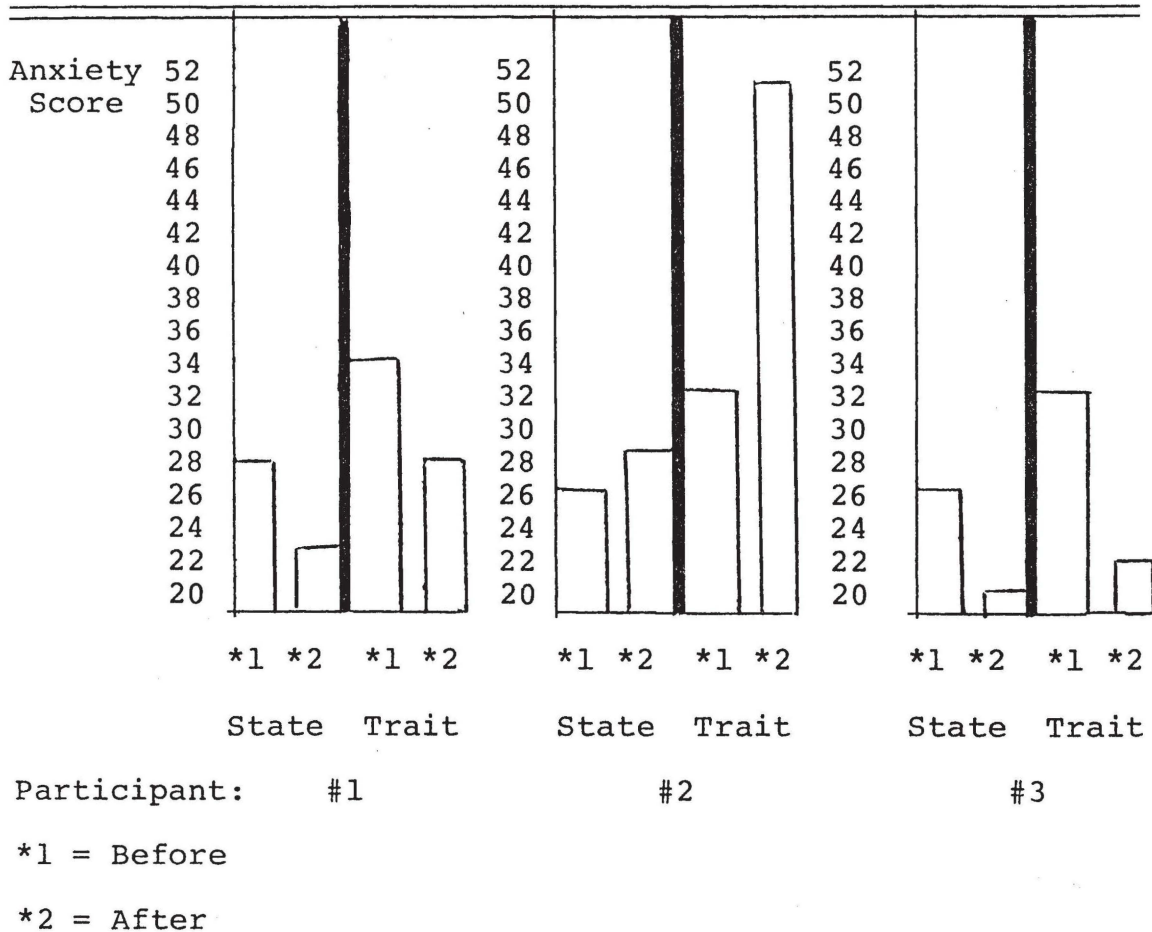
TABLE 12

PARTICIPANTS' STATE AND TRAIT ANXIETY SCORES,
PRE- AND POST-TEST


```
Anxiety  52                        52                        52
 Score   50                        50                        50
         48                        48                        48
         46                        46                        46
         44                        44                        44
         42                        42                        42
         40                        40                        40
         38                        38                        38
         36                        36                        36
         34                        34                        34
         32                        32                        32
         30                        30                        30
         28                        28                        28
         26                        26                        26
         24                        24                        24
         22                        22                        22
         20                        20                        20

         *1 *2   *1 *2        *1 *2   *1 *2        *1 *2   *1 *2

         State   Trait        State   Trait        State   Trait

Participant:      #1                    #2                    #3
```

*1 = Before

*2 = After

Summary

The reasons for non-participation of the nine out of twelve patients interviewed are shown on Table 1. The physician's encouragement to participate in the study is demonstrated in Table 2. Demographic data are categorized and demonstrated in Tables 3 through 8. Test scores are

categorized according to State-Trait Anxiety scores and pre-
and post-tests, mean scores for both tests and individual
participant tables are demonstrated in Tables 9 through 12.

CHAPTER V

SUMMARY, CONCLUSIONS, IMPLICATIONS,
AND RECOMMENDATIONS

The following chapter is a summary of the study.
Conclusions are drawn from data obtained, implications of
conclusions stated, followed by recommendations for further
study.

Summary

This investigation was a descriptive study implemented
on a thirty-seven bed cardiovascular floor in a federally
supported hospital in Central Texas. The study investigated
post M.I. patient's anxiety and implementation of the Relax-
ation Response nursing intervention. Purposes of the study
were to teach post M.I. patients the Relaxation Response
nursing intervention and to determine the anxiety levels of
the patients before and after implementation of the technique.

Out of the twelve patients that met the criteria, only
three wished to participate; reasons for non participation by
the nine patients are listed in Chapter 4. Data were collected
over a four week period; each patient implemented the tech-
nique beginning on the sixth day post M.I. until discharge.

Tools utilized were the State-Trait Anxiety Inventory,
to measure patients' anxiety and the Relaxation Response
protocol, to induce a relaxed state.

Data were analyzed by descriptive statistics.

Conclusions

The conclusions which resulted from this study:

1. Anxiety in the hospitalized post M.I. patient was determined before implementation of the Relaxation Response nursing intervention, utilizing the STAI scores.

2. The Relaxation Response nursing intervention was implemented in the hospitalized post M.I. patient.

3. Due to the sample size, no conclusions can be drawn about the relationship between hospitalized post M.I. patient's anxiety and implementation of the Relaxation Response nursing intervention. It was concluded that 44.4 percent of the non-participant population gave no reason for not participating, and 55.5 percent expressed personal beliefs about not believing the technique would help them.

4. Physician encouragement to participate in the study occurred in two out of three of the participants; it is therefore concluded that the physician's opinion may be of importance to the patient.

5. Conclusions from the study cannot be generalized.

Implications

The implications drawn from this study show that
anxiety can be determined in hospitalized post M.I. patients,
by the STAI. Implementation of the Relaxation Response
nursing intervention, however, is influenced by several
factors, as is the success of the technique. Patients'
receptiveness to learning a new technique, as indicated by
the non-participant's answers, depend on their belief of
untraditional modes of treatment, such as a "relaxation
technique." Education of patients about the effects of
stress and "pressures of everyday life" on the body should
be a part of primary prevention. Conclusions about the
physician's influence on patients' thinking concerning the
Relaxation Response technique indicates that nurses must be
aware of the client's conception of health care.

Recommendations

Recommendations for further study are that this
study be conducted over a greater time period and that the
population include a larger sample. Collection of data
should include more than one agency, as well as a non-
governmental agency, which would allow for a greater pop-
ulation range.

An assessment of other factors, which influenced
this study, would include the length of time the post M.I.

patient spends in the hospital, considering the physicians that would be caring for the particular patient.

Further recommendations concerning this study are using a control and experimental group to determine the relationship between anxiety and the Relaxation Response nursing intervention.

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APPENDIX A

PERMISSION FOR THE STUDY

TEXAS WOMAN'S UNIVERSITY
COLLEGE OF NURSING
DENTON, TEXAS

DALLAS CENTER
1810 Inwood Road
Dallas, Texas 75235

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

AGENCY PERMISSION FOR CONDUCTING STUDY*

THE Veteran's Administration Hospital - Temple Center

GRANTS TO Mary Janeshutz

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:

Hospitalized Post M.I. Patient's Anxiety and Implementation of the Relaxation Response Nursing Intervention

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 stu-
    dent 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_____

Robert G. Rosseweg, M.D.
Signature of Agency Personnel

Mary M. Janeshutz
Signature of student

Anna G. Burkhard RN, MS
Signature of Faculty Advisor

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

TEXAS WOMAN'S UNIVERSITY

Human Research Committee

Name of Investigator: Mary Janeshutz   Center: Temple

Address: 3000 West Adams #132   Date: March 10, 1978

Temple, TX 76501

Dear Ms. Janeshutz:

Your study entitled Hospitalized Post M. I. Patient's Anxiety and
Implementation of the Relaxation Response Nursing Intervention
has been reviewed by a committee of the Human Research Review Committee

and it appears to meet our requirements in regard to protection of the

individual's rights.

Please be reminded that both the University and the Department

of Health, Education and Welfare regulations require that written

consents must be obtained from all human subjects in your studies.

These forms must be kept on file by you.

Furthermore, should your project change, another review by

the Committee is required, according to DHEW regulations.

Sincerely,

C. K. Rozier

Carolyn K. Rozier, Ph.D.
Chairman, Human Research
          Review Committee
at_____Denton_____.

jc

cc: Graduate School

March 7, 1978

Robert Barnes, M.D.
Chief of Cardiology
Veterans Administration Center
Temple, Texas

Human Research Review Committee
Texas Woman's University
Denton, Texas

To The Human Research Review Committee:

I hereby consent to oversee the reseach project, as Chief
of Cardiology at the Temple V.A. Center, of Mary Janeshutz.
I foresee very minimal risk to the patient that agrees to parti-
cipate in this study; to reduce any potential risks that have
been identified and may be encountered, I will be consulted by
the investigator concerning the patient that is to participate
and will medically follow him personally and/or inform the
physician to whom he has been assigned about the project,.including
the risk factors involved.

Sincerely,

Robert Barnes, M.D.

March 8, 1978

Robert Barnes, M.D.
Chief of Cardiology
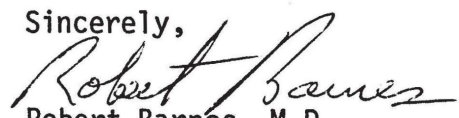Veterans Administration Center
Temple, Texas

Human Research Review Committee
Texas Woman's University
Denton, Texas

To the Human Research Review Committee:

The metabolic equivalents required to practice the relaxation
technique proposed in the study by Mary Janeshutz, for the post M.I.
patient on the sixth day would be approximately 1 MET. The activity
level for the uncomplicated post M.I. patient is generally between
1 to 3 METS, six days after an infarction.

I foresee no problems concerning this aspect of the study and will
be closely monitoring the subjects that have been selected.

Thank you.

Sincerely,

Robert Barnes, M.D.

APPENDIX B

STATE-TRAIT ANXIETY INVENTORY

SELF-EVALUATION QUESTIONNAIRE
STAI FORM X-2

NAME _____ 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 *generally* feel. 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 how you generally feel.

	ALMOST NEVER	SOMETIMES	OFTEN	ALMOST ALWAYS
21. I feel pleasant	①	②	③	④
22. I tire quickly	①	②	③	④
23. I feel like crying	①	②	③	④
24. I wish I could be as happy as others seem to be	①	②	③	④
25. I am losing out on things because I can't make up my mind soon enough	①	②	③	④
26. I feel rested	①	②	③	④
27. I am "calm, cool, and collected"	①	②	③	④
28. I feel that difficulties are piling up so that I cannot overcome them	①	②	③	④
29. I worry too much over something that really doesn't matter	①	②	③	④
30. I am happy	①	②	③	④
31. I am inclined to take things hard	①	②	③	④
32. I lack self-confidence	①	②	③	④
33. I feel secure	①	②	③	④
34. I try to avoid facing a crisis or difficulty	①	②	③	④
35. I feel blue	①	②	③	④
36. I am content	①	②	③	④
37. Some unimportant thought runs through my mind and bothers me	①	②	③	④
38. I take disappointments so keenly that I can't put them out of my mind	①	②	③	④
39. I am a steady person	①	②	③	④
40. I get in a state of tension or turmoil as I think over my recent concerns and interests	①	②	③	④

SELF-EVALUATION QUESTIONNAIRE

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

STAI FORM X-1

NAME _____ 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

APPENDIX C

RELAXATION RESPONSE PROTOCOL

Practice this technique once a day for twenty minutes,
before a meal or at least 2 hours afterwards:

1. Sit quietly in a comfortable position (you may use
   a hard back chair, the floor, a recliner -- whatever
   is comfortable FOR YOU).

2. Close your eyes.

3. Deeply relax all your muscles (become aware of
   clenched fists, tight facial muscles expressed as
   frowns, and any other muscles that become tight
   without your noticing); keep them relaxed.

4. Breathe through your nose. Become aware of your
   breathing. As you breathe out, say the word, "ONE,"
   silently to yourself. For example, breathe IN...OUT,
   "ONE"; IN...OUT, "ONE"; etc. Breathe easily and
   naturally.

5. Continue for 10 to 20 minutes. You may open your
   eyes to check the time, but do not use an alarm.
   When you finish sit quietly for several minutes, at
   first with your eyes opened. Do not stand up for a
   few minutes.

6. Do not worry about whether you are successful in
   achieving a deep level of relaxation. Maintain a
   passive attitude and permit relaxation to occur
   at its own pace. When distracting thoughts occur,
   try to ignore them by not dwelling on them and
   repeating "ONE." With practice, the response should
   come with little effort. Practice the technique
   once daily, but not within two hours after any meal,
   since the digestive processes seem to interfere with
   the elicitation of the Relaxation Response.

(Modified from Benson, Herbert, The Relaxation Response,
New York, William Morrow and Company, Inc., 1975.)