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WOMENS HEART STUDY:

SELF-EFFICACY AND THE REHABILITATION EXPERIENCES

FOLLOWING ACUTE MYOCARDIAL INFARCTION

By

Suzanne Pearsall Budd

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ABSTRACT

WOMENS HEART STUDY: SELF-EFFICACY & THE REHABILITATION
EXPERIENCE FOLLOWING ACUTE MYOCARDIAL INFARCTION

By

SUZANNE PEARSALL BUDD

Life-style readjustment and recovery after myocardial infarction (MI) present challenges for patients, families and health care professionals assisting in the rehabilitation process. Few studies related to cardiac rehab have included women, yet nearly 250,000 women have heart attacks yearly. Women often fail to attend cardiac rehab programs and fare less well then men in recovery from bypass surgery. This descriptive study explores factors that influenced the perception of the rehabilitation process and the role of self-efficacy in recovering post-MI women. Based on Bandura's (1986) Self-efficacy theory and Orem's (1971) Self-Care theory, three instruments were developed. A sample of 46 recovering post-MI female subjects, age 40 to 87 ($\overline{X}$=65) years, self-administered the Knowledge Test (Po = .90) and Self-efficacy Scale (a=.95) one day prior to discharge. The Rehab Success Scale (a=.92) was administered via telephone 10 weeks post-discharge by the nurse investigator. Pearson correlation was computed for Rehabilitation Success, Knowledge, and Self-efficacy. Significant relationships were found between Rehabilitation and Self-efficacy (r=.69, p=.001), but not for Rehabilitation and Knowledge. Multiple regression revealed Self-efficacy as the main contributor to perceived Rehabilitation

Success (adjusted r=.47, p=.0001). Self-efficacy assessment
and supportive strategies should be an integral part of
discharge planning and rehabilitation for post-MI women.

DEDICATED TO MY FAMILY

To my parents and role models, Gilson and Katherine Pearsall, whose love and support have been a constant source of inspiration and encouragement to me in my pursuit of education and life goals.

To my husband, the love of my life and best friend, Charles E. Budd, whose love, support, and good humor has lightened my load in pursuit of my goals and put a smile on my lips for many reasons.

To my children, Randy and Kathy Budd, who have grown up with Mom always taking some class or working on a paper. Maybe now, I'll be able to say "yes, let's go" more often. You have brought endless joy into my life.

To my sisters and life-long best friends, Margo Corkins and Connie London, whose encouragement and confidence in me pulled me through the rough days, especially near the end of dissertation writing.

And to my extended family, who have been waiting for this day for many years. Yes, next summer we can play!

Last, but not least, to the women heart patients, whose courage and self-efficacy, I have grown to admire and stand in awe!

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I am indebted to Dr. Louise Jenkins, who represents the epitome of what a nurse researcher should be, for inspiring me in the pursuit of my research study. As we discussed our mutual interest in self-efficacy theory and our findings, I experienced a genuine mentorship from her. She helped me gain new insights in interpreting the theoretical model in light of my research questions and provided direction for further analysis. Her commitment to the advancement of nursing science has made her an excellent role model.

Many people at the research sites facilitated the conduct of my research by allowing access to and for

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The Problem

INTRODUCTION:

Life-style readjustment and recovery after a heart attack presents challenges for patients, their families and health care professionals involved in assisting in the rehabilitation process. Nearly 1,500,000 Americans will have a heart attack this year and more than 512,000 will die. According to the American Heart Association, 48% of heart attack fatalities occur in women (AHA, 1991). Although countless studies have been conducted with post-myocardial infarction (MI) men in various phases of rehabilitation, few research studies have been conducted on post-MI women exclusively. Women have been poorly represented in terms of numbers in those studies that do include them.

Wenger (1985) has reported that nearly 250,000 women die of cardiovascular disease each year, they have a 75% greater mortality in the first month post-MI, they seldom attend rehabilitation outpatient exercise programs and they do not fare as well as men in recovery from heart bypass surgery. Thirty-nine percent of women, as compared to 31% of men, die within a year after their heart attacks, and the incidence of a second heart attack during the first four years is almost 20% for women as compared to 15% for men. Fortunately, 1,000,000 Americans will survive their heart attack, partly due to specialized units for heart attack

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victims that have reduced the in-hospital deaths by 30%.
Many of these survivors are women who will need rehabili-
tation programs to deal with the life style changes imposed
by their heart attack.

According to Boogaard's comparison of men and women
during post-MI recovery (1984), their experiences differ.
She states that women tended to feel guilty and even resist
assistance with household activities, whereas men decreased
their physical activities and allowed family members to take
care of them during the recovery period. Boogaard (1984)
further states that the men in her study engaged in cardiac
rehabilitation programs, whereas, the women engaged in no
structured cardiac rehabilitation program. Wenger (1985)
also remarked on the smaller numbers of women participating
in structured exercise regimens post-M.I., and their poorer
adherence to training regimens.

Parchert and Creason (1989) agree that past research
has not focused on womens' experiences post-MI nor the
social context of these experiences. They state that women
increase their activities by engaging in household chores,
which are primarily anaerobic and increase the workload of
the heart. They also state cardiac rehabilitation programs
should recognize the importance of relationships in terms of
how women define themselves and their concerns.

Statement of the Problem

The rehabilitation programs created for men may not be meeting the needs of post-MI women. Health care providers and educators need to discover the nature of women's experiences during the post-MI recovery period so that they can create optimal rehabilitation programs for post-MI women. Rehabilitation refers to the bio-psycho-social process leading to restoration or return to "normal" or previous level of functioning. . .such as, returning to work, family and social roles. The discovery of factors that influence recovery, rehabilitation and self-care behavior among post-MI women is important for the improvement of health status and quality of life.

In the rehabilitation process, functional ability or physical capability is the means most often used to define progress. Toward the goal of facilitating post-discharge physical functioning, outpatient cardiac exercise programs have been developed. Most of the programs include walking at various speeds on a treadmill, stationary bicycling, and rowing. Men tend to be more interested in activities related to their jobs and sports, and are taught the guidelines for these activities, according to Parchert and Creason, (1989). Women's physical activities tend to relate to housework as well as other physical activities. The notably low attendance by post-MI women in cardiac outpatient programs may be due to the exclusion of areas important for women. Rehabilitation programs may not

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include guidelines and exercises related to housework or physical activities that are of interest to women (Parchert and Creason, 1989). The format or presentation of cardiac exercise programs may not be conducive to promoting participation of female patients. Another possibility for low participation is that cardiac rehabilitation exercise programs may not be prescribed for women on any consistent outpatient basis.

Nature of current rehabilitation programs: The rehabilitation of cardiac patients is based on the premise that most patients can and should return to normal (or near normal) independent and productive lives after experiencing a heart attack (Comoss, 1985). Most cardiac rehabilitation programs are designed on a patient-teaching educational model with the major focus on information dissemination. The information relates to the physical aspects of the MI and care, risk factor modification, and adjustments for a healthier life-style. Most programs start in the hospital and some continue through recovery at home. Programs that include a home phase are generally offered through out-patient departments or community rehabilitation units and focus primarily on progressive exercise. There are basically four phases to cardiac rehabilitation programs. The following cardiac rehabilitation program is based on Comoss' (1985) design:

In-Hospital Phases

1. __Phase one--Acute phase__: During the acute phase the
   patient is in the Coronary Care Unit (CCU) in an
   unstable condition. Explanation of care is given to
   decrease anxiety, procure cooperation and provide
   comfort with the surroundings. The patient is not held
   responsible for retaining information at this point.

2. __Phase two--Post CCU/Step-down Unit__: The patient's
   physical condition is stable and he/she is transferred
   to a Step-down Unit. Teaching and discharge planning
   occur at this time. The client is taught about the
   disease and healing process, for example, risk factors
   that lead to MI, the healing process that takes
   approximately six to eight weeks and the relationship
   of the therapeutic regime to promote healing. The
   patient is also taught about medications to be taken,
   activity guidelines and how to monitor one's own
   exercise tolerance, diet, and what to do in case of
   chest pain. Cardiac bedside exercises and ambulation
   are added. Follow-up appointments with the physician
   are arranged. Educational goals are aimed at
   increasing the patient's knowledge of self-care at home
   following discharge from the hospital. This phase
   lasts approximately five days.

At Home Phases

3. **Phase three--Recovery and Beginning Rehabilitation:**
    The assumptions of the recovery phase are that the
    patient and/or a family member have had the in-hospital
    post-MI teaching, have retained the information and are
    willing to engage in self-care behaviors (and for
    family. . . care-giving activities) at home that
    promote a healthy recovery. It is at this time that
    the knowledge and understanding of rehabilitation goals
    and self-care (such as performing cardiac exercises and
    resting between activities) are put to the test as the
    patient and family begin to make life-style adjustments
    and changes. The patient may be enrolled in a
    community outpatient rehabilitation program near the
    middle or end of this phase. This phase lasts
    approximately six to eight weeks post-MI.

4. **Phase four--Rehabilitation phase:** This phase is
    characterized by the beginning resumption of "normal"
    or previous activities, such as, return to work (part
    or full time), and return to social and family role
    functions. Hopefully the needed life-style changes
    have been implemented and the client is now engaged in
    a cardiac rehabilitation program of progressive
    exercise. This phase lasts indefinitely.

Factors contributing to rehabilitation: Successful
rehabilitation is based on the assumption that the client
and family have the knowledge, capability and desire, the

physical stability and the social support to engage in activities that support a new, healthier life-style. Adherence to prescribed regimes is explained by various models and theories such as the health belief model, coping and adaptation models (Hentinen, 1986, Lazarus & Folkman, 1984, Janz, 1988). According to Hentinen (1986), teaching is considered the major method for promoting adherence, regardless of the model selected. The rehabilitation program outlined above then would seem to meet most of the needs of post-MI patients. . .at least the knowledge or informational needs. However, this is not totally supported by what little research exists for women. (Boogaard, 1984; Mickus, 1986; Wenger, 1985).

An exciting new approach to the study of human responses, is Bandura's Self-efficacy theory, which was derived from Social Learning theory. Reseachers exploring Self-efficacy theory in various fields have reported it's relevancy in the health care field as well. Examples include, post-MI exercise testing (Ewart, Taylor, Reese, & DeBusk, 1983); risk factor reduction, such as smoking cessation and weight control (Allen, 1988); activities of daily living during post-MI recovery (Jenkins, 1985) and diabetic self-care (Crabtree, 1986). Two studies relating to post-MI patients were conducted by Ewart, et al. (1983) and Jenkins (1985). Ewart and colleagues studied the increase in self-efficacy relative to pre- and post-exercise stress testing of post-MI men, and noted a significant

increase in self-efficacy scores. Jenkins (1985) measured the complex process of how patients assess their self-efficacy related to activities of daily living behaviors as they recovered from myocardial infarction. The majority of studies relating to self-efficacy theory, however, were predominantly about men.

Self-efficacy theory is interesting as a framework for research related to post-MI recovery and rehabilitation of women for several reasons. The theory involves self-beliefs in terms of capabilities and the effort one puts forth to accomplish certain goals. In the past, women and girls have been the subject of research related to self esteem and locus of control. Self-efficacy theory provides the opportunity to examine perceived capabilities, a related concept, using a new approach (Bandura, 1986). The theory also offers a positive way to stimulate beliefs in personal competencies.

Another reason why self-efficacy theory is appealing is because it includes a social-interactional component and emphasizes that behavior is influenced by social inter-action. Thus, one of the main ways in which women are influenced developmentally, through social interaction, is included in the theory. Both personal competencies and social support may foster self-care behaviors. . .the kind of behaviors that may be very important in cardiac rehabilitation.

Social support has been promoted in most educational models by including the spouse in the teaching sessions. Traditionally, the wives of post-MI patients have attended the teaching sessions, especially the dietary management and medication taking sessions. However, this has not been the case when women are the patients. Husbands tend not to be invited and/or tend not to attend with their post-MI wives.

Other researchers have approached rehabilitation from a social support context. Dracup, Meleis, Baker and Edlefsen support the view "that role supplementation is an important adjunct to the physical conditioning provided in outpatient cardiac rehabilitation programs" (1984, p. 113). They advocate a program to support the patient and spouse in dealing with the changing roles throughout the recovery and rehabilitation period. They suggest role modeling, role rehearsal and clarification of new roles as strategies to support role supplementation. One of the benefits of the program is the formation of a reference group with whom couples can identify, share feelings and receive confirmation and emotional support. This is similar in concept to what Bandura's Self-Efficacy Theory proposes relative to social interaction.

Although several authors suggest that knowledge, self-efficacy and social support may have an effect on post-MI men relative to promoting recovery and rehabilitation, there is no clear evidence to support this for women.

PURPOSE

The purpose of the study is to identify factors that influence the recovery and rehabilitation process for women as they recover from a myocardial infarction (MI). In the previous section, the nurse researcher raised several questions about factors related to the goal of facilitating recovery and rehabilitation and creating optimal rehabilitation programs for post-MI women. These questions include:

1. What are the experiences that post-MI women have during the recovery and rehabilitation period at home (phase three and four)?

2. What factors influence successful rehabilitation for post-MI women? For example, is knowledge a major component? Is there a self-efficacy component that also influences the rehabilitation process? What is the role of social support in the recovery and rehabilitation process?

3. What unknown factors are encountered by women that serve as barriers to recovery and rehabilitation ? What enhances recovery and rehabilitation for women?

The questions are presented in a more formalized form below.

RESEARCH QUESTIONS:

1. Do women with a basic knowledge of diet, medications, activity level and factors related to disease and healing process perceive a more successful level of recovery and rehabilitation?

2. Do women who perceive themselves as self-efficacious for home <u>self-care</u> perceive a more successful level of recovery and rehabilitation?

3. Do women who <u>negotiate social support</u> perceive a more successful level of recovery and rehabilitation?

4. Do women who have a higher level of knowledge and also have a higher level of Self-efficacy perceive a more successful level of recovery and rehabilitation?

<u>Theoretical Base for the Study:</u> Bandura's Self-Efficacy Theory has been selected as the conceptual framework for exploration of the research questions. Bandura's Self-Efficacy Theory was selected because the theory incorporates the variables of interest . . . knowledge, self-efficacy and negotiated social support.

Theoretically, Bandura postulates the positive interactive influences of three classes of factors. These factors are <u>P</u>ersonal factors, <u>E</u>nvironmental factors and <u>B</u>ehaviors for successful functioning. See Figure 1.

Personal beliefs include what a person is thinking and feeling. Environment factors include all the social resources available for social support. Behavior includes actions and responses such as physical action in performing a task.

Three Classes of Factors

1. PERSONAL FACTORS include:
Thoughts or cognitions,
Feelings, values, attitudes, motives,
knowledge, Problem-solving, Self-efficacy
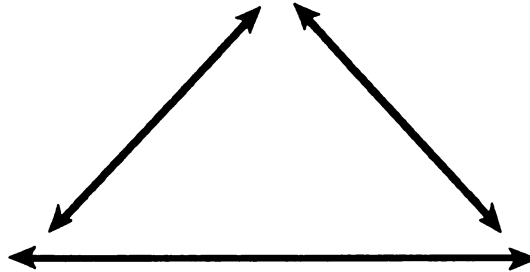
2. ENVIRONMENTAL FACTORS include:
Social supports,
Role relationships & function
Family and household member
"in relationships"
Social Economic Status
Work Status
Social institutions (health
care system for teaching
knowledge and exercise
programs)

3. BEHAVIORS include:
Physical actions, "body
language, exercise
Self-care behaviors
Performances (work,
play, etc.)
Altercations, verbal
statement & written
work.

Figure 1-1. Bandura's Self-Efficacy Model

The model proposed for this study is derived from Bandura's model. In this study, personal factors are knowledge and self-efficacy, the environmental factors are social supports and the behaviors are rehabilitation self-care behaviors. Figure 2 depicts the proposed study model derived from Bandura's model. The variables of interest are starred (*).

Bandura offers the following statement in support of self-efficacy theory. "In social, intellectual, and physical pursuits, those who judge themselves highly efficacious will expect favorable outcomes, self-doubters will expect mediocre performances of themselves and thus negative outcomes. . .most outcomes flow from actions" (Bandura, 1986, p. 392). What people think, believe, and feel affects how they behave, that is, the amount of effort they will put forth to achieve.

This study will focus on the home phase of recovery and rehabilitation to discover factors that enhance and serve as barriers to successful rehabilitation. The role of patient knowledge, self-efficacy, and negotiated social support will be explored. Also the experiences women share about their recovery and rehabilitation will be described.

The personal factor related to knowledge will include knowledge of self-care. The self-efficacy factor will relate to perceived capability of self-care behaviors during recovery and rehabilitation. The social support factor will relate to the assistance obtained for self-care during
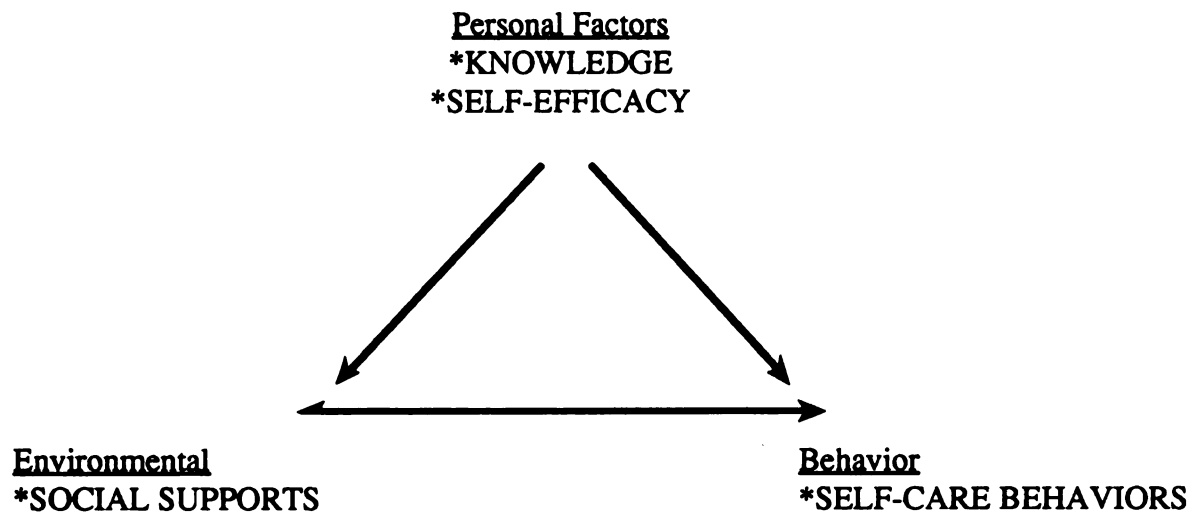
<u>Figure 1-2</u>.   Proposed Model for the Women's Heart Study

recovery and rehabilitation. Self-care behaviors are the
target behaviors, which include, activities of daily living
and those behaviors such as risk modification, activity
restrictions, progressive exercises, dietary modification,
etc., that are recommended for recovery and rehabilitation.
The influence of the independent variables knowledge, self-
efficacy, and social support will be explored to determine
their influence on the dependent variable, self-care
behaviors for a perceived successful rehabilitation.

Definitions

Self-efficacy - perceived capability to perform a task.

Knowledge - cognitive comprehension of content related to
the topic of interest.

Negotiated social support - assistance enlisted for care of
self and/or family and work roles, emotional confirma-
tion secured, and/or informational resources obtained
to enhance self-care or knowledge.

Role function - the activities or behaviors one carries out
in the performance of the role, e.g. the mothering
role.

Rehabilitation self-care - activities undertaken to provide
care to self, such as, personal hygiene, health
regime adherence and health promotion.

Significance of the Study: There is the potential in this
study of discovering factors that influence the recovery and
rehabilitation process of women as they recover from a heart
attack. Through this research, information could be gained

related to the experiences women have and the factors that enhance or serve as barriers to rehabilitation. Programs could be designed to meet the unique rehabilitation needs of women. Health care providers could gain a better understanding relevant to post-MI women's experiences and thus, devise interventions based on these needs.

Research using the self-efficacy framework could lead to a deeper understanding of the theory and extend the theoretical model to another group related to the health field, post-MI of women.

Report of the Public Health Service Task Force on Women's Health Issues calls for establishing priorities for women's health issues, such as, preventive service and the management of chronic illness that cannot be prevented at this time. "The greater longevity of women contributes to their greater risk for chronic disease" (Women's Health Task Force, 1985, p. 79). Toward this effort, research related to post-MI recovery could add information to the growing demand for knowledge related to women's health issues.

OVERVIEW OF THE STUDY

Scope of the study: Post-MI women were selected from two Lansing, Michigan area acute care hospitals. There were two phases of data collection. The in-hospital phase included the administration of a knowledge test and a self-efficacy scale which incorporated negotiated social support. The home phase utilized a telephone interview to collect data related to perceived level of rehabilitation success.

Comparison of pre-discharge variables with post-hospital experiences were described and analyzed for potential predictive value, and to suggest changes in teaching and practice.

The time frame for the main study included eight months for in-hospital data collection with a two-month lag period for follow-up telephone interviews. Preceding the main study a pilot study was conducted. Pilot study results guided revision of the scales developed for the main study.

Limitations: Data was collected from subjects in one geographic location and may not apply to women in other areas of the country. No women other than caucasians elected to participate in the study, due to the limited number of hospitalized post-MI Afro-American, Asian, and/or Hispanic women in either hospital. All women who were diagnosed with acute myocardial infarction were approached. Fifty-one subjects participated in phase one, however, only 46 completed both phases of the study.

DISSERTATION PLAN

In chapter one, the problem related to recovery and rehabilitation for post-MI women is introduced. Factors suggested by current research that might influence successful rehabilitation are presented. Self-efficacy theory is introduced, as well as the research questions generated for the study.

Chapter two includes the review of literature relevant to the research variables, which include knowledge, self-

efficacy, and social support. The research questions are transformed to hypothetical statements for the purpose of hypotheses testing.

In chapter three the methodology is detailed for both the pilot study and the main study. Pilot study results are presented, along with revisions of the instruments developed for the main study. Rationale for a slight modification of the hypotheses from pilot study to main study is given.

Chapter four of the dissertation provides a detailed analysis of the statistical procedures carried out for testing the hypotheses. Results of other interesting findings are also reported, including factors that enhance rehabilitation as well as barriers. In addition, limitations of the study are acknowledge.

Chapter five concludes the dissertation by presenting discussions related to the research results, suggestions for teaching and practice and implications for future research.

CHAPTER II

LITERATURE REVIEW

The literature review is organized around the variables of interest --- knowledge, perceived self-efficacy, negotiated social support and self-care during rehabilitation. The variables are derived from Bandura's Self-Efficacy Model to address the research questions related to recovery and rehabilitation of post-MI women. Bandura's "Personal Beliefs" are represented by knowledge and self-efficacy, "Environment" is represented by social support environment, and "Behavior" is represented by self-care behaviors. Finally, the research questions are transformed into hypotheses.

According to present evidence and theory as represented in the literature, successful rehabilitation depends on a number of factors. The justification for each factor, as addressed in the research questions, is considered below.

Knowledge as a factor in successful rehabilitation

1. Do women with a basic knowledge of diet, medications, activity level and factors related to the disease and healing process perceive a more successful level of recovery and rehabilitation?

Numerous researchers have reported the need for and effectiveness of patient education programs for post-MI patients and their families (Pozen, Stechmiller, Harris, 1977); Comoss, 1979; Moynihan, 1984; Miller, Wikoff, McMahon, Garrett, Ringer, 1985; Garding, Kerr, Bay 1988).

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Pozen, et al. (1977) were able to demonstrate that a hospital-based teaching program was effective in improving patient knowledge, facilitating return to work, and decreasing smoking behaviors. The controlled trial included 102 male patients with acute myocardial infarction. The outcomes were attributed to the patient's increased knowledge of heart disease due to the teaching by nurse educators.

The main focus of the Miller, et al. (1985) study was related to medical regimen adherence for their sample of 87 men and 25 women MI patients. They believed that behaviors found to increase chances for optimal recovery for cardiac patients included following the prescribed physical activity, medications and diet, modifying the stress response, and decreasing the risk factors such as smoking. They also discovered that both attitudes and perceived beliefs of significant others were important indicators of adherence.

Grading, et al. (1988) focused on post-MI patients need for information and support during the recovery period at home. They utilized a telephone patient education approach to discuss the disease and healing process, medications, exercise, activity restrictions and rest, and diet to promote the acquisition of knowledge, safe self-care, and motivation. Their sample consisted of 23 men and three women in the experimental group and 21 men and five women in the control group. A significant difference was reported in

the area of MI disease understanding and exercise teaching for the experimental group, as well as a higher mean score for all other areas except rest.

Sivarajan and colleagues (1983) were unable to demonstrate the effectiveness of group education and counseling in modifying the individual risks factors of 219 male and 39 female post-MI patients. Three intervention programs aimed at reducing risk factors were compared. The programs were a teaching and counseling intervention; a teaching, counseling and exercise program; and a control group with routine medical and nursing management. The teaching topics included: atherogenesis; the infarction and healing process; risk factor modification; dietary changes; activity and exercise; stress and relaxation; return to work, play, and sexual activity; and emotional responses. The teaching sessions focused on information designed to reduce risk factors related to the dependent variables. The target (dependent) variables were cigarette cessation, dietary adherence and exercises to control weight.

Although positive trends were noted for some risk factors in the three and six month follow up periods, significance was not reached. The teaching of information occurred mainly in groups and did not address individual problems or risk reduction strategies. Sivarajan and researchers were left with the belief that the acquisition of correct knowledge is only one of many factors that influence changes in desired behaviors.

Numerous researchers have provided strong evidence linking patient education to successful rehabilitation following a heart attack (despite the Sivarajan study). Although some studies have included a minimal number of women, possible differences have not been addressed. It is important to know how significant patient education is for women. In this study, patient education to increase patient knowledge for self-care at home is hypothesized to be an enhancing factor in successful rehabilitation.

Self-efficacy as a factor in successful rehabilitation:

2. Do women who perceive themselves as self-efficacious for home self-care perceive a more successful level of recovery and rehabilitation?

Recently, attention has focused on the role of "self-efficacy" in predicting the attainment of health care behaviors. Self-efficacy theory offers an appealing framework for predicting health behaviors. It is based on Bandura's Social Learning Theory, which assumes an interactive model of human behavior, and focuses on the interaction between perceived abilities related to performance of specific behaviors. Self-efficacy is concerned with one's belief about ability to perform a specific task or achieve a certain goal. Self-efficacy focuses on efficacy expectation -- the belief about one's capabilities to perform certain behaviors, whereas outcome expectations refer to the belief that a certain behavior

will lead to a specific outcome. Efficacy expectation is the focus in this research study.

Bandura's approach to measuring self-efficacy expectation is to devise a separate scale for each behavior by listing a series of activities to test each behavioral domain, such as the testing of adherence in the domain of diet or physical activity.

Self-efficacy research has examined a variety of health care risk reduction studies, such as smoking cessation, weight control, physical exercise, and diabetes self-care. Strecher (1986) examined the relationship between the patient's perceptions of susceptibility to illness, social support, self-efficacy and subsequent changes in smoking patterns. Of special interest in this prospective study of 146 men who were inpatients and outpatients at the Veterans Administration Medical Center is the relationship of efficacy expectation related to smoking. The perceived ability to refrain from smoking was tested by presenting ten situations for participants response (such as perceived ability to refrain from smoking after a meal, or when feeling impatient). An inter-item reliability score (alpha) of .80 was obtained for the efficacy expectation index.

After three months, cigarette smoking reduction or cessation was again measured. Subjects reporting high perceived susceptibility to illnesses related to smoking and high self-efficacy expectations for smoking reduction demonstrated the highest average percentage of smoking

reduction (P <0.03) among all the subjects. Subjects reporting high susceptibility but low efficacy were in the least likely group to reduce or cease smoking. Strecher (1985), warned against fear-arousing tactics sometimes used to scare people into smoking cessation without providing the education, skills, or support to effectively deal with quitting smoking.

Although no direct relationship was found between social support and anxiety on smoking reduction, it was the belief of Strecher (based on informal client interviews) that high anxiety (stress) acts to reduce self-efficacy expectations and that social support may serve to buffer the effects of high anxiety. Many of the subjects reported chronic stress, boredom and a feeling of helplessness in regard to smoking cessation. Social support in the form of encouragement from others was associated with a high desire to quit smoking. Strecher (1985), cautions that these subjects were characterized by a lower level of income and education, and a higher level of illness and stress than in the general population.

Self-efficacy theory was utilized by Ewart et al. (1983), in a cardiac rehabilitation program to increase the sense of physical exercise efficacy in 40 post-MI men with a mean age of approximately 52 years. Self-efficacy (SE) judgements were tested at three different times: Prior to treadmill testing (SE #1), after treadmill testing but before a counseling session (SE #2), and after counseling

(SE #3). The domain of physical activity was tested by using six self-efficacy scales that pertained to running, walking, lifting objects, stair climbing, sexual intercourse, and general physical exertion. Correlation between the first self-efficacy test (SE #1) and the peak heart rate achieved by the patients during treadmill testing approximated r=0.36. Self-efficacy scores post treadmill (SE #2) correlated with the peak heart rate achieved at r=0.50, a much higher correlation level then pre-treadmill (SE #1).

Ewart and colleagues concluded that high self-efficacy leads to greater effort, which in turn leads to higher achievements, which further enhances self-efficacy. Post exercise self-efficacy scores were significantly higher and most notable in the activity scores for stair climbing, running, and general activity. The effect of counseling on self-efficacy scores (SE #3) was to significantly (p=>.005) increase the scores above baseline treadmill scores, most notable for the activities of lifting and sexual activity. Home activities were best predicted by the modified judgements (SE #3). These results highlight the interactive relationship between self-efficacy perceptions and performance and the capability of raising perceptions of self-efficacy. The authors defended the administration of three self-efficacy testing sessions within a three hour time period on the basis that "significant increases in self-efficacy resulting from repeated administration of

self-efficacy questionnaires have not been noted in previous studies" (Ewart et al., 1983, p. 1079).

Adherence to a prescribed regime for patients with chronic obstructive lung disease was studied by Kaplan, Atkins and Reinsch (1984). Efficacy expectation and locus of control (a more generalized expectancy) were compared on five activities, which included walking, lifting, climbing stairs, tolerating stress, and tolerating anger. Sixty subjects (22 males and 38 females) were randomly assigned to one of four groups: a cognitive group, a behavioral group, a cognitive-behavioral group, or a control group. The cognitive group treatment consisted of self-talk techniques. The behavioral group treatment consisted of goal setting, reinforcers, a contract, relaxation exercises and contingency management. The cognitive-behavior group were exposed to both treatments, and the control group received routine attention and served as a comparison group. The changes in walking self-efficacy at three months were significantly correlated with walking adherence (r=.32). Locus of control as measured by the Health Locus of Control scale, was poorly correlated (r=-.01) with the walking behaviors. There were no significant differences among the three groups relative to increasing efficacy expectation. Therefore the researchers made no claim on which treatment was the best. They did discover with factor analysis a significant main effect when comparing the cognitive versus the behavioral components among groups. The behavioral

component positively influenced walking behavior. The walking behavior served as enactive mastery relative to the desired compliance behavior. Enactive mastery has a strong influence on self-efficacy expectancy.

Crabtree (1986) found that an important determinant of self-care among 143 ambulatory clinic diabetic subjects (57 males, 86 females) was self-efficacy. She examined demographic variables, self-efficacy, and social support to predict diet, medication-taking, exercise, and general self-care behaviors. Internal reliability for the 25 item self-efficacy scale she devised was .79. Multiple regression analysis demonstrated that the self-efficacy scale was the best predictor of all of the models except medication. Crabtree acknowledges surprise that social support did not enter any of the four regressions. The general self-care model explained variance was 52% (R square=.52), 47% for the diet model, 35% for the exercise model, and 26% for the medication model.

Jenkins (1985) studied the complex process of how patient assess their self-efficacy related to a variety of behaviors as they recovered from myocardial infarction. She conducted a repeated measure exploratory study of 30 men and 10 women, twice during hospital stay and at one and four weeks post discharge. Assessments of self-efficacy expectation and outcome expectation remained generally stable over time. Activities included walking, following a diet, resting after a meal, lifting and tolerating a

disagreement. Internal consistency for the five scales were in the .90's, except for resting which had an alpha level of .68. Jenkins reported the findings for each of the five domains separately at the four different measurement times. She found that over the course of the study there were some behaviors which were more significant then others, and no factors were found that systematically related to self-efficacy. The strength of efficacy expectation increased significantly over time for all behaviors in the absence of any interventions.

Based on the preceding research studies, self-efficacy is an important construct to examine in rehabilitation, particularly for women recovering from MI's. Self-efficacy is operationalized as the belief that one is capable of performing the prescribed self-care behaviors at home. It is hypothesized that self-efficacy will positively influence rehabilitation.

Social support as a factor in successful rehabilitation

3. Do women who negotiate social support perceive a more successful level of recovery and rehabilitation?

According to Northouse (1988), research into support provided by spouses, family members and friends has provided useful data for understanding the relationship between adjustment to chronic illness and social support. She views social support as a characteristic of the social interaction that buffers the effect of stress on the individual's health

by lessening the perception of stress or by facilitating the coping efforts to deal with stress. Stress occurs when demands exceed the individuals resources for handling them. Northouse's study dealt with the social support that the mastectomy patients and husbands received during a 30-day period following surgery. Patients and husbands who reported higher levels of social support reported fewer difficulties in adjusting after surgery.

Social support and role functioning: Boogaard (1984) was interested in the differences between men and women recovering from myocardial infarction and the rehabilitative process. Utilizing a retrospective semi-structured interview, she compared 10 men and 10 women (age 25-55) in three areas: (1) Return to physical activity, (2) psycho-social aspects, and (3) family interrelationships. One of the major differences she found was that men tended to adhere better to physical activity prescriptions. For example, during the first week home men rested, relaxed and walked in the house, whereas women tended to do general cleanup, dishes, meal preparation, dusting, making beds, etc. Men allowed others to wait on them. Women resisted help and felt guilty when they accepted help from their family. At four weeks, 50% of the men enrolled in structured cardiac programs, whereas only 10% of the women had enrolled. At six months post-MI, 67% of the previously employed women still had not returned to work as opposed to 10% of the men. Both men and women experienced depression

post-MI and all participants returned to pre-infarction sexual activity patterns by three months, however, women lagged behind men.

Boogaard recommended that cardiac rehabilitation programs be developed to meet the special needs of women. Development of guidelines incorporating the energy requirements of household tasks and education for progression of activity was also recommended. She further stated that women should be helped to understand feelings such as depression and guilt during early recovery and to learn to accept help from family members in carrying out role responsibilities (Boogaard, 1984).

Robinson (1985), a sociologist involved in the "Use of Time Project", reported that although married men do twice the housework now than they did back in 1965, women still perform twice as much housework (cleaning, cooking, laundry, vacuuming) as their husbands. He attributed this increase in housework by husbands to the fact that wives are becoming part of the work force. Robinson pointed out that despite the assistance of husbands, wives who have a job outside the home, as well as housework responsibility, have the equivalent of two jobs. This is even more apparent if there are young children in the family.

How one perceives their main role in life and the adjustments imposed by a chronic illness were addressed in an ethnographic study by Johnson and Morse (1990). The researchers were interested in the process of adjustment

after MI. Fourteen subjects, seven men and seven women, from a cardiac exercise rehabilitation program were interviewed. They discovered four stages related to control issues were involved in the process of adjustment: stage one involves defending against the threat of loss of control; stage two involves coming to terms with the MI; stage three involves strategies to regain control; and stage four includes accepting limitations, refocusing on other issues in life and a sense of perceived mastery. Issues related to social support were also raised, particularly hesitancy in giving up certain role-activities. Johnson and Morse suggested that self-worth is often connected to role functions. This could have implications for the most common role women play -- the "mothering role."

Woods, Yates and Primomo (1989) state that the whole family experiences life differently when one of it's members is diagnosed with chronic illness. They describe three modes of support and suggest sources for each. The three types of support are instrumental, expressive, and informational. Instrumental support, such as physical assistance with personal care and homemaker tasks, is best provided by individuals less connected, such as extended family or friends. Expressive support, for affirmation, is best provided by family members or friends with strong ties. Informational support and advice can best be provided by health care providers or experienced individuals.

Woods and colleagues found that when men are ill they generally rely solely on their wives for support. Because women generally have a more varied and extensive network then men, they have a greater access to support. In addition, they suggest further research regarding the acceptance of support which may incur future indebtedness.

Researchers also need to consider the possibility that the recipient of too much support, especially instrumental support, may experience feelings of uselessness. In some cases, spousal support of post-MI patients had a deleterious effect. The spouse took on the role of "enforcer" over adherence to the physical activity regime of the post-MI patient.

Woods and colleagues contend that different types of support are most effective when the support is matched to the illness demands. For example, if weakness is a problem, the most effective support will be instrumental.

<u>Traditional Role Expectations</u>: Despite changes in women's sex role orientation over the past decade or so, women in the age range at the highest risk for MI (40 and above) have most likely been raised in a traditional fashion with traditional role expectations. These expectations include household responsibilities, raising children and nurturing activities, to name a few. If, after a heart attack, a woman is unable to physically carry out her role expectations, she may experience anxiety or depression which, in turn, could impede rehabilitation.

Another problem for post-MI women is that self-expectation of role performance may drive a post-MI woman to over-extend physical activity guidelines. Extended physical activity could lead to post-MI complications such as congestive heart failure or another MI.

Thus, the working woman may be caught in the double bind of work responsibilities and traditional home responsibilities. Although her employer may give her time off for convalescence and rehabilitation, will her family? Will she take time off from homemaking tasks without guilt? Is she willing to negotiate roles, delegate tasks and utilize social supports such as family and friends? As pointed out in the research, people who utilize social support are less likely to experience complications. It would be important to determine negotiation and utilization of social support for post-MI women. It is hypothesized that women who negotiate social support at home, in the work place, and in social roles will see themselves as having a more successful rehabilitation.

Interaction of factors in successful rehabilitation:

4. Are women who have a higher level of knowledge and also have a higher level of self-efficacy perceive a more successful level of recovery and rehabilitation?

Bandura postulates the positive interactive influences of Personal factors (knowledge and self-efficacy) and Environmental factors (social supports) to enhance Behaviors

(self-care behaviors) for successful functioning (perceived successful rehabilitation).

Each of the preceding variables, knowledge, self-efficacy and social support, are hypothesized to influence recovery and rehabilitation separately. Therefore it seems logical that the greater number of positive factors or resources a woman has available, the more likely she is to experience a successful rehabilitation.

The greater number of positive factors or resources available, the higher the self-efficacy potential, the more likely the pursuit for success. It is further suggested by Bandura's theory that should one factor be low, such as social support, that other factors, such as high knowledge level, could be sufficient enough to positively influence rehabilitation. For the purpose of this study, it is hypothesized that the greater number of positive factors a woman has available, the more likely she is to experience a successful rehabilitation.

Research and theory suggest that the likelihood of successful recovery and rehabilitation depend on certain factors. For women these factors are hypothesized to be knowledge, perceived self-efficacy, and negotiated social support. For purposes of testing, the research questions have been transformed into the following hypotheses.

HYPOTHESES:

1. Women who have a basic <u>knowledge</u> of diet, medications, activity level and factors related to disease and healing process will perceive a more successful recovery and rehabilitation.

2. Women who perceive themselves as <u>self-efficacious</u> for home self-care will perceive a more successful recovery and rehabilitation.

3. Women who can <u>negotiate social support</u> will perceive a more successful recovery and rehabilitation.

4. Women who have a higher level of knowledge and also have a higher level of self-efficacy are more likely to perceive a higher level of rehabilitation.

<u>Summary of Chapter II</u>

A review of the literature relevant to the research variables was summarized and presented. The variables include, knowledge, self-efficacy, and social support. The paucity of research related to post-MI women limit an extensive review. However, research and theory extracted from other areas are sufficient to support four hypotheses. These four hypotheses, which were presented as research questions in Chapter I, have now been transformed to hypothetical statements for the purpose of hypotheses testing.

CHAPTER III

DESIGN AND METHOD

An exploratory, descriptive design was employed to investigate the relationship of self-efficacy, knowledge, and negotiated social support with successful rehabilitation among women recovering from a heart attack. This chapter describes the procedures for selecting and contacting patients, collecting data, protecting human subjects, and developing instruments for testing the hypotheses. The pilot study conducted to test the instruments, the results of the pilot study, the revision of instruments, and the revised model are also described. The design of the main study is included.

Data Collection Procedure

The procedure for data collection is outlined at the onset of this section for clarity and to serve as an overview or easy reference. Table 3-1 displays the schedule.

Table 3-1. <u>Procedure schedule for data outline:</u>

    1.   Select subjects - nurse researcher
    2.   Obtain signed consent forms - nurse researcher
    3.   Administer Interview questions
        a.   Demographic ⎤ interview by
        b.   Social   ⎦ nurse researcher
    4.   Administer tests
        a.   Knowledge level Test ⎤ subjects
        b.   Self-efficacy Scale ⎦ take by self
    5.   Collect chart data - nurse researcher
    6.   Post-discharge Rehabilitation Scale - telephone interview by nurse researcher

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Selection of Subjects: The population for this research study was women who had a documented acute myocardial infarction, had reached the age of 21 years, could speak and read the English language, would be discharged home from a local area hospital and had agreed to participate.

Sample: The subjects for this study were selected from volunteers of the above population. All women who met the criteria were invited to participate in the study. Fifteen subjects were recruited for the pilot study and fifty-one subjects were recruited for the main study. The subjects were recruited one day prior to discharge from two Lansing, Michigan hospitals. Subjects were contacted after they were transferred from the acute coronary care units to a non-acute or intermediate area called a step-down unit.

Patient contact: Once approval had been granted by each hospital's Human Subjects Review Committee, the nurse researcher presented inservice programs to acquaint the unit nurses with the study and to enlist their cooperation and collaboration in identifying patients. It was felt that the better the nurses understood the study the better they could address questions their patients might ask. The unit nurses identified potential subjects and released the names to the nurse researcher when she telephoned or visited daily.

Potential subjects were contacted on the step-down unit the day prior to discharge. This time was chosen because patients are physically stable and have received the

majority of their cardiac rehab teaching. The day of discharge is less desirable because it is often marked with last minute discharge instructions from various team members and patients and families are anxious to leave the hospital. The nurse researcher explained the study and the patient's potential involvement and then asked patients to participate. (See verbal explanation Appendix A).

Data collection: Once the consent form had been signed (Appendix B), the nurse researcher interviewed each subject to obtain social-demographic data. (See Social-Demographic Form in Appendix C). This took approximately 10 minutes.

The Knowledge Test was then introduced and information related to method of cardiac teaching was obtained. The subject and nurse researcher completed the first question together to serve as an example of how to complete the test and to ensure understanding. The subjects completed the true/false test on their own (see Appendix D). The test took 10 to 15 minutes. Because the purpose of the test was to assess basic knowledge related to cardiac teaching no time limit was enforced.

As soon as the Knowledge Test was completed the subject was given the Self-efficacy Scale (see Appendix E). This scale was completed in 10 - 15 minutes. Again, there were no time constraints.

While the subject was completing the self-administered tests, the nurse researcher collected the Chart Data to

obtain discharge information and to confirm diagnosis (see Appendix F). Upon completion of the two tests, the nurse researcher asked the subject if there were any questions or problems in answering the questions and then discussed any question or concerns raised. The nurse researcher referred any concerns regarding the patient's progress to the nurse. The nurse researcher then scheduled the post-discharge telephone interview with the subject. For the pilot study, the nurse researcher conducted the telephone interview approximately one month after hospital discharge. For the main study, the nurse researcher contacted the subject two months after discharge to conduct the telephone interview (see Telephone Interview Questions - Criteria for the Rehabilitation Success Scale in Appendix G). During the pilot study the nurse researcher discovered that patients needed more time to experience recovery and rehabilitation. This issue is discussed later under instrument development.

Approximately two months after discharge (one month for the pilot study) the nurse researcher contacted the subjects and established a convenient time for the Rehabilitation Success telephone interview. The majority of telephone interviews took place by the tenth week and took approximately forty- five minutes to one hour to complete. The time depended upon how much the subject had to say about the recovery and rehabilitation experience. The nurse researcher assured subjects of confidentiality and thanked them for their participation in the study.

INSTRUMENT DEVELOPMENT

Prior to beginning the main study, the nurse researcher developed instruments that measured knowledge, self-efficacy including negotiated social support, and rehabilitation and recovery of post-MI women, and pilot tested each. Three instruments were developed and pilot tested among 15 post-MI women at Northern Michigan Hospital, Inc., a 300 bed general hospital in Petosky, Michigan. The instruments were 1) a Self-efficacy scale, which included negotiating for social support, 2) a Knowledge test, and 3) a Rehabilitation Success scale (telephone interview). The nurse researcher also developed a Social-Demographic Interview form to collect general information from the subject.

Self-Efficacy Scale: Bandura's (1977a) definition of self-efficacy, the belief in one's capability to perform a task, was used as the construct of interest. Self-efficacy in this study related to self-care during recovery and rehabilitation of post-MI women. For this study, self-efficacy was defined as the patient's perceived capability to perform self-care behaviors. This was operationalized by determining the self-care behaviors or tasks expected of post-MI women during recovery and rehabilitation.

Based on the literature review of post-MI recovery and rehabilitation, the nurse researcher identified five areas of self-care as most relevant to measure among post-MI women. These areas were 1) maintaining a healthy heart diet 2) taking medication (nitroglycerine) 3) performing

prescribed activities & exercises 4) readjusting life style including modifying risk factors and dealing with emergencies, and 5) negotiating for social support. These areas reflected the crucial elements required for healthy behavior during rehabilitation.

In determining these elements, the nurse researcher considered the perceptions and concerns for recovery and rehabilitation encountered during discussions with post-MI women. Their concerns centered around such issues as return to previous role functions (family, household and job responsibilities), knowledge and understanding of the whole event and expectations related to medical regime adherence and health in general. Information from these women, in conjunction with the research literature, guided identification of items for the instruments used in the study.

The five major areas identified by the nurse researcher for the self-efficacy scale were subtitled: 1) Managing your Diet, 2) Taking Medications, 3) Rest, Activity & Exercise, 4) Arranging (Negotiating) for Social Support or Assistance, and 5) Life-style Adjustments including dealing with Emergencies, Stress Management and Risk Factor Reduction. The self-efficacy scale included 40 questions reflecting the five areas or domains. In the pilot study the self-efficacy scale was not subdivided into the specific domains; the items were intermingled. In the main study the self-efficacy scale was subdivided into five subscales. The scale was divided to make the Self-efficacy instrument

format more consistent with the theoretical construct, that is, to reflect that self-efficacy is domain-specific.

Self-efficacy perception was rated using a five-point Likert scale consisting of 0 = not at all confident, 1 = somewhat confident, 2 = moderately confident, 3 = very confident and 4 = completely confident in perceived capability to perform a specific task. A total score of 160 points was possible for the total 40 item scale.

Self-care task items referred to tasks that post-MI patients could be expected to safely perform during recovery. For example, the question "How confident are you that you could adjust your family diet to meet your heart diet needs," or "take nitroglycerine for chest pain" or "gradually increase your activity level safely" are examples of three items generated to test self-efficacy.

The Negotiated Social Support subscale of the self-efficacy Scale deserves special mention. Eleven items were developed to measure perceived capability to negotiate or enlist social support when needed. Woods, et al. (1989) suggested three types of social support, which include emotional support, personal assistance and informational support. Items were designed to represent all three types. Examples of enlisting or negotiating social support, that incorporate the three types of support, include, "How confident are you that you could: confide in spouse or friend about your true feelings," or "ask someone else to vacuum for you," or "call your nurse to get more

information." Data related to social support were also collected in other sections to determine availability of potential support persons. For example, in the pre-discharge Socio-demographic Interview, subjects were asked to identify family or significant others, live-ins, and friends who could provide assistance and serve as supports, because availability could influence social support negotiations. The majority of the Negotiated Social Support subscale items were based on role-supporting activities such as household responsibilities, getting emotional support and negotiating cooperation at work.

Prior to pilot testing, the self-efficacy scale was reviewed by one construct expert and two content experts for validity assessment. The content experts were nurses involved in the care of recovering post-MI patients and cardiac rehabilitation. The Content Validity Index (CVI) rating by the two nurse experts for content was CVI = .93. [The CVI is the proportion of items two content experts agree (rate the items 3-4 on a 4 pt. scale) fit or test the content or construct. Waltz, et al., 1984.] The nurse researcher consulted the self-efficacy construct expert at the inception of item development and scale construction for guidance.

The Cronbach Alpha formula was used to estimate the reliability of the pilot study self-efficacy scale. The reliability coefficient was α = .91 for the total self-efficacy scale in the pilot study.

Prior to the main study, two different nurse experts in cardiac nursing reviewed the self-efficacy scale. The CVI after revision was .95. A second expert in self-efficacy, who is a cardiovascular nurse researcher, also reviewed the questions prior to administration in the main study. A list of panel members and their areas of expertise is presented in Appendix H.

Revisions for the self-efficacy scale were made on the basis of expert recommendations. For example, division by domain was made for the main study and some items were reworded slightly for clarity and ease of understanding by the patient. Also the nurse researcher changed the words "activity progression" to "increase activity level" to provide a clearer understanding. See Appendix E for the revised Self-Efficacy Scale.

Scoring the self-efficacy scale was based on the subject's self-rating and the number of items answered. There were forty items, each with a ceiling response of four. Therefore, a maximum score of one-hundred and sixty could be attained if the subject self-rated a four for all forty items.

Knowledge test: The purpose of this test was to determine the patient's level of knowledge and understanding following cardiac teaching and prior to administration of the Self-Efficacy Scale. Several studies have reported the effects of patient-teaching for medical regime adherence and rehabilitation (Grading, et al., 1984, Miller, et al, 1985,

and Sivarajan, 1982). Therefore, it was important to establish the subjects' knowledge level for later comparison with rehabilitation level of success.

The nurse researcher generated the test questions from the hospitals' teaching program content and from the American Heart Association recommendations and guidelines for teaching recovering heart patients. The nurse researcher developed a total of 45 true/false questions reflecting the areas of heart function, diet, medication, activity and exercise, and chest pain. The Knowledge test was changed from a multiple choice format, used in the pilot study, to a criterion-referenced, true/false format for the main study. Since the main purpose of this test was to determine whether or not the subjects had a basic under-standing of five content areas, the nurse researcher felt that a criterion-referenced test was more appropriate than the norm-referenced, multiple choice format used in the pilot study. Patients would find the true/false format easier and less confusing than the multiple/multiple response format in the pilot study knowledge test. Two items were omitted as a result of format change to avoid redundancy. The Kuder-Richardson formula (KR 21) was used to estimate the reliability of the pilot knowledge test. The reliability coefficient was .77 for the pilot test. A panel of experts involved in cardiac teaching and post-MI recovery and rehabilitation assessed the content validity for the knowledge test (see Appendix H). Two raters

assessed the scale on two different occasions, once prior to pilot testing and once prior to administration of the main study. This assessment resulted in the changes described above for the main study. The Content Validity Index based on rater agreement for the pilot study multiple choice knowledge test was .89. The Content Validity Index for the main study true/false knowledge test was .91.

The nurse researcher scored the knowledge test according to the number of correct responses. There were 43 true/false questions, therefore, the maximum score was 43 points.

Rehabilitation Success Scale (Telephone Interview): A total of 90 questions, 58 self-rating items and 32 open-ended questions, were developed by the nurse researcher to measure the level of perceived success during rehabilitation and recovery. The "gold standard" of successful rehabilitation is viewed by cardiac rehabilitation professionals as the bio-psycho-social process leading to the restoration or return of "normal" (near-normal) functioning. The category "physical functioning" includes tasks such as self-care, walking, driving, household chores and job responsibilities. The category "quality of life" include tasks such as return to work, home and family roles, and social functioning. The nurse researcher developed questions based on literature review, on content from agency health assessment forms and from the goals of cardiac rehabilitation. The questions focused on activities of daily living (Mikus, 1986)

functional status after a coronary event (Allen, et al.1990, Tedesco, et al. 1990), social support during recovery (Parchert, 1989) return to work (Shanfield, 1990), and regime adherence. The nurse researcher operationalized the variable successful rehabilitation as following the prescribed rehabilitation regime, making the changes deemed necessary for a healthier life-style, and enlisting the support needed. For example, the nurse researcher developed questions such as "to what extent have you: followed your heart diet," or "increased your activity level as prescribed," or "enlisted assistance with household chores?" The interview questions paralleled many of the questions asked in the pre-discharge self-efficacy scale and social demographic interview. The purpose of the parallel questions was to compare pre-discharge self-efficacy expectancy with post-discharge perceived rehabilitation outcome data for potential predictive relationships. Also the nurse researcher developed several open-ended questions to tap barriers to, and enhancing factors in, the rehabilitation process.

The nurse researcher divided the questions into the following domains: 1) management of diet, 2) management of medications (specifically nitroglycerine), 3) management of physical activity and exercise (including employment), 4) risk factor modification, and 5) life-style readjustment. In addition, negotiating or enlisting social support was incorporated into each sub-division. The nurse researcher

asked subjects to rate their perceived level of performance using a five-point Likert scale, which ranged from 0 = not at all to 4 = most of the time/excellent. The open-ended questions were designed to solicit subjects' opinions about barriers and enhancers to successful rehabilitation in each domain as well as to solicit advice for other post-MI women, and to provide an opportunity to share any special comments about the experience (See Appendix G).

Content validity of the Rehabilitation Success sale was assessed by experts in cardiac rehabilitation; two experts were nurses, one expert was a physical therapist, and one expert was a nurse educator. The Content Validity Index of the self-rating scale was .85. The Content Validity Index was not calculated for the open-ended questions. The Cronbach Alpha (α) formula was used to estimate the reliability of the rehabilitation pilot scale and the coefficient was .78. Based on feedback received from panel members, the instrument was revised for the main study.

The nurse researcher made several revisions in the Rehabilitation Success scale (telephone interview) for the main study. For example, one question asking "to what extent have you experienced stress?," could not be scored in the pilot study in terms of success. If the subject experienced little stress she would receive a rating of 1 or 2, which reflects below average rehabilitation success. Therefore, this question was revised to ask "to what extent have you been able to manage stress?" This change allowed

for rating the <u>management</u> of stress, which is more a measure of rehabili-tation progress instead of the presence of stress. In addition, two items were dropped and seven items were added to the Rehabilitation Success Scale to better represent the sub-categories. The five new items were related to diet, medications, stress and two items concerning spiritual help. The nurse researcher also added two questions about perceived differences between men and women relative to post-MI recovery. The purpose of the questions was to seek their opinion about any possible differences between men and women in the recovery and rehabilitation process.

Furthermore, three informational questions were added at the end of the telephone interview for general information: 1) time waited before seeking medical care, 2) post-discharge complications and 3) re-admissions for complications and/or surgical procedures (See last page of the Rehabilitation Success Scale in Appendix G).

All tests were reviewed for face validity and ease of test taking by members of the panel of experts. Questions that were difficult to administer or failed to elicit appropriate or logical responses during the pilot testing were either revised or discarded for the main study.

One other change from the pilot study to the main study was the time interval between hospital discharge and administration of the Rehabilitation Success Scale. Subjects were interviewed four to six weeks post-discharge

for the pilot study. However, the nurse researcher found that more time was needed by patients to experience the recovery and rehabilitation process. Some patients had not yet returned for doctor's appointments. Other patients had not been cleared for cardiac exercise classes or made plans for returning to work. The nurse researcher decided to allow more time, at least two months, for recovery and rehabilitation of subjects in the main study.

One example of scoring the Rehabilitation Success Scale is presented, using the Dietary Management Subscale from the main study: There are nine items that can be scored using a five point Likert scale. If the subject stated she was meeting the first eight items to "some extent" and the ninth item was not applicable, the nurse researcher assigned a score of 16 (2 x 8 = 16 out of possible 32 points) or 50% for the dietary management section. This subject is successful only to "some extent" in the process of meeting rehabilitation goals for dietary management. The nurse researcher might assign another subject a score of (4+4+4+4+3+4+2+1+2=29) 77% to be considered moderately successful in the process of achieving rehabilitation goals. There is a possibility of attaining a score as high as 36 (4 x 9 = 36) for this section. There are 58 items in the total Rehabilitation Success Scale that can be scored for a potential maximum score of 232 points.

Patient Social-Demographic Interview: The nurse researcher developed a patient interview form to collect

social-demographic data, such as age, marital status, educational level, living arrangements, occupational status, presence of other chronic conditions, and to identify family or friends they might enlist to assist during recovery. The nurse researcher also asked patients to identify their risk factors and to rate how they were physically feeling today, on a scale of one (great) to four (uncomfortable at rest). Only one social-demographic interview question was dropped from the pilot study. The question was dropped because subjects were reluctant to respond to questions about the amount of their gross annual income (See Appendix C).

The nurse researcher collected <u>Chart Data</u> to confirm presence of myocardial infarction by heart enzymes and/or electrocardiogram, to note the location of the occlusion, if documented, and to record the discharge orders for diet, medications, activity and follow-up doctor's appointment. The nurse researcher also recorded any special studies, surgical procedures and major complications.

PROTECTION OF HUMAN SUBJECTS

The University Committee on Research Involving Human Subjects (UCRIHS) at Michigan State University reviewed and approved both the pilot study and the subsequent main study. The nurse researcher then contacted three hospital review boards for review and approval. Northern Michigan Hospital in Petoskey was contacted first for the pilot study. When the pilot study was completed, the data analyzed and reported (Budd, 1990), Ingham Medical Hospital and Sparrow

Hospital in Lansing were contacted concurrently for the main study.

Following hospital approval and agreement, nurses from the hospital stepdown units and cardiac rehabilitation departments reported the names of patients who might fit the study criteria to the nurse researcher. The nurse researcher contacted each patient, explained the purpose of the study, the nature of involvement, confidentiality assurance procedures and the right to refuse or withdraw without affecting care. Time was allotted for the patient and family to discuss possible participation and to ask questions related to participation. The nurse researcher also mentioned the possibility of reporting research results as group results to health care professionals and in scientific literature. If the patient agreed, the patient, a witness and the nurse researcher signed the consent form. The nurse researcher gave a photocopy of the signed consent form to the subject along with written explanation of the study and the nurse researcher's name and phone numbers. See appendix A and B for verbal explanation, written explanation and consent the form.

The nurse researcher maintained confidentiality by separating the consent forms from the data collection materials and substituting numbers for names, keeping the consent forms with names in a locked file. This file was later used to obtain names and phone numbers to conduct the telephone interview for Rehabilitation Success data and to

issue the same case number to the subject in order to match pre-discharge data with post-hospital data. The record linking names with code numbers was immediately returned to the locked file.

Safety: During the whole process of patient contact any concerns that arose regarding the patient's condition was either called to the attention of the nurse (if in the hospital) or the patient was advised to contact her physician. For example, one patient seemed restless during the interview. When the nurse researcher determined that the patient was beginning to have chest pain, the nurse researcher immediately contacted her nurse, and delayed the interview until the next day.

PILOT STUDY

In this section the pilot sample characteristics and results are described. The results of the reliability analyses, correlations, and regression analysis are discussed. The revised theoretical model is also presented.

Pilot Sample Description: The nurse researcher conducted a pilot study at Northern Michigan Hospital, Inc., a 350 bed acute care hospital in Petosky, Michigan. Fifteen women, age 49 to 85 ($\bar{X}$ = 65.7), agreed to participate in the Woman's Heart Pilot Study. The nurse researcher solicited participation according to established protocol for patient's with a diagnosis of myocardial infarction (MI) or impending MI (MI stopped in progress). Two women received coronary artery bypass graft (CABG) surgery and two women

received balloon angio-plasty. One day prior to discharge, the nurse researcher conducted the social-demographic interviews and then administered the Knowledge Test and the Self-Efficacy Scale. Participants indicated the most convenient time to be contacted for the follow-up Rehabilitation Success telephone interview to take place, which would be in approximately four weeks.

Social-Demographic Interview

Fourteen women were caucasian and one was a Native American. Eight women were married and lived with their husbands. Five women were single. Two of the single women had grown children living with them, and one lived in a sheltered home for people with mental disorders. Educational level ranged from a sixth grade education to a college graduate. Six subjects were at the median with some high school education (10 to 11 grades completed). Three women were working prior to their heart attacks, one full time as a cook and two part time in clerical/supervisory positions. Eight considered their main occupation as homemaker, five were retired, and two blind women considered themselves disabled and therefore not working at a job. Only two married women stated that they had someone dependent upon them for financial support; one had a son in college, the other had a retired husband. Table 3-2 displays the data.

The number "one" controllable risk factor identified by this group of women was "stress," followed by high blood

pressure and smoking. See Table 3-3 for perceived number one risk factor identified by subjects.

Table 3-2. Self-Reported Social-Demographic Characteristics

	(N = 15) Frequency	% of sample
Marital Status		
Married	8	.53
Single	7	.47
Divorced	3	.20
Widowed	4	.27
Educational level		
Sixth grade	1	.07
Jr.High (7-9)	1	.07
10-11th grade	6	.40
High Sch. Grad.	4	.27
Jr. Col./Bus/Trade	2	.13
College Graduate	1	.07
Occupational Status pre-MI		
Not employed (never)	6	.40
Worked full time	1	.07
Worked part time	2	.13
Retired	5	.33
Disabled	2	.13
Homemaker Status pre-MI		
Full time	8	.53
Part time	4	.27
Cared for by Family	2	.13
Community assisted	1	.07

Table 3-3. Frequency of Subjects' Perceived 1st Major Risk Factor (N = 15)

	Frequency	% of sample
No. 1 Risk Factor		
Stress	7	.47
High blood pressure	4	.27
Cigarettes	2	.13
Obesity	1	.07
Diabetes	1	.07

Five women also identified stress as their second major risk factor. The identification of stress as a perceived major risk factor, both in number one and two positions,

means that 80% of the women (N=12) perceived stress in their lives that contributed to their heart disease. This may have some strong implications for teaching stress management in cardiac rehabilitation programs.

Heart problems prior to this admission included angina for seven women, a previous MI for seven, and congestive heart failure for five women. Eleven women reported no hospitali-zations in the past year for heart problems, while four reported at least one other admission prior to this event. In addition, ten women reported arthritis as the other major chronic health problem. Thus 67% of the group may have difficulty with arthritic joints. Note that women have a much higher incidence of arthritis than men in the general population. This could influence the type of exercises prescribed for women to enhance physical functioning relative to cardiac rehabilitation.

The nurse researcher asked the following questions to obtain some insight into the availability of family/friend social support and previous use of community support. In answer to the question "who would you ask if you needed help with. . .?, husbands and daughters were most frequently identified in every category of assistance (personal care, cleaning, shopping, etc.). The patient's friends and visiting nurses were also identified as sources of assistance. Subjects identified the same sources for emotional support and two subjects included their clergy. Ten women responded affirmatively to the question of

"hassles" or "hate to bother" others for assistance. This could mean that although assistance might have been available that the women may have been reluctant to ask for help. One widow stated that she expected not to have to ask, that it should be offered after all the years she has been the caretaker for her large family.

One-half of the group had previously used community services and were satisfied with services received. These services ranged from home health assistance including "meals on wheels" to emergency helicopter transport to the hospital.

The nurse researcher asked questions to determine the subjects' perception of their physical status. In rating how "my body feels physically today," the majority (N=8) of subjects chose the response which indicated that they were comfortable at rest but soon became tired, short of breath, or felt chest pain when walking the hospital halls. This question was based on the New York Heart Association Functional Classification (NYHA) and had four possible choices, with a choice of one meaning you feel the best, to a choice of four meaning you feel the worst. Twelve subjects (80%) selected either number one or number two response, indicating that they were feeling pretty good physically. Only one subject selected response number four.

The nurse researcher asked a related question: "What activity level do you believe should be prescribed for you?' The choices were also based on the NYHA Functional

Classification.   Responses ranged from number one - ordinary

physical activity with no restriction to number four -

marked activity limitation.   Ten subjects (67%) selected

number one or number two responses, indicating that they

felt their activity should have no restrictions (two

subjects) or slight limitations (eight subjects).   The other

subjects selected "moderate limitations should be imposed."

No one selected severe activity restrictions.   Since the

majority of subjects thought that there should be only

slight limitation on their ordinary physical activity, this

may have implications for directing these women into cardiac

rehabilitation exercise programs.   The subjects perception

of physical status corresponded quite closely to the Cardiac

Rehabilitation nurse's assessment of physical status report.

PILOT STUDY STATISTICAL RESULTS

The statistical studies and data are reported below and

the data is presented in Table 3-4.

Table 3-4.   Descriptive Statistics for Knowledge, Self-
                  Efficacy, Rehabilitation Success and
                  Negotiated Social Support (N = 15)

	POSS.SCORE	MAX	MIN	$\overline{X}$	STD.DEV.	RELIAB.
KNOWLEDGE:	45	44	24	38	4.5	.77
SELF-EFFICACY:	160	153	88	128	20	.91
REHAB SUCCESS:	164	162	112	131	16	.78
NEG.SOC.SUP.:	48	48	23	37.7	7.5	.78
KNOWLEDGE SKEW:	-1.8					

Based on the descriptive statistics, the mean score on

the Knowledge test was the highest at 84%.   Self-efficacy

and Rehabilitation Success scale mean scores were both 80%

and the Negotiated Social Support subscale mean score was
79%.

Reliability Measures:

The nurse researcher used the Kuder-Richardson formula
(KR-21) to estimate the reliability of the Knowledge scale.
The reliability coefficient was .77. The knowledge test
results shows a negative skew (-1.8) indicating that these
subjects' scored, on average, high on the test. The mean of
38 (84%) also confirms the subjects scored high on this
test. In interpreting the results of the knowledge scale it
should be kept in mind that it was designed as mastery level
test.

The nurse researcher used the Cronbach Alpha (α)
formula to estimate the reliability of the Self-Efficacy
Scale, the Social Support Subscale and the Rehabilitation
Scale. The reliability values are all quite acceptable and
are displayed in Table 3-5, along with the descriptive
statistics.

Correlation Studies:

The nurse researcher used the Pearson Product Moment
Coefficient (r) to measure the relationship between
variables. The results of the correlations are presented in
Table 3-5.

Table 3-5.   Correlation between Knowledge, Self-Efficacy
              and Rehabilitation Success

	KNOWLEDGE	SELF-EFFICACY	REHAB SUCCESS
KNOWLEDGE		-.105 p=.312	.138 p=.312
SELF-EFFICACY			.573 p=.013

Based on the correlation, there appears to be no relationship between knowledge and self-efficacy. A scatterplot revealed that the knowledge scores were clustered near the high end of the scale. One might project that a certain amount of knowledge is required for a high self- efficacy score, since there was only one low scoring subject on both self-efficacy and knowledge tests.

The correlation between knowledge and rehabilitation success scores are also very low. The scatterplot for knowledge and rehabilitation success depicted a similar picture, as does the low and insignificant Pearson r (r=.14, p=.31). The scores were clustered to the right, indicating high scores on the knowledge scale, but unrelated to the rehabilitation success scores.

The correlation between the self-efficacy and rehabilitation success scales, as well as the scatterplot, demonstrate a significant positive linear relationship (r=.57, p=.01).

Analysis of Variance and Multiple Regression

Statistics: analysis of variance and multiple regression statistics were computed to determine the contribution of the two predictor variables, self-efficacy and knowledge, to the dependent variable, rehabilitation success.

The regression effect of the two predictor variables, knowledge and self-efficacy, on rehabilitation success fall short (F=3.39, DF=2,12) of the .05 significance level. (A DF 2,12 requires an F value of 3.76 for p.05). The F value of 3.388 however, shows a trend at the p=<.10 level. (DF 2,12 requires F=2.73 for p=<.10). The adjusted R^2 is .33 for the two variables; together they explain only 33% of the variance in rehabilitation success scores. The standardized beta (β) demonstrates that self-efficacy carried the most weight (.58). See Table 3-6.

Table 3-6. Analysis of Variance of Rehabilitation Success with Knowledge and Self-Efficacy

ANALYSIS OF VARIANCE	D F	SUM OF SQUARES	$\bar{X}$ SQUARES	F
REGRESSION	2	1321.951	660.975	3.388
RESIDUAL	12	2340.982	195.082	

VARIABLE	B	STD. ERROR B	BETA
KNOW	.6478	.8289	.1807
SELF-EFF	.4644	6.3766	.5838
CONSTANT	46.6098		

MULTIPLE REGRESSION

Multiple R	.57304	F= 6.35594	SIGNIF F= .076
R Square	.32837		
Adjusted R Square	.27671		
Standard Error	13.75648		

The regression effect of self-efficacy alone (T=2.52, p=.0256, need T=2.14 for p=.05) reached statistical significance at the 0.0256 level, demonstrating the "best fit." The standardized beta for self-efficacy is .57, only slightly less than when knowledge was in the equation. The self-efficacy variable reached significance when the knowledge variable was deleted from the equation because self-efficacy no longer shared the explained variance in rehabilitation success with the knowledge variable. The model with self-efficacy alone is the most parsimonious model.

Table 3-7.   Analysis of Variance for Rehabilitation
                Success with Self-Efficacy

ANALYSIS OF VARIANCE	D F	SUM OF SQS	X̄ SQUARES		
REGRESSION	1	1202.80358	1202.80358		
RESIDUAL	13	2460.12976	189.24075		

VARIABLE	B	SE B	BETA	T	SIG T
SELF-E	.455872	.180823	.573037	2.521	.0256
CONSTANT	72.368953	23.499677		3.080	.0088

In this pilot study of 15 subjects, the self-efficacy scale was the best predictor of perceived of rehabilitation success. There is less than a 3% chance that the positive linear relationship between the self-efficacy scale and the Rehabilitation Success scale would occur by chance.

Validity: A panel of experts was enlisted to review the three scales used in the pilot Women's Heart Study and again for the main study. This was discussed more fully under instrument development in a previous section.

<u>Discussion of the Results of the Pilot Study</u>:

According to present evidence and theory as represented in the hypo-theses, successful rehabilitation depends on a number of factors. The analysis for each factor addressed in the hypotheses is considered below.

<u>Hypotheses</u>:

1. Those women who have a basic knowledge of diet, medications, activity level and factors related to disease and healing process will perceive themselves as having a more successful recovery and rehabilitation.

Although knowledge and rehabilitation success reflected a trend for the 15 subjects, the relationship did not achieve statistical significance. One wonders if a certain amount of knowledge isn't basic for successful recovery and rehabili-tation. Perhaps these statistics will improve by increasing the number of subjects.

2. Those women who perceive themselves as self-efficacious for home self-care will perceive themselves as having a more successful recovery and rehabilitation.

The results were statistically significant for a positive linear relationship between self-efficacy and rehabilitation success. The pilot study results supported the hypothesis and thus the underlying theory of self-efficacy.

3. Those women who can negotiate social support will perceive themselves as having a more successful recovery and rehabilitation.

The social support sub-scales in self-efficacy and rehabilitation success are highly correlated, as expected

(r=.72, p=.001). Thus, reporting these two sub-scales as independent of the major scales may be redundant. However, the hypothesis for negotiating social support is supported by the high correlations between the two social support subscales. Recall that Negotiated Social Support was the only subscale abstracted from the total self-efficacy scale and then compared with the Rehabilitation Social Support Subscale in the pilot study. For the main study, correlations will be computed on all subscales, including Negotiated Social Support.

4. Those women who have a higher level of knowledge and also have a higher level of self-efficacy are more likely to perceive a higher level of rehabilitation.

The self-efficacy variable (including the support subscale) provided the best evidence for predicting rehabilitation success in this pilot study. Note that social support was not entered as a separate variable in the regression for the pilot study.

The experiences of the 15 post-MI women in the pilot study and the likelihood of successful rehabilitation was supported by the some of the study results, as reflected by some of the hypotheses originally proposed. However, it is recommended that all hypotheses remain for the major study for further testing and that Negotiating Social Support be considered a part of the variable self-efficacy. The instruments were refined and the number of subjects were more than doubled for the main study.

The nurse researcher made several revisions based on the comments from the experts for both the Patient Knowledge Test and the Rehabilitation Success Scale, as previously discussed in the instrument development section. The nurse researcher also made minor revisions for the Self-Efficacy Scale and the Social-Demographic Interview, also discussed in the instrument development section. The nurse researcher made four instrument revisions:

1. Social-demographic Interview - drop the annual income question.

2. Knowledge Test - change the format from multiple/multiple to true/false. The number of items now total 43.

3. Self-efficacy Scale - arrange the items by domains and change the words for some items. The scale still contains 40 items.

4. Rehabilitation Success Scale (telephone interview) - Reword several items for scoring purposes, add several questions (two diet, two spiritual, two opinion questions for differences between men and women post-MI rehabilitation, and three questions related to time waited and complications. The Rehabilitation Success scale contains 58 items for scoring and 32 non-scored responses.

The nurse researcher revised the theoretical model tested in the main study, based on comments from experts and insight gained by conducting the pilot study. The revised model divides self-efficacy into five domains: 1) Dietary management, 2) Medication taking, 3) Activity and Exercise, 4) Life-style Adjustment, and 5) Negotiating Social Support. Negotiating Social Support was omitted as a separate variable. Knowledge remains a variable in the model.

SELF-EFFICACY*
(Diet, Meds, Activity & Exercise,
Negotiated Social Support, & Life Style)
KNOWLEDGE
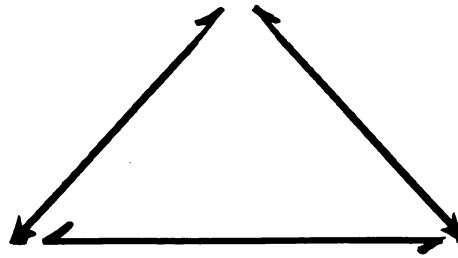
Social Environment

  Cardiac Rehab Teaching

   Family, Friends

    Community Resources

REHAB Self-Care Behaviors

  Diet, Meds, Activity,

   Life-Style Adjustment

    & Neg. Social Sup.

*Self-Efficacy including:

  1. Diet management ⟶ Dietary management

  2. Medication taking ⟶ Taking medication

  3. Activity & Exercise ⟶ Activity & exercise

  4. Negotiating Social Support ⟶ Soc. Sup. Negotiated

  5. Life-Style Adjustment ⟶ Life-Style Adjust

Rehab Success including:

Figure 3-1. Revised Model for the Main Study

The model now depicts self-efficacy as the major variable with negotiated social support as part of self-efficacy. The perceived ability to negotiate or enlist the support needed is considered part of self-efficacious behavior. Negotiated social support continues to be of major interest in this study.

It seems logical that a certain level of knowledge would be necessary in order to perform self-care behaviors during recovery and rehabilitation. Self-efficacious behavior may in part be attaining and using the knowledge gained via cardiac teaching programs. However, to determine the effect of knowledge on rehabilitation success, knowledge remains as a separate variable in the model.

The social environment was not measured directly by using a standardized instrument because it was not the focus of the study. However, subjects were asked to identify the person(s) they most likely would ask for support. The nurse researcher noted living arrangements in the Social-Demographic Interview, and previous use of community health resources. Cardiac rehabilitation teaching programs are also viewed as a resource provided by the social (therapeutic) environment.

Norbeck's (1983) social support instrument is one measure of the social environment or social support "networks," frequently used in research studies (Crabtree, 1986). This instrument was not selected for either the pilot or main study because the amount of time required for

subjects to complete it (approximately 30 minutes) was considered too long for heart patients.   The self-efficacy subscale, Negotiating Social Support, does not measure social support networks, as Norbeck's (1983) instrument is reported to measure. Rather, it focuses on the person's capability of enlisting social support as needed, which was of primary interest.

Theoretically, the model postulates that self-efficacy and knowledge relate directly to rehabilitation self-care behaviors, as depicted by the direct arrow. The model also depicts an arrow from self-efficacy and knowledge to the social environment to negotiate for the supports needed (i.e., to increase knowledge by attending a class, or to get self-care assistance, or ask for emotional support). Arrows with partial arrowheads are also shown in the model indicating the possible connection between all three points. However, these connections were not the focus of this study and therefore, not measured.

Based on the changes in the model the hypotheses were revised and restated for the newer model.

Hypotheses Re-stated for the Main Study Model:

1.   Women who perceive themselves as self-efficacious for self-care related to the following will perceive themselves as having a more successful recovery and rehabilitation.
      a. dietary management
      b. medication taking (nitroglycerine)
      c. activity and exercise
      d. negotiating social support
      e. life-style adjustment.

2.   Women who have a basic knowledge of diet, medications, activity level and factors related to disease and healing process will perceive themselves as having a more successful recovery and rehabilitation.

3.   Women who have both a higher level of Knowledge and a higher level of self-efficacy are more likely to perceive a higher level of rehabilitation.

THE MAIN STUDY

Procedure for the Main Study: Two mid-Michigan general hospitals served as sites for the research study, Ingham Medical Center (IMC), a 250 bed general hospital with specialty in heart surgery; and E. W. Sparrow Hospital (EWSH) a 500 bed general hospital. Both agencies had an Intensive Coronary Care Unit (ICCU), a Stepdown Unit, a very active in-hospital Cardiac Rehabilitation Teaching program based on the American Heart Association (AHA) recommen- dations, and an active post-discharge Cardiac Rehabilitation Exercise program. The nurse researcher recruited a continuous sample of post-MI women who agreed to participate in the main study and met the criteria, one day prior to discharge, as described in the pilot study. The nurse researcher used as criteria for sample selection women with documented acute myocardial infarction, above the age of 21 years, English speaking and reading, discharged home, and agreed to participate. The nurse researcher contacted subjects in the step-down unit, a less acute unit patients are transferred to prior to discharge, one day prior to discharge. The nurse researcher explained the study and obtained informed consent. The nurse researcher then

conducted the social-demographic interview. This was followed by the self-administered knowledge test and the self-efficacy scale. Patients were involved for 30 to 40 minutes. The nurse researcher also collected chart data at this time. Two months after discharge, the nurse researcher contacted subjects to establish a convenient time for the telephone Rehabilitation Success Interview. The nurse researcher conducted the interviews by the tenth week, unless delayed by re-hospitalization, in which case the time delayed was added to the wait period. The nurse researcher administered the Rehabilitation Success Scale via telephone, which took 45 to 65 minutes, depending on how much the subject wanted to say in response to the open-ended questions.

Data collection: The nurse researcher carried out data collection from August 1990 to May 1991 for the two-phase main study. The in-hospital phase of data collection ran from August through March, 1991. The post-discharge phase, which started approximately two months after discharge, started in October 1990 and ended at the end of May, 1991. A total of 51 subjects were recruited from the two hospitals, 40 from IMC and 11 from EWSH. Two subjects died, two subjects retired to Florida before the telephone interview could be initiated, and one subject (on welfare) moved out of state with no available forwarding address or phone number. Forty-six subjects completed both phases of the study, 35 from IMC and 10 from EWSH.

Three patients, not included in the numbers above, declined to participate in the study on the basis of time constraints due to out-of-town visitors. The nurse researcher did not select one patient because she could not fully understand the purpose of the study nor her involvement. The nurse researcher felt that informed consent would have been questionable.

Data Analysis: The nurse researcher analyzed data on a CompuAdd 325 computer equipped with the SPSS/PC+ statistical package (Norusis,1988). The nurse researcher developed data analysis plans based on the research questions. The alpha (α) level set was .05 for all analyses.

The nurse researcher used descriptive statistics to describe social demographic data, such as age, marital status, education, and supportive persons. Chart data, included location of infarction, heart enzymes, complications and discharge orders. The nurse researcher calculated frequencies, ranges, means, standard deviations and modes.

Data Analysis Related to Hypothesis One: The first hypothesis states "Women who perceive themselves as self-efficacious for self-care will perceive themselves as having a more successful recovery and rehabilitation." The nurse researcher assessed the Self-Efficacy Expectation Scale reliability by computing internal consistency for the total scale and each of the sub-scales as described in the instrument development section of this chapter. Cronbach's

alpha (α) formula was the statistical method used. A stem-and-leaf histogram of the total scale was graphed and visually inspected for symmetry and skewness.

The nurse researcher analyzed the Self-efficacy _total_ scores and Rehabilitation Success _total_ scores using the Pearson product moment r correlation to determine if a linear relationship existed between self-efficacy and successful rehabilitation and to determine the strength of the relationship. Self-efficacy sub-scores and rehabilitation Success sub-scores were also examined using Pearson r correlations to determine the strength of the relationship among sub-scales.

Analysis of variance and multiple regression statistics were computed to determine the contribution of the total self-efficacy and total knowledge scales, to the dependent variable rehabilitation success. Negotiating social support was separated out from the self-efficacy scale and also entered into the regression equation as a third variable to determine possible independent effects on total rehabilitation success. This was done to determine the specific contribution of negotiated social support to the explained variance of total rehabilitation success. Because living arrangements may influence negotiating social support and rehabilitation, χ^2 statistics were calculated to examine the relationship between subjects living with someone or living alone and high or low levels of rehabilitation success.

To guard against violation of the regression assumptions related to normal distribution, independence and homoscedas-ticity, a scatterplot of self-efficacy and rehabilitation success residuals was graphed and visually inspected.

Data Analysis Related to Hypothesis Two: The second hypothesis states "Women who have a basic knowledge of diet, medication taking, activity level, risk factors and the disease and healing process will perceive themselves as having a more successful rehabilitation." The knowledge test was computer graded and a score was obtained for each subject. The nurse researcher computed descriptive statistics for the total knowledge test and each of the sub-tests.

The Kuder-Richardson formula (KR-20) was used to estimate the reliability of the Knowledge test and sub-tests. Their was some question regarding the appropriateness of the KR-20 now that the test had been changed to a true/false criterion referenced test for the main study. In addition, the nurse researcher considered a method recommended by Subkoviak (1988) for determining reliability. Subkoviak recommends the use of two reliability indices for computing and interpreting reliability for criterion-referenced tests are (1) the agreement coefficient (Po) or (2) the kappa coefficient. The agreement coefficient is the proportion of subjects consistently classified as masters or as nonmasters over two

tests administrations. The kappa coefficient is the proportion of consistent classification observed beyond what is expected by chance. Subkoviak (1988, p.48) provides a formula and grid for both coefficients, thereby eliminating the need for a second test administration. (This issue will be discussed further in chapter four).

The nurse researcher computed a scatterplot of Knowledge scores with Rehabilitation Success scores to search visually for a relationship. The nurse researcher also calculated a Pearson r correlation. A scatter plot of Knowledge residuals was graphed for visual inspection.

Data Analysis related to Hypothesis three: The third hypothesis for the main study states "Women who have both a higher level of Knowledge and a higher level of Self-efficacy are more likely to perceive themselves as having a higher level of recovery rehabilitation." Each of the preceding variables (knowledge and self-efficacy) are supposed to influence recovery and rehabilitation separately. The third hypothesis implies that the addition of more than one positive factor will increase the level of rehabilitation success. Thus, if a subject scores high on both knowledge and self-efficacy, she is more likely to experience a higher level of success during recovery and rehabilitation than if her scores were high on just one factor.

The nurse researcher carried out multiple regression analysis to examine the effect of more than one independent

variable on the dependent variable rehabilitation success,
to determine the contribution of each variable to
rehabilitation success, and to note changes in R square.
The nurse researcher used both step-wise and hierarchical
multiple regression methods for total self-efficacy,
negotiated social support sub-scale, and knowledge to see if
differences in the order of variable entry occurred. A
scatterplot of the residuals for self-efficacy, negotiated
social support and knowledge were examined for normalcy and
constant variance. This was done to comply with the
assumptions of regression.

The nurse researcher used the Cronbach Alpha (α)
formula to estimate the reliability of the rehabilitation
success scale. Responses to two of the questions in each of
the rehabilitation success sub-scales were analyzed to
address the perceived enhancing factors and barriers to
desired perfor-mance. The nurse researcher collected data
to determine what factors subjects perceived as helpful to
the rehabilitation process and what factors were perceived
as barriers. The comments made by subjects were examined
for trends and then grouped into categories for data coding.
The nurse researcher determined the most frequently selected
enhancing factors and barriers. Then the nurse researcher
used χ^2 test of association to compare various "enhancers"
and "barriers" with high and low levels of rehabilitation
success. For example, subjects living alone were compared

to subjects living with family regading high and low levels of rehabilitation success.

The nurse researcher used other tests to consider possible differences in other factors that might influence rehabilitation success results. The nurse researcher computed an analysis of variance test to compare the differences among subjects with 1) in-hospital complications, 2) post-discharge complications 3) readmissions post-discharge and 4) all other on rehabilitation success. The nurse researcher also computed cross tabulation of the two hospitals with age in years to determine if subjects from one hospital were older than subjects from the other hospital. Finally, the nurse researcher used a χ^2 test between hospitals and rehabilitation success to determine if differences existed between the subjects from the two hospitals.

Summary

This chapter contains the methodology the nurse researcher used to conduct the pilot study and the subsequent main study. The chapter includes discussion of the development, pilot-testing and revisions of three instruments used in the pilot study. The results of the pilot study were also summarized and the model and hypotheses were revised. Procedures and data analysis for the main study were included.

RESULTS

The methodology for the main study was implemented as described in the preceding chapter based on the results of the pilot study. The nurse researcher collected data from each subject by conducting a personal Social-demographic interview, administering a paper and pencil Knowledge test and Self-efficacy scale, reviewing patient charts and by conducting a telephone interview using the Rehabilitation Success scale. Data collection took place on two occasions, just prior to hospital discharge and during the recovery period at home.

In this chapter the results of the main study are presented. The chapter includes the sample characteristics, the reliability and construct validity of the Self-efficacy scale, the Knowledge test and the Rehabilitation Success scale, the correlation and multiple regression results used to test the hypotheses and model, and the barriers and enhancing factors to recovery and rehabilitation. The proposed hypotheses are addressed and a summary of the results concludes this chapter.

<u>Sample Subjects and Setting</u>: Forty-six women recovering from myocardial infarction on the step-down units of two Lansing, Michigan hospitals participated in the research study. Thirty-six subjects (78%) were from Ingham Medical Center and 10 subjects (22%) from Sparrow Hospital. To detect any possible differences between patients from the

two hospitals, the nurse researcher computed an analysis of variance (ANOVA) for age, knowledge scores, self-efficacy scores, and rehabilitation success scores. In addition, the nurse researcher used χ^2 analysis to check group differences in educational level and in living arrangements. There were no significant differences between the IMC subjects and the EWS subjects. Data from subjects from the two hospitals were combined, on the basis of these results, for analysis.

The nurse researcher contacted a total of 55 patients as potential subjects. Fifty-one participated in the first phase of the study, two declined because of out of town visitors, one was indecisive and wanted to check with her daughter who would not be present until discharge, and one was not interested. Of the 51 patients that started the study, 46 completed both phases. Two died after discharge, two retired to Florida before they could be contacted for the second phase of the study, and one subject moved out of state with no forwarding address or phone number.

To detect any difference between the five women who did not complete the second phase of the study and the forty-six who did complete both phases of the study, the nurse researcher analyzed the data from both groups and compared the two groups. The descriptive statistics revealed that the mean age of the five subjects (Group I) was 64.4 years (range 39-84 years), approximately one year younger on average than the forty-six subjects (Group II). In Group I, much as in Group II, four subjects (80%) identified stress

as their number one risk factor and one subject identified diabetes mellitus. Three subjects developed the complication congestive heart failure, two died from this complication, and the other subject retired to Florida with her husband. For Group I subjects, the mean score for knowledge was 3.63 (89%) on a four point scale and the mean score for self-efficacy was 2.81 (68%) on a four point scale. Thus, Group I mean scores were slightly below Group II mean scores for both knowledge (3.75) and self-efficacy (3.16).

The nurse researcher computed a T-test to detect any difference between the means for the two groups on knowledge and self-efficacy. There was no statistically significant difference between the two groups for either knowledge (T value=1.31, T prob.=.20) or self-efficacy (T value=1.17, T prob.=.25). The data from the five subjects who did not complete both phases of the study showed no bias in those who did complete the study.

Social-Demographic Characteristics

Social-Demographic Interview: The 46 caucasian women in the sample were between the ages of 40 and 87 years. The mean age was 65.5, and the mode was 62 years. The majority of subjects had a high school education or better. Half of the subjects were married (23), and one-third were widowed (16). Twenty-nine subjects were living with either a spouse or an adult child in the household, whereas 17 were living alone and independently.

Work Roles: Prior to their heart attack, 13 subjects worked full time, two worked part time and one did volunteer work. The type of work described included running a business, teaching, nursing, sales clerking, working as secretaries, child caring, housekeeping, cooking, and one subject was working on the assembly line in an automobile factory. Many of the subjects were retired (21, 45%) and some (7, 15%) unemployed. When asked about homemaker status, 30 (65%) subjects stated they were full time homemakers and 12 (26%) considered themselves part time homemakers. Two subjects hired assistants for homemaker services, one was cared for by her family, and one relied on community resources for homemaker services.

Motherhood Roles: The number of children raised by these subjects ranged from no children (five subjects) to ten children (one subject); and for most of subjects (22), the pattern was either two children or three children. The majority of the subjects' children were now adults, their ages ranging from 15 to 66 years. Four children were under the age of 21 and two of these teenagers were living at home. Three subjects had children dependent upon them for financial support, one subject took care of her husband who had multiple sclerosis, and four subjects stated they were providing emotional support and guidance to their children. Table 4-1 displays the data.

Table 4-1. Self-Reported Social-Demographic Characteristics
(N = 46)

	Frequency	% of sample
Marital Status		
Married	23	50
Single	1	2
Separated	1	2
Divorced	5	11
Widowed	16	35
Educational level		
Jr.High (7-9)	4	9
10-11th grade	7	15
High Sch. Grad.	18	39
Jr. Col./Bus/Trade	12	26
College Graduate	2	4
Masters Degree	3	7
Occupational Status pre-MI		
Not employed (never)	7	15
Worked full time	13	28
Worked part time	2	4
Retired	21	46
Disabled	2	4
Volunteer work	1	2
Type of Work (In the past)		
Professional	5	11
Technical	6	13
Clerical/Supervisor	18	39
Labor/Domestic	7	15
Homemaker/wife/mom	10	22
Homemaker Status pre-MI		
Full time	30	65
Part time	12	26
Cared for by Family	1	2
Community assisted	1	2
Hired services	2	4
Living Arrangements		
Live alone	17	17
Live with Spouse	22	48
Adult child lives with	4	9
Teenager (no spouse)	2	4
Child <6yrs (Grnd-chld)	1	2

Risk Factors: The nurse researcher asked subjects to identify their number one and number two risk factors associated with heart disease. Subjects identified stress as the number one risk factor related to their heart attack. Subjects followed with obesity and diabetes mellitus in round one. In round two subjects selected stress as their number one selection, followed by high blood pressure and diabetes mellitus. See Table 4-2.

Table 4-2. Frequency of Subjects' Perceived Major Risk Factors (N = 46)

	Frequency	% of sample
No. 1 Risk Factor		
Stress	24	52
Obesity	7	15
Diabetes	5	11
Cigarettes	3	7
Family history	3	7
High blood pressure	2	4
Age	1	2
None	1	1
No. 2 Risk Factor		
Stress	11	24
High cholesterol	6	13
High blood pressure	6	13
Diabetes	6	13
Cigarettes	5	11
Family history	5	11
Obesity	3	7
Physical inactivity	2	4
None	2	4

Prior to their hospital admission, twenty subjects reported no previous heart problems or symptoms. Fourteen women reported angina, eight women reported a previous MI, and three had previously experienced congestive heart failure (CHF). Forty women reported no hospitalizations in the past year for heart problems, while six reported at

least one other admission during the year prior to this event. The nurse resercher carried out analysis of variance (ANOVA) procedures to detect possible deifferences between the subjects (N=11) who have experienced a previous MI or CHF and all other subjects relative to knowledge, self-efficacy and rehabilitation success scores. There were no significant differences between the two groups for knowledge (DF 1,43, F=.99), self-efficacy (DF 1,40, F=.93) and rehabilitation success scores (DF 1,42, F=.81). Heart problems reported prior to this admission are presented in Table 4-3.

Table 4-3. Frequency of Subjects' Self-Reported Previous Heart Problems

Heart Problems	(N = 46)	% of sample
None	20	44
Angina	14	30
MI	8	17
Congestive failure	3	7
Rheumatic heart	1	2

Chronic Health: Other than heart disease, arthritis was reported as the most common chronic health problem by 28 women (61% of the group). Note that women have a higher incidence of arthritis in the general population. In addition, 29 women reported treatment for hypertension at one time or another (although subjects did not report hypertension as number one or two in risk factor identification).

Financial concerns: The nurse researcher asked subjects if they had any financial concerns related to this hospitalization. Thirty-five had no concerns, five were concerned about the adequacy of their insurance, five were

concerned about work loss money, and one subject had no insurance.

Social Support Resources: The nurse researcher asked several questions to determine who the subjects might ask for help after discharge. The questions were: "Who would you ask to assist you in personal care if needed"?, "Who would you ask to cook and do household chores"?, "Who would you ask to run errands"? and "Who would you turn to for emotional support"? See Table 4-4.

Table 4-4. Frequency of Identified Social Supports

Physical Assistance

	Frequency	%
Personal care		
Spouse	14	30
Daughter/Dtr-in-law	19	41
Sister	3	7
Friend	4	9
Community services	3	7
Hired assistance	1	2
Household chores		
Spouses	12	26
Daughters	19	41
Sister	1	2
Friends	1	2
Hired assistance	10	22
No one	3	7
Errands		
Spouse	12	26
Daughter/Dtr-in-law	19	41
Friend	4	9
Others	11	24

Emotional Support

Spouse	8	17
Daughter/Dtr-in-law	11	24
Sister	4	9
Friend	9	20
Visiting nurses	1	2
Clergy	7	15
No one	4	9

When asked if there were hassles in asking for assistance, 19 subjects said no, and 27 (59%) said yes for various reasons. The reasons included: "I hate to bother anyone (11), I'm too independent (8), I dislike asking (6), and No one is available (2)."

Thirty-one subjects (67%) had never used Community Health services. Seven (15%) subjects had used Visiting Nurse Services, two (2%) subjects had used Meals on Wheels, and two subjects had called 911 emergency services. Four subjects also used community services, other than health related services. These include special transportation, senior citizens groups and church groups for house cleaning and meals when ill. All subjects, except one, who had used the various community services were very satisfied with the services.

<u>Subjective physical status</u>: The nurse researcher asked subjects to rate how their body felt, on the day of the intervies, one day prior to discharge. The four response levels of activities and symptoms are presented in Table 4-5.

<u>Table 4-5.</u> Level and Presence of Symptoms with Hospital Activity (N = 46)

	Subjects	%
1. No symptoms with usual activity	6	13%
2. No symptoms at rest, some with hall walking...	31	67%
3. Comfortable only at rest, symptoms with walking in the hospital hall...................	9	20%
4. Some symptoms even at rest, such as sitting in hospital bed...............................	0	0%

The nurse researcher asked subjects what limitation they felt should be placed on their usual physical activity. Four choices were available and are presented in Table 4-6 along with the subjects' responses.

Table 4-6. Physical Activity Limitations --
            Self-Recommendations (N = 46)

	Subjects	%
1. No limitations	0	0
2. Slight limitations	7	15
3. Moderate limitations	36	78
4. Severe limitations	2	4

The majority of subjects were stable and comfortable at time of discharge. The majority of subjects also felt that ordinary physical activity should be moderately limited upon discharge.

Informational Supports: Prior to beginning the true/ false knowledge test, the nurse researcher asked subjects what their main source of learning about MI self-care was. For example, subjects were asked if they learned from bedside teaching, video tapes, class or self. In addition, the nurse researcher asked subjects to identify the rehabilitation team teachers who contacted them, if they had attended class, and who, if anyone, had attended class with them. The questions were asked to confirm that cardiac rehabilitation teaching had been implemented by health team members prior to administering the knowledge test and to determine who the subject perceived was providing rehabil-

itation information for home self-care and recovery. Table 4-7 displays perceived sources of information.

Table 4-7. Frequency of Identified Sources of Learning (N = 46)

Sources: Cardiac Team	Frequency	%
Nurses	42	91
Doctors	19	41
Physical Therapist	14	30
Dietician	14	31
Social Worker	11	24
Pharmacist	2	4

The nurse researcher was also interested in the method of teaching, by which the learner perceived she acquired the information, and if a spouse or relative was also present. Table 4-8 shows that 24 (52%) subjects reported personal contact (9 class and 15 bedside).

Table 4-8. Frequency of Identified Methods of Learning and Others in Attendance

Learning Method	Frequency	%
Class	9	20
Videos	16	35
Bedside teaching	15	33
Self-read	2	4
No teaching	3	7
Other mode	1	2

Thus, personal contact was the most common mode of presenting information. However, video presentation is becoming increasingly more common according to 16 (35%) of the subjects. Table 4-9 shows people in attendence with the subject during the teaching session.

Table 4-9. Frequency of Others in Attendance During
               Teaching Sessions   (N = 46)

No family or friends	34	74%
Husband	6	13%
Daughter	3	7%
Sister/in-law	2	4%
Friend	1	2%

Nearly three-quarters of the subjects (74%) had no one in attendance during the learning sessions (note that this figure includes the three subjects who stated they had not received teaching).

Chart Data

Location of MI: The areas of myocardium infarcted in the 46 subjects were as follows: inferior twenty-one (47%), anterolateral nine (20%), anterior seven (15%), anteroseptal four ((9%), posterior two (4%), and no location given for two subjects. The nurse researcher could not determine the severity of the infarction, such as whether it was non-transmural or transmural, because this information was not sufficiently documented in all charts. Severity reflected by cardiac enzyme studies are reported in the laboratory section below.

Heart Procedures: Several subjects had undergone a number of procedures from cardiac catheterization (cardiac cath) to coronary artery bypass surgery (bypass). Twenty-one (47%) subjects had more than one procedure. For example, twelve (26%) patients had a cardiac cath and then a balloon plasty procedure. Ten subjects had thrombolysis

therapy, eight prior to cardiac cath and two during cardiac cath. More than one-third of the subjects had no procedures performed during this hospital stay. See Table 4-10.

Table 4-10. Frequency of Recorded Heart Procedures
Pre-Discharge (N = 46)

Procedures	Frequency	%
Cardiac cath	26	56
Balloon plasty	12	26
Thrombolysis	10	22
Bypass surgery	7	15
No procedures	16	35

Diagnostic Measures: Laboratory test results that help confirm the diagnosis of myocardial infarction are referred to as the "cardiac enzymes" and are composed of the creatine phosphokinase (CPK), lactic dehydrogenase (LDH), and serum glutamic oxaloacetic transaminase (SGOT). Diagnostic data were recorded in the chart for 37 subjects. CPK levels ranged from 173 to 5413 reflecting severity of MI (24 to 170 mg/ml is the normal range for women). If CPK levels were not elevated (including MB bands), the LDH levels were examined to help confirm the diagnoses. LDH levels were recorded for only 18 subjects and ranged from 235 to 983 (the normal range is 118 to 240 mg/ml). One subject's LDH was below 245. The statistics are displayed in Table 4-11.

Table 4-11.   Cardiac Enzymes - Descriptive Statistics

	MIN	MAX	MEAN	STD.DEV	N
CPK:	173	5413	1172.86	1119.36	37
LDH:	235	983	528.17	219.54	18

To examine any possible effect of the severity of MI with Rehabilitation Success, the nurse researcher correlated cardiac enzymes with Rehabilitation Success scores. The results are shown in Table 4-12.

Table 4-12.   Correlation of Cardiac Enzymes with
                Rehabilitation Success

	CPK	LDH	Rehab
CPK		.8106**	-.0554
LDH	.8106**		.0416
Rehab	-.0554	.0416	

N=17   1-tailed significance: * - .01   ** - .001

Enzyme levels were correlated on the 17 cases available with Cardiac Rehabilitation Success scores to determine any possible effect. There was no significant statistical relationship between cardiac enzyme level and Rehabilitation Success scores. The low correlation between cardiac enzymes and Rehabilitation Success may be due to the relatively few cases. As expected, there is a high correlation between CPK and LDH enzymes, since both measure cardiac damage.

Risk Factors Identified by Health Care Providers: The nurse researcher examined laboratory data for high cholesterol levels, which are considered a major risk factor for

coronary artery disease. Levels above 200 mgm/ml were recorded in 24 (52%) subjects. Fourteen (30%) subjects had normal cholesterol levels, and no data were recorded for eight subjects. Cardiac health team members identified other major risk factors, such as high blood pressure, cigarette smoking and stress.

Sometimes the cardiac health team members identify different risk factors than those risk factors perceived as most detrimental by the patient. The following data were recorded for comparison between team members and subjects and are displayed side-by-side in Table 4-13.

Table 4-13. Frequency of Risk Factors Identified by Health
Team Members (N = 46) and Subjects'
First and Second Choices

Risk Factor	Health Team	%	Subjects 1st	& 2nd
High BP	23	50	0	6
High cholesterol	21	46	2	6
Cigarette smoking	11	24	3	5
Obesity	16	35	7	6
Diabetes	16	35	5	6
Stress	11	24	24	11
None	1	2	1	0

Thirty-nine subjects (85%) identified at least two risk factors, and 26 (57%) subjects identified at least three risk factors above. It is interesting to note that 35 (76%) subjects identified stress as either their first or second major risk factor, whereas health team members identified stress as a risk factor for only 11 subjects. Eight

subjects identified cigarette smoking as either a number one or number two major risk factor, whereas, 11 team members identified smoking as a risk factor for 11 subjects. However, three other subjects included smoking in their total selection of risk factors. Similarly, ten subjects identified obesity as their first and second risk factors, whereas, team members identified obesity in 16 subjects. One subject did not identify any risk factors, nor did the health team for this subject. Except for stress, subjects and health team members identified risk factors fairly consistently.

Complications: The nurse researcher recorded physical complications experienced during the current hospital admission for MI to determine any possible effect on rehabilitation. Three patients had been admitted for reasons other then a heart attack. One subject was undergoing gallbladder surgery when her MI occurred. Another subject was having vascular studies on her leg when she experienced a heart attack, and another subject was admitted for amputation of her diabetic foot.

Twenty-five (54%) subjects had uncomplicated MI's. The most common in-hospital complication was congestive heart failure (CHF), followed by arrhythmias (two subjects were defibrillated). The complications are not mutually exclusive; subjects may have had more than one complication. Four of the eleven subjects that had CHF also had pulmonary edema, a secondary complication of CHF. As a result of

cardiogenic shock, one subject had renal failure. Three
subjects had urinary tract infections following urinary
bladder catheterization. See Table 4-14.

Table 4-14. Frequency of Recorded In-hospital Complications
(N = 46)

Complication	Frequency	%
Congestive Heart Failure	11	24
(Pulmonary edema)	4	9
Arrhythmias	3	7
Angina	1	2
Cardiogenic shock	1	2
Non-cardiac complications		
Exacerbation of Respiratory	2	4
Urinary tract infection	3	7
No Complications	25	54

The nurse researcher recorded post-discharge complica-
tions and readmissions. Several subjects were readmitted to
the hospital following their initial MI. The major reason
for readmission was congestive heart failure (CHF). Three
subjects had another MI (or extended their current one),
requiring re-hospitalization. Five subjects experienced
severe angina, three of whom were readmitted, and one
subject was readmitted for adjustment of her medications to
control arrhythmias. As with other complications, these
complications were not mutually exclusive. For example, a
subject with angina also extended her MI and experienced CHF
on two occasions. Twenty-six subjects had no post-hospital
physical complications. However, it should be noted that
post-discharge rehabilitation success telephone interviews
were delayed because subject was hospitalized. This "time
out" period was less then ten days for all subjects except

two, one hospitalized for cerebral vascular accident and one
hospitalized for chemotherapy for cancer of the lung. Table
4-15 displays the data.

Table 4-15. Frequency of Self-Reported Post-hospital
           Complications and Hospital Readmission Frequency
                        (N = 46)

Complication of MI	Frequency	%	Freq.ReAdm	%
Congestive Heart Fail.	12	26	11	24
Myocardial Infarction	3	7	3	7
Angina	5	11	3	7
Arrhythmias	1	2	1	2
Non-cardiac complications				
Cerebral Vascular Acci.	1	2	1	2
Lung Cancer	1	2	1	2
No Complications	26	57	0	0

Some readmissions were for surgical procedures that
were planned prior to initial discharge. Four admissions
were for heart bypass surgery, one for balloon plasty, and
one was for above the knee amputation (AKA) related to
diabetes. Table 4-16 shows this data.

Table 4-16. Frequency of Self-Reported Post-MI Readmissions
                     for Surgery (N = 46)

Surgical Procedures	Frequency	%
Heart Bypass	4	9
Balloon Plasty	1	2
Above Knee Amputation	1	2

To determine any differences among the subjects rela-
tive to the level of rehabilitation success, four groups
were formed and an analysis of variance (ANOVA) was
computed. The four groups were composed of subjects with
1) In-hospital complications during first admission for MI,
2) Post-hospital discharge complications, without

readmission, 3) <u>Hospital readmissions</u> due to post-discharge complications, and 4) <u>All Others,</u> no complications and no readmissions. The subject with above the knee amputation was not included in the analysis due to ambulation restrictions. The statistical data and ANOVA appear in Table 4-17.

<u>Table 4-17.</u> Analysis of Variance for Complications, Readmission & Others With Rehabilitation Success

ANOVA Source	DF	Sum of Squares	Mean Sq.	F Ratio	F Prob.
Between Grps.	3	1.4306	.4769	2.0271	.1255
Within Grps.	40	9.4098	.2352		
Total	43	10.8404			

Group	Max	Min	Mean	Std. Dev.
1. In-Hosp.	3.6491	2.3750	2.9463	.5674
2. Post-Hosp.	3.9380	2.4340	2.9478	.6759
3. Hosp. ReAdm	3.5818	2.00017	2.7959	.4909
4. All Others	3.7037	1.9643	3.1973	.4128

The means and standard deviations of the four groups are very close. The results of the ANOVA demonstrated no significant differences among the four groups with respect to Rehabilitation Success. Therefore, all the subjects were treated as one group for the remainder of the various statistical analyses.

<u>Instrumentation</u>

The instruments utilized in this study were for the specific purpose of examining the study behaviors stated in the hypotheses and described in Chapter III.

<u>Knowledge Test:</u> The nurse researcher administered the knowledge true/false paper pencil test. The knowledge test

was assessed for validity prior to administration for the main study.

Content Validity: To insure adequacy of the content being measured by the Knowledge test two experts in cardiovascular nursing and cardiac rehabilitation (see Panel of Experts in Appendix H) were asked to analyze the items, prior to administration, to determine if they adequately represented the content area. The CVI index was .86 for the main study, as previously discussed in Chapter III.

Reliability Measures: The nurse researcher used the Kuder-Richardson formula (KR-20) to estimate the reliability of the knowledge scales. The reliability coefficient was .43 for total knowledge, and much less for each individual knowledge sub-score. This finding was low, considering the pilot study knowledge test KR-21 coefficient was .77 for reliability (See Table 4-18).

Table 4-18. Kuder-Richardson Values for the Knowledge Test
(N = 46)

ANAT/PHYS/HEALING:	KR 20 = .3392
CHEST PAIN:	KR 20 = .0714
DIET:	KR 20 = .0781
ACTIVITY:	KR 20 = .0155
NITROGLYCERINE	KR 20 = .1387
RISK FACTORS	KR 20 = .0150
TOTAL KNOWLEDGE:	KR 20 = .4260

However, the KR-20 measure for reliability may not be the most appropriate measure for the criterion-referenced or mastery level test of knowledge. Subkoviak (1988) has suggested a method for computing and interpreting

reliability for criterion-referenced tests that does not require repeated measures or parallel testing methods. The two reliability indices that he recommends are (1) the agreement coefficient, (designated P sub o, or Po) or (2) the kappa coefficient. The agreement coefficient is the proportion of subjects consistently classified as masters or as nonmasters over two tests administrations. The kappa coefficient is the proportion of consistent classification observed beyond what is expected by chance. However, Subkoviak points out that methods for estimating the two coefficients from a single test administration have been proposed by Huynh (1976), Marshall & Haertel (1976), and Subkoviak (1976), thereby eliminating the need for a second test administration (Subkoviak, 1988, p.48). He provides a formula for obtaining standard Z scores for the test cutoff score (C). By using the traditional reliability (KR-20 in this case) of the test scores the Po and the K coefficients can be read from the approximation tables, which he also provides. The formula is:

$$Z = \frac{(C - .5 - M)}{S}.$$

The Z stands for standard score, which appears in the table; the C represents the cutoff score designated by the administrator of the test; the M is the mean score of the test, and the S is the standard deviation.

How high the Po score should be depends upon the seriousness of decisions being made by the test. The example Subkoviak uses relates to high school seniors in

terms of graduation. A test score with an internal reliability of r =.70, where approximately 15% of the students are nonmasters, corresponds to an agreement coefficient of Po = .85. As the proportion of masters increase and nonmasters decrease, the Po values exceed Po = .85. Kappa values between .35 - .50 might be expected for a test if approximately 15% of the subjects are nonmasters, those at the higher end of the range as the percent of nonmasters increases.

The nurse researcher expected that more than 90% of the subjects would master the knowledge content. The cutoff score of 88% was selected on the basis of the stem & leaf and scatterplot SPSS computer printouts. As can be observed from the data (scatterplot, stem & leaf, etc. in Appendix I) a natural cut occurs at this point, only three subjects (6%) scored below 88%.

Decision to report an agreement coefficient or kappa coefficient should be based upon desire to measure "either overall consistency (Po) or to measure the test's contribution to the consistency (K). . .both may be of potential interest in many instances" (Subkoviak, 1988, p. 53).

The agreement and kappa coefficients of the knowledge subscales and total scale are presented in Table 4-19, as well as the KR 20 coefficients, from which the Po and K values were calculated.

Table 4-19. Agreement and Kappa Coefficients Knowledge
Test Results

ANAT/PHYS/HEALING:	Po = .77	K = .15	KR 20 = .3392
CHEST PAIN:	Po = .96	K = .02	KR 20 = .0714
DIET:	Po = .78	K = .04	KR 20 = .0781
ACTIVITY:	Po = .86	K = .03	KR 20 = .0155
NITROGLYCERINE:	Po = .78	K = .04	KR 20 = .1387
RISK FACTORS:	Po = .96	K = .02	KR 20 = .0150
TOTAL KNOWLEDGE:	Po = .90	K = .16	KR 20 = .4260

The agreement coefficient, the measure of overall consistency, for some of the subscales meets the suggested minimum standard. The kappa (K), the consistency expected beyond chance, does not meet minimum standards for any of the subscales. Again, the K values are based in part on the low KR 20 subscale coefficients. The Po of .90 exceeds the expected minimal standard of Po =.85, indicating that overall test consistency was present. However, the K was .16 for the total knowledge test, which does not meet the expected standard of K =.45. This indicated that there was little or no gain in reliability by administering the test.

But there are other consideration regarding the knowledge test results, and they are:

(1) It was designed as a mastery test and therefore nearly everyone should master the knowledge deemed necessary for self-care at home.

(2) Most subjects were highly knowledgeable about the heart and self-care.

(3) Some of the subscales of the knowledge test were too easy and did not discriminate well enough between knowledgeable and non-knowledgeable subjects.

(4) There was a lack of variability among the subjects' scores.

(5) The Po and K scores are based on traditional reliability scores as one component of the formula. The lack of variability in the subjects' scores resulted in low KR-20 scores and thus low Kappa scores.

The total knowledge scale met the requirements for internal consistency as measured by the agreement coefficient but not the kappa tests statistics. The subscales that met the standards of Po = .85 or more (chest pain, activity guidelines, and risk factors) indicate that these subscales are internally consistent. Failure of the subscales to meet minimum standards for kappa indicate that there is no gain in consistency by giving the subscales.

Descriptive Statistics: The means of the total knowledge test and each of the subscales were very high. The total knowledge mean score was 94%, the lowest score was 81%, and six subjects scored 100% on the test. Table 4-20 displays descriptive statistical results of the knowledge test based on 43 total questions.

Table 4-20. Descriptive Statistics for the Knowledge Test
(N = 46)

	POSS.SCORE	MEAN	%	STD.DEV.	MIN	MAX
Sub-scales						
Anat/phys/heal	13	12.11	92	1.08	8	13
Chest pain	5	4.91	98	.28	4	5
Diet	8	7.37	92	.74	5	8
Activity	6	5.61	93	.58	4	6
Nitroglycerine	4	3.67	92	.56	2	4
Risk Factors	7	6.74	96	.49	5	7
Total Knowledge	43	40.41	94	1.96	35	43

The total knowledge test stem-and-leaf graph reflects a shift to the high side, and the scatterplot reflects scores in the high range except for three subjects' scores. (See Appendix I for graphs).

Polit and Hungler (1987) note that a key issue may be whether an instrument is useful in predicting some subsequent behavior. In terms of this study, only three subjects had low scores on knowledge and two these subjects also had low scores for rehabilitation success (See Scatterplot in appendix I). All other subjects had high scores on the knowledge test, therefore, in this study the nowledge test was not useful in predicting rehabilitation success.

SELF-EFFICACY EXPECTATION SCALE

The nurse researcher developed the Self-Efficacy Scale to operationalize the self-care efficacy expectation component of self-efficacy theory, and to test the hypothesis "Women who perceive themselves as self-efficacious for self-care related to dietary management, medication taking, activity and exercise, negotiating social

support, and life-style adjustment, will percieve themselves as having a more successful recovery and rehabilitation.

Construct Validity: Prior to the main study, two nurse experts in cardiac nursing reviewed the Self-efficacy scale. The Construct Validity Index (CVI) rating was .95.

Reliability: The Self-efficacy Scale was considered in total and as separate subscales. To assess internal consistency, the nurse researcher used Cronbach's alpha. The results appear in Table 4-21.

Table 4-21. Self-Efficacy Reliability Analysis

Sub-scale Behavior	Alpha Coefficients	N
Diet	.8125	46
Medication (Nitro.)	.6454	43
Activity/Exercise	.7695	46
Negotiating Soc.Sup.	.8860	45
Life Style & Risk Mod.	.8459	46
Total Self-Efficacy Scale	.9476	42

The reliability of the majority of subscales are quite satisfactory. The reliability of the Medication subscale was marginal at .65. This marginal reliability might be explained on the basis of little variability among the majority (N=43) subjects in perceived ability to self-medicate using nitroglycerine (Nitro). Failure to respond to several items in a subscale caused that patient's scores to be deleted from the reliability analysis. Note that three subjects were omitted from the analysis because nitro-glycerine was not prescribed for them, therefore the Medication subscale was not applicable. If the percentage of items deleted approximated 50% of the number of items in

a patient's subscale then that subject was omitted from the total self-efficacy analysis. This accounts for an N =42 in the self-efficacy total scale. The total self-efficacy scale had a very satisfactory level of reliability at alpha .95, better than that found in the pilot study (in which Cronbach's alpha was .91).

Descriptive Statistics: The mean score for total self-efficacy was 127.57 (SD =21.70) out of a possible 160 points or 80%, reflecting a moderately high level on average for the forty item scale. The pilot study mean was 128 out of 160 points with a standard deviation of 20.

The nurse researcher corrected for the number of items in each subscale before comparison. This was necessary because each subscale contains a different number of items. For example, there are five items in the Diet subscale, five items in the Medication subscale, seven in the Activity subscale, eleven in the Negotiating Social Support subscale, and twelve in the Lifestyle Adjustments subscale. Self-efficacy scores are presented in Table 4-22.

Table 4-22. Descriptive Statistics for Self-Efficacy Expectation Scale

Sub-scales	POSS.SCORE	MEAN	%	STD.DEV.	MIN	MAX	N
Diet mgmt.	20	14.85	74%	4.03	3	20	46
Meds (Ntg)	20	17.12	86%	2.76	10	20	43
Activity	28	21.13	75%	4.22	10	28	46
Soc.Sup.	44	36.98	84%	7.58	16	44	45
Life Sty.	48	36.72	77%	7.22	14	45	46
Total Self	160	127.57	80%	21.70	67	157	42

Subjects received the lowest average score on the Dietary Management subscale ($\overline{X}$ score = 14.85 or 74%). Perhaps the "healthy heart" diet was new to them, since for many subjects, this was their first heart attack. The subjects may not have had an opportunity to experience various aspects of dietary management asked about in the subscale.

On the other hand, subjects produced the highest mean score (17.12 or 86%) on the Medication subscale. This high mean score may be related to previous experience in self-administration or opportunities to learn about nitro-glycerine administration early during hospitalization. It is common practice to start cardiac teaching about nitro-glycerine administration as soon as patients are transferred to the step-down unit.

Subjects reached the highest possible score on all subscales except, the Life Style Adjustment subscale, suggesting that a ceiling effect might be present. However, the mean scores and standard deviations for the subscales were not restricted.

Correlations among sub-variables in the self-efficacy scale were examined for evidence of multi-collinearity. Multicollinearity was defined as a correlation of higher then .70 between two variables (Glass, 1984). The subscales Negotiating Social Support and Life-style Adjustment were highly intercorrelated (r=.82, p=.001), suggesting they may be tapping the same construct, social support, without

contributing any new information. Two items in the subscale Negotiated Social Support that produced the highest correlation with the Life-style subscale were selected for omission. The items were #19, "Call your nurse at the hospital and ask her to explain things again" (r=.82), and #25, "Rearrange job responsibilities or tasks at work" (r=.83). The nurse researcher then recalculated the correlations for the subscales to attempt to diminish the multicollinearity. It is not clear why these two items were correlated so highly with the Life-style subscale. One consideration is that successful life-style re-adjustment following a heart attack is related to the social support one negotiates in the outside social environment, indicating that the two constructs are similar. Thirty-seven subjects (80%) rated 3 and 4 for item #19 and (65%) responded "not applicable" for item #25. In the latter case, low number of responses could be a factor.

The correlation between Life-style Adjustment subscale the Negotiated Social Support subscale without the two items was r=.74. This was considered only a marginal decrease in multicollinearity, however further item elimination would drop the self-efficacy scale correlation value with rehabilitation success even more. When two items were omitted, the correlation value was r=.67, a decrease from r=.69, with the Rehabilitation Success scale. The nurse researcher decided to keep the two items in the Self-efficacy scale and maintain awareness of the multicollinearty. There was no

other evidence of multicollinearty among the subscales.
(See Appendix L for Self-efficacy subscale correlations).

REHABILITATION SUCCESS SCALE

The nurse researcher implemented the Rehabilitation Success scale via telephone interview approximately 10 weeks after discharge. The scale was developed to operationalize the level of perceived success during recovery and rehabilitation after a heart attack.

Content validity: Content validity of the Rehabilitation Success scale was assessed by experts in cardiac rehabilitation, as discussed in Chapter III. Two experts were nurses, one expert was a physical therapist, and one expert was a nurse educator. The CVI for the self-rating scale was .85.

Reliability: The nurse researcher used the Cronbach Alpha (α) formula to estimate the reliability of the Rehabilitation Success scale. The reliability coefficient was .92 for the main study total Rehabilitation Success scale. Internal consistency was considerably improved from the pilot study total scale α of.78.

Cronbach's α was computed for the Rehabilitation Success subscales in the main study. The values are displayed in Table 4-23.

Table 4-23.   Rehabilitation Success Scale
                   Reliability Analysis

Sub-scale Behavior	Alpha	No. of Items
Diet Management	.6373	9
Medication (Nitro.)	.7640	8
Activity/Exercise	.8325	10
Negotiating Soc.Sup.	.7804	12
Risk Modification	.7962	7
Life Style Adjustments	.8503	14
Total Rehabilitation Success Scale	.9237	60

The moderate alpha for the subscale Diet management cannot be explained on the basis of the number of items analyzed because the number of items increased by two from the pilot study. The Diet subscale cannot compared with the pilot diet items because the Rehabilitation Success subscales were not analyzed for the pilot study. Omitting one item related to diet and weight could increase the alpha level to .70. However, this item was not eliminated.

After calculating individual subjects scores for rehabilitation success in the main study, the nurse researcher found it necessary to eliminate four items from the instrument. Items 26, 27 and 47, related to working at a job, following guidelines for working, and negotiating support at work. Thirty eight subjects (80%) stated "not applicable" when responding to the question because they had not been working prior to their MI or did not plan to return to work. This is not unexpected considering the majority of subjects were not working at a job prior to their MI.

The fourth item to be dropped from the Rehabilitation Success scale was item 28 about sexual functioning. Thirty-

three subjects (72%) responded "not applicable." Although
the nurse researcher did not pursue the reason for this
response, it may be explained considering since the majority
of these women were not married. Nine subjects did respond
to the sexual functioning item; four subjects responded
"only fair" or "poor" and five subjects responded "pretty
good" or "excellent." Item 28, however, lacked the
variability to increase reliability and was therefore
eliminated from the analysis.

Descriptive Statistics for Rehabilitation Success
Scale: In viewing the statistics for Rehabilitation Success
subscales in Table 4-24 and 4-25, consider that the
subjects' total possible scores for each subscale are
variable. A specific item that is not applicable for a
subject in a particular section is not scored. Therefore,
four points per item are dropped from the subject's possible
baseline score, so as not to penalize the subject, when
computing individual scores. Table 4-24 displays both mean
raw scores and mean percent scores.

Note that the three items related to work and one item
related to sexual function have been eliminated from the
Rehabilitation Success scale, leaving a total of 54 items to
be scored. This represents a decrease from the original
Rehabilitation Scale containing 58 items.

Table 4-24. Descriptive Statistics for Rehabilitation
Success Scale

Raw Scores and Percents

	POSS.POINTS	MEAN	%	STD.DEV.	MIN	MAX	N
Subscales							
Diet mgmt.	28	20.70	78%	4.02	10	28	46
Meds (Ntg)	24	17.41	75%	5.72	00	24	46
Activity	40	27.91	70%	8.74	5	40	46
N.Soc.Sup.	72	53.77	78%	10.44	30	72	44
Life-S/Rsk	52	37.56	72%	6.73	19	51	45
Total Rehab	216	157.25	73%	27.59	101	200	44

In the first column above, the "Possible Points" were
based on the number of items in the updated Rehabilitation
Success Subscales. The total points possible were based on
54 items resulting in a possible total score of 216. The
range of scores achieved by the subjects is presented in
the Min and Max columns. Three subjects were not taking
nitroglycerine, which accounts for the minimum score of zero
possible in the Medication subscale. All of the raw
subscale means, as represented by the percentage scores in
Table 4-24, are in the seventies.

Subjects achieved the maximum score possible in four of
the subscales suggesting a cap on scores, however, the means
suggest otherwise. The Diet Management subscale mean of 78%
and the Negotiated Social Support subscale mean of 78% are
the highest. Apparently, the subjects, on average, were
quite satisfied with the progress they were able to make in
these areas during their recovery and rehabilitation period.
The Activity subscale mean was the lowest at 71%. Perhaps
the low Activity mean reflects less satisfaction in this
area at this point in time. The scores on the total

area at this point in time. The scores on the total
Rehabilitation Successs Scale ranged from 101 (47%) to 200
(93%) with a mean of 157.25 (73%) for the main study. In
comparison, the pilot study scores were higher. The pilot
study scores ranged from 112 (68%) to 162 (99%) out of a
possible score of 160 points. The mean was 131 (82%) and
the standard deviation was 16 (10%) for the 15 subjects in
the pilot study. Considering the pilot study subjects were
interviewed (Rehabilitation Success scale) approximately one
month eariler in their rehabilitation period, this finding
was surprising.

The nurse researcher transformed the percent scores to
a standardized four-point scale so that the reader could
easily compare the Rehabilitation Success statistics with
other computations. For example, the scatterplots for
Rehabilitation Success and Knowledge and Rehabilitation and
Self-efficacy displayed in the appendix are based on the
four-point scale. Table 4-25 presents the standardized
scores for Rehabilitation Success and subscales.

Table 4-25. Descriptive Statistics: Rehabilitation Success
Scales -- Standardized

	POSS.POINTS	MEAN	STD.DEV.	MIN	MAX	N
Subscales						
Diet mgmt.	4.00	3.13	.52	1.67	4.00	46
Meds (Ntg)	4.00	2.98	.91	.00	4.00	46
Act.& Exer.	4.00	2.83	.87	.71	4.00	46
Neg.Soc.Sup.	4.00	3.10	.54	1.76	4.00	44
Life Sty/Rsk	4.00	2.91	.53	1.46	3.92	45
Total Rehab	4.00	2.91	.49	1.91	3.85	44

The majority of standardized subscale means presented
in Table 4-25, are close to the "3 point" range. The nurse

researcher considered the mean total score to be very
satisfactory (73%) in terms of the subjects' average
achievement on the Rehabilitation Success scale.

In viewing the telephone interview "Rehabilitation
Success" scale in Appendix G, note that items related to the
subscale Negotiating Social Support (Neg.Soc.Sup.) appear as
items in the other Rehabilitation subscales. The nurse
researcher constructed the form in this manner for ease in
administering the telephone interview. For scoring purposes,
all Neg.Soc.Sup. items were combined to reconstruct the
Neg.Soc.Sup. subscale. In addition, recall that the Risk
Factor Modification section is part of the Life-style
Adjustment subscale. Thus, the Life-Style Adjustment
subscale scores include the risk factor modification scores,
even though the interview form shows the items separated.
This re-formatting done for scoring purposes was also
planned to facilitated correlation of Rehabilitation Success
subscales with Self-efficacy subscales. The reliabilites of
total Rehabilitation Success scale and the subscales are
based on the reformatted scores.

CORRELATION STUDIES: The Knowledge and Self-efficacy
scales were correlated with the Rehabilitation Success scale
to detect the possibility of a linear relationship among the
variables.

Knowledge and Rehabilitation Success: To compare the
relationship between Knowledge and Rehabilitation Success
and the subscales, the nurse researcher used the Pearson

Product Moment Coefficient (r). The correlation matrix is
presented in Table 4-26.

Table 4-26.	Correlation between Knowledge & Rehabilitation Success				
		Knowledge			
	Diet	Meds	Activity	Risk	Total
Rehab Success					
Diet	.003				
Meds		.12			
Activity			.11		
Risk/Life				.02	
Total Rehab					.24

There appears to be no linear relationship between
total knowledge and total rehabilitation success nor any of
the subscales. A scatterplot of knowledge and rehabilitation
success (Appendix I) reveals that the scores are clustered
near the high end of the knowledge scale, except for three
scores. In looking at the knowledge residuals scatterplot
(Appendix I) it is also apparent that this sample has more
scores in the upper range rather than scattered throughout
as one would expect in a normal distribution of errors.
This appears to be additional evidence that the subjects in
this sample are highly knowledgeable, as determined by the
knowledge test. However, the knowledge scores do not
correlate with high scores on the Rehabilitation Success
scale. The pilot study revealed similar results. The
hypotheses which states "Women who have a basic knowledge
of diet, medications, activity level and factors related to
disease and healing process will perceive themselves as

having a more successful recovery and rehabilitation,"
cannot be supported by the data.

Self-efficacy and Rehabilitation Success: To compare
the relationship between Self-efficacy and Rehabilitation
Success and their subscales, the nurse researcher used the
Pearson Product Moment Coefficient (r). The correlation
matrix in Table 4-27 includes correlations among the
subscales that were significant.

Table 4-27.   Correlation between Self-efficacy &
               Rehabilitation Success
                      N = 40

SELF-EFFICACY

	Diet	Meds	Active	N.SocSup	LifeSty.	TOT-SE
REHAB SUCCESS						
Diet	.51**(N=46)					
Meds		.48*(N=43)				
Activity			.35*(N=46)			
N.SocSup.				.62**(N=43)		
LifeSty.					.46**(N=45)	
Total REHAB	.50**(N=40)	.52**(N=40)	.48**(N=40)	.66**(N=40)	.61**(N=40)	.69**(N=40)

1 - tailed signif: * = .01,   ** = .001

Significant correlations are shown among Self-efficacy
subscales and Rehabilitation Success subscales at the .01 or
.001 significance levels. The highest subscale correlation
values appear to be between Negotiating Social Support
(N.Soc.Sup.) subscales at r=.62, p=.001. The lowest
correlation is between the Activity subscales (r=.35, p.01).

The correlation for total Self-efficacy (TOT-SE) and total Rehabilitation Success also reflect a high and significant correlation (r=.69, p=.001), as expected. Scatterplots of Self-efficacy and Rehabilitation Success and each of the subscales reflect linear relationships. Scatterplots were also graphed for the residuals of Self-efficacy and Rehabilitation Success. The residuals are dispersed with no discernable pattern, indicating constant variance through-out (see Appendix J).

The hypothesis states "Women who perceive themselves as self-efficacious for self-care related to dietary manage-ment, medication taking (nitroglycerine), activity and exercise, negotiating social support and life-style adjustment will perceive themselves as having a more successful recovery and rehabilitation." This hypothesis was supported by the data.

MODEL TESTING RESULTS

<u>Multiple Regression Statistics</u>: Multiple Regression statistics were computed to determine the contribution of the two predictor variables, Self-efficacy and Knowledge, to the dependent variable, Rehabilitation Success.

Two regression procedures were carried out: 1) a re-gression in which the sequence of independent variables entered was controlled by the investigator (via the SPSS "enter" command) and 2) a "step-wise" regression in which the sequence of variables entered was controlled by the computer. Total Knowledge was the first variable to be

entered, using the investigator controlled regression. The
data is presented in Table 4-28. Note the number of
subjects entered into the regression analysis is 39. The
change in numbers occured when some subscales had less then
a 50% response rate from the subject. For example, three
subjects Medication scale was more than 50% incomplete,
therefore it was omitted. This process eliminated these
three subjects from the multiple regression analysis, plus
other subjects who did not respond at least to 50% of a
subscale.

Table 4-28.   Multiple Regression

Dependent Variable = Rehabilitation Success
    Variable entered on step   1. Knowledge (total)

Multiple R	.29			
R Square	.08	R Square Change	.08	
Adjusted R Square	.06	F Change	3.40	
Standard Error	.48	Signif F	.07	

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	1	.76957	.76957
Residual	38	8.59160	.226097

F =   3.40   Signif F = .07

Variable	B	SE B	95% Confdnce Intrvl B		Beta
Tot-Know	.725902	.393459	-.00615	1.5224	.286720
(Const)	.227308	1.477843	-2.764428	3.219044	

Variable	Sig T	
Total Knowledge	1.845	.07
(Constant)	.154	.88

The total Knowledge variable alone accounts for only 6% of the model's explained variance (adjusted R = .058). The change in R square was negligible, (.08) when the Knowledge variable was entered into the regression equation. The F value of 3.40 does not reach the .05 significance level (F=.07) and the 95% confidence interval for the B slope does include "0", indicating the null hypothesis of no significance cannot be rejected for the knowledge variable. This is consistent with previous knowledge tests results, such as, the pilot study regression results and the correlation results in the main study.

The second variable entered into the regression equation was the subscale the self-efficacy (total) variable. This also was entered as a total scale instead of as subscales. The data is presented in Table 4-29.

The total Self-efficacy variable increased the explained variance in Rehabilitation Success to 47% when entered into regression equation (N= 39, Adj. R square =.47, F= 18.34, Signif F=.0001). The R square change increased to .42, including a significant F change (.0001). The Beta slope was for .58, indicating that for every unit increase in the Self-efficacy score there tends to be an increase of .58 units in the Rehabilitation Success score. The 95% confidence interval does not include zero, therefore the null hypothesis can be rejected. The Self-efficacy beta weight accounts for .66, where as, the Knowledge beta weight was only .14. The findings indicate that the best and most

parsimonious predictor of total Rehabilitation Success is total Self-efficacy.

Table 4-29. Multiple Regression

Dependent Variable = Rehabilitation Success
Variable entered on step __2. Self-efficacy (total)__

Multiple R	.71			
R Square	.50	R Square Change	.42	
Adjusted R Square	.47	F Change	30.62	
Standard Error	.36	Signif F	.0000	

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	2	4.66010	2.33005
Residual	37	4.70107	.12706

F =   18.34   Signif F = .00001

Variable	B	SE B	95% Confdnce	Intrvl B	Beta
Knowledge	.344392	.302903	-.269348	.958131	.13603
Self-eff.	.584347	.105600	.370381	.798313	.66205
(Const)	-.216355	1.110746	-2.466940	2.03423	

Variable		Sig T
Knowledge	1.137	.26
Self-eff.	5.534	.00
(Constant)	-.195	.86

The third hypothesis which states "Women who have a higher level of knowledge and also have a higher level of self-efficacy are more likely to perceive themselves as having a higher level of rehabilitation," cannot be completely supported since the knowledge variable was insignificant in explaining or predicting rehabilitation success. The Self-efficacy Scale was the best predictor of Rehabilitation Success (Adjusted R square =.47, p=.0001). These findings are consistant with the results of the pilot study. The Knowledge test was not significant, but the Self-

efficacy scale was significant in predicting Rehabilitation Success.

When the stepwise method of regression was used, the only variable entered was total self-efficacy. The results of the stepwise regression method reveals little change (Multiple R =.69, R Square =.48, Adjusted R Square .47, DF, 1,38, F=35.11, Signif. F=.0001, B weight =.69) from the results presented in Table 4-29, with both variables in the equation. Self-efficacy accounts for the greatest amount of the explained variance in Rehabilitation Success.

Subscale Analysis: The nurse researcher conducted a multiple regression analysis of the Self-efficacy subscales (Diet, Meds, Activity, Neg.Soc.Sup., & Life-style) on Rehabilitation Success. The results of the regression analysis with all five sub-variables are given in Table 4-30.

When the five Self-efficacy sub-variables were added to the regression equation it resulted in a slight increase in the value of the R^2 from 47% for Self-efficacy (R^2 =.47) as a single scale to 49% for the five (R^2=.49) sub-variables. The adjusted R^2 dropped from 45% (Self-efficacy adjusted R^2 =.47) to 41% for the five sub-variables (Adjusted R^2 =.41). The Beta weight for the Negotiated Social Support sub-variable (.41) reflected the greatest contribution among the five subscales to Rehabilitation Success. None of the subscales achieve significance (in total) in the final equation. However, the F value of 6.25552 does reflect

Table 4-30.   Multiple Regression of <u>All Five</u> Self-Efficacy
Subscales on Rehabilitation Success

Dependent Variable = Rehabilitation Success

Variable entered on step number:
1.Diet, 2.Meds, 3.Act/Exer., 4.Nego.Soc.Sup. 5.Life-Style

Multiple R	.70		
R Square	.49	R Square Change	.0015
Adjusted R Square	.41	F Change	.09
Standard Error	.37	Signif F	.76

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	5	4.59	.92
Residual	34	4.78	.15

F =   6.52   Signif F = .0002

Variable	B	SE B	95% Confdnce Intrvl B			Beta
Diet	.11	.10	-.08	to	.31	.18
Meds (Ntg)	.06	.16	-.26	to	.38	.07
Act/Exerc	.09	.13	-.18	to	.35	.10
N.Sco.Sup	.27	.15	-.04	to	.58	**.41**
Life-Sty	.06	.18	-.31	to	.43	.07
(Const)	1.09	.42	.20	to	1.91	

Variable	T	Sig T
Diet	1.15	.26
Meds-NTG	.39	.70
Act/Exerc	.65	.52
N. Soc.Sup.	1.77	.09
Life Sty.	.31	.76
(Const)	2.50	.02

significance (Signif F= .0003) for the five subscales together when regressed on Rehabilitation Success.

The multiple regression analysis revealed an increase in Multiple R, R^2, and Adjusted R^2 as each sub-variable was added. Table 4-31 presents the partial multiple regression tables.

Table 4-31.   Changes in Multiple Regression Figures as
                    Sub-variables are Added

Step	Sub-Variable	Multiple R	R Square	Adjusted R	Sig. F
1.	Diet	.50	.25	.23	.0009
2.	Meds	.59	.35	.31	.0004
3.	Activity	.62	.39	.34	.0004
4.	N.Soc.Sup.	.70	.49	.43	.0001
5.	Life-style	.70	.49	.41	.0002

When the last sub-variable, Life-style, was added no change in Multiple R or R^2 occurred. There was a decrease in the Adjusted R and Significant F. This may indicate that there is nothing gained by adding the sub-variable Life-Style and that there is a loss in the adjusted R value or explained variance in Rehabilitation Success.

To investigate this further, the nurse researcher used the regression model again, this time omitting the sub-variable Negotiating Social Support at the fourth step and entering the Life-style sub-variable. The results are the same through the third step. Table 4-32 shows the changes in results when the sub-variables are switched at the fourth and fifth steps.

Table 4-32.   Changes in Multiple Regression Figures as
               Sub-variables are Added

Step	Sub-Variable	Multiple R	R Square	Adjusted R	Sig. F
1.	Diet	.50	.25	.23	.0009
2.	Meds	.59	.35	.31	.0004
3.	Activity	.62	.39	.34	.0004
4.	Life-style	.66	.44	.37	.0003
5.	N.Soc.Sup.	.70	.49	.41	.0002

The addition of Negotiated Social Support increases the value accross the board. It would appear that the most parsimonious model excludes Life-Style Changes. However, the exclusion of this sub-variable is not consistant with Bandura's theoretical model of domain specificity (discussed in Chapter Five). On the otherhand, the problem of multicolinearity ($r=.82$), discussed previously, may be the issue between these two variables. It may be that how subjects performed on the first four sub-variables (Diet, Meds, Activity, and Neg. Soc. Sup.) was also reflected by the Life-style Adjustment sub-variable. The Life-style items relate to Risk factor modification, coping measures and satisfaction with their overall progress.

The final model includes all five sub-variables as presented previously in Table 4-30. The explained variance in this model is 41% due to the five separate sub-variable entries. However, when the Self-efficacy (total) variable is considered as one variable, (Stepwise regression results) the explained variance increases to 47%.

<u>Perceived Enhancers and Barriers to Rehabilitation</u>

<u>Success</u>: Each Rehabilitation Success subscale included

questions about perceived barriers and enhancers to

Rehabilitation Success. For example, the nurse researcher

asked subjects questions such as "What helped you to stay on

your diet or exercise program?", "What was the hardest part

of your program?" and "What advice would you like give other

women who have had a heart attack?" The nurse researcher

explored the subjects responses for patterns and recorded

frequencies of like patterns. The nurse researcher asked

opinion questions, such as, "Who do you think has the

hardest time during recovery. . .men or women. . . and why?"

A description of some of their responses and experiences

follows.

Dietary Management: When asked "What helped you the

most during you recovery with dietary management?" the

majority of subjects, 24 (52%), stated their own "self-

determination" to either get well or prevent another MI.

Eleven subjects (24%) identified fear as motivating dietary

adherence, and four (9%) mentioned family support. Thirty-

two subjects (70%) stated that the hardest part of staying

on the healthy heart diet was by far specific cravings for

restricted foods. Cravings for foods such as chocolate, ice

cream, salty snacks, pizza and meat (steak) were among the

restricted favorites.

Management of Medications/Nitroglycerine: Twenty-three

(50%) subjects reported the use of nitroglycerine (fast-

acting form for angina) post-discharge. Five subjects had been assisted in taking or had been given Nitroglycerine by a family member or friend on at least one occasion in the past. Only two subjects (4%) reported any problem taking Nitroglycerine, other then mild side effects, which resulted in discontinuance of the medication. Two subjects also stated that some of their other medications had to be adjusted once they returned home. Forty-three subjects (93%) stated there were no problems or barriers in taking medication.

When asked what was helpful in taking their medication, subjects said just getting into the "routine" of taking them and keeping them "handy." Of these forty-three subjects taking medications, forty subjects (93%) were quite knowledgeable about their medications. Subjects could state the name of the medication, what it was for and when and how to take the medication.

The medications most commonly prescribed post-MI for these subjects are listed in Table 4-33. Most of the subjects were taking more than one medication for their heart condition, and one subject was not prescribed any medication.

Table 4-33.   Heart Medications Most Frequently Being Taken
                Post-MI as Reported by Subjects

Medication	Number	%
Nitrates	29	63.0
Lanoxin	14	30.4
Diuretic	26	56.5
Aspirin	18	39.1
Beta Blockers	12	26.0
Calcium Blockers	25	54.3
Anti-hypertensives	16	34.7

Nitrates (longer-acting forms of Nitroglycerine) were the most common medication prescribed, followed by diuretics, used for both hypertension and congestive heart failure. Beta Blockers are decreasing in use and Calcium Channel Blockers (a newer form of angina control) are increasing in use (American Heart Association, 1991). The list does not include medications subjects may have been taking for other chronic conditions, such as diabetes and arthritis.

Management of Physical Activity and Exercise: Twenty-seven (59%) subjects reported they were informed by their physicians that they should start walking and increase their activity level gradually. Nine subjects (20%) were enrolled in Cardiac Outpatient Rehabilitation programs at one of the area hospitals and two (4%) were given a specified Cardiac Rehabilitation program at home. Three subjects (7%) reported they were told to "continue the same activity level" as in the hospital, and five (11%) reported they were told to follow "activity as tolerated."

Subjects reported that they engaged in a variety of activities during their recovery period. They participated in self-personal care, including bathing and dressing unassisted (100%) and meal-preparation (91%). Many subjects cared for their home and family, including cleaning (57%) vacuuming or mopping (37%), and driving a car (52%). Forty-five subjects (98%) were walking inside their own home, and 26 were routinely walking anywhere from one block up to two or more miles. Several subjects (15, 33%) exercised on stationary bikes, and one subject was engaged in a swimming program.

One of the most strenuous activities is vacuuming and most women are advised against engaging in this activity during the first few weeks of recovery. Seventeen subjects reported they were currently vacuuming by themselves. To determine if vacuuming was related to how subjects rated themselves on overall activity level of rehabilitation success, the nurse researcher used the Pearson R correlation. The correlation indicates no significant linear relationship (N=46, r=.14).

The greatest barrier to activity reported by 27 subjects (59%) was physical signs and symptoms, such as weakness, fatigue, and shortness of breath. The greatest barrier to walking exercise reported by 14 subjects (30%) was the weather. Note that data collection occurred during Fall, Winter and early Spring. Subjects gave other reasons for not exercising: no rehabilitation program or community

place to exercise (N=4, 9%), no transportation (N=2,4%),
lack of time (N=4, 9%), and one subject had fractured her
knee. Two subjects found no barriers to exercise and made
the comment "just do it."

Walking activity may be an indicator of how successful
subjects perceive their overall rehabilitation activity.
The amount of walking subjects reported by week 10 is
presented in Table 4-34. All subjects, except one who was
in a wheelchair could walk around inside their house or
apartment.

Table 4-34. Frequency of Self-Reported Level of Walking
             Activity and Self-Rating of Overall
                  Activity Success (N = 45)

Walking Activity Level	Number of Subjects	%	Mean Answer (0 -4)
1.Walk inside home/apt.only	8	36.2	2.25
2.Walk outside house/apt.	11	21.7	2.55
3.Walk outside but <1 mi.	11	23.9	2.82
4.Walk between 1 & 2 mi.	10	23.9	3.30
5.Walk more than 2 miles	4	8.7	3.00
(Wheel chair inside home)	1	2.2	NA

To determine if walking was significantly related to
perceived overall successful activity level (a subscale of
rehabilitation sSuccess) and which of the five "walking"
levels, if any, were important, the nurse researcher carried
out a One-way Analysis of Variance. The subjects were
assigned to one of the five groups according to their level
of walking activity. Table 4-35 presents the ANOVA for the
five groups (levels of walking) and the mean ratings of
overall Rehabilitation Activity Success for each group.

Table 4-35. Self-Reported Walking Activity and Self-Rating
on Overall <u>Activity</u> Success

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	F Prob.
Between	4	5.7636	1.4409	2.3450	.0715
Within	39	23.9636	.6145		
Total	43	29.7273			

- - - - - - - - - - - One-way - - - - - - - - - - - - -

Group	Count	Mean	Std.Dev.	Std.E.	95% Conf.Int.
1.Wlk.In	8	2.25	.8864	.3134	1.5089 to 2.9911
2.Wlk.Out	11	2.55	.9342	.2817	1.9179 to 3.1731
3.Wlk <1mi	11	2.82	.7508	.2264	2.3138 to 3.3225
4.Wlk.>1mi	10	3.30	.4830	.1528	2.9544 to 3.6456
5.Wlk.>2mi	4	3.00	.8165	.4082	1.7008 to 4.2992
Total	44	2.7727	.8315	.1253	2.5199 to 3.0255

The mean ratings for perceived Activity Rehabilitation
Success for the five groups steadily increase from level one
through level four, and then drop again. Group one has the
lowest rating mean and group four has the highest rating
mean. Why group five has a lower mean rating for Activity
Rehabilitation Success than group four is unknown. One
possible explanation is that there were only four subjects
in this group.

When the data from all of the groups in the ANOVA
revealed a trend (F Prob. =.07), the nurse reseacher used
multiple comparisons of means to search for any possible
differences between the groups.   The Scheffe procedure for
post-hoc comparison was used. Two multiple contrasts were
of interest: 1) groups one and two with groups three, four,
and five; and 2) groups one, two, and three with groups four
and five. The results of the two multiple contrasts were:

Contrast one t=2.28 and Contrast two t=2.43. Neither contrast achieved a value of t=2.57, required for α .05 significance level. There were no statistical significant differences between the five (levels of) walking groups, however there does appear to be a trend (p=<.10).

Life-Style Changes and Risk Management: The nurse researcher asked subjects to identify their "heart risk factors" and then to state the major risk factor that they want to work on, or had been working on, during the recovery period. Twenty-eight subjects identified stress as their major risk, and eight others identified stress as a second risk. Frequency of first and second identified risk factors are listed in Table 4-36.

Table 4-36.   Frequency of Self-Identified 1st & 2nd Major
Risk Factors

Risk Factor	1st	%	2nd	%
High Blood Pressure	0	0	3	6
High Cholesterol	3	6	1	2
Cigarette Smoking	4	7	3	6
Physically Inactive	0	0	0	0
Obesity	8	17	6	13
Stress	28	61	8	17
Diabetes	2	4	2	4
None	1	2	23	50

To determine if there was a relationship between the risk factor stress and Negotiated Social Support, the nurse researcher conducted a Chi square test. The high stress group was defined as those subjects reporting stress as

their number one risk factor. All others were assigned to
the low stress group.   Subjects who scored above or below
the mean of 3.06 on Negotiated Social Support during
recovery and rehabilitation were assigned to the high and
low Social Support.   The results are presented in Table 4-
37.

Table 4-37.   Level of Self-Reported Stress with Level of
Negotiated Social Support during
Rehabilitation

Risk	Negotiated Social Support		
	Low	High	Row Total
High Stress	18	9	27
			61.4
Low Stress	6	11	17
			38.6
Column	24	20	44
Total	54.5	45.5	100
Pearson	4.14118	1	.04185

Subjects identifying stress as their number one risk
factor also had lower scores on the Negotiated Social
Support subscale. The relationship was significant, χ^2 =
4.14 (p=<.05).

When asked what the nature of the stress was,
responses included: Health Status (15), Family/Friend
Relationships (11), Job Status (5), Financial Concerns (5),
Role Strain (3), Worrier (3), and Life-Style Changes/Loss of
Control Over Life (2). Stress was not measured by an
instrument, rather it was reported as a subjective response
by the subjects to questions asked about risk factors.

Obesity was the second most frequently identified risk factor, reported by 30% of the subjects (17% as first and 13% as second risk factor). None of the women selected physical inactivity as a major risk factor.

The nurse researcher ask the subjects to identify the major barriers to eliminating or controlling risk factors. The barriers were categorized and presented in Table 4-38.

Table 4-38.   Frequency of Self-Reported Major Barriers to Risk Factor Control
(N=45)

Barriers	Frequency	%
Impatience (with self,progress)	5	11
Temptations (Food,Smoking)	9	20
Inadequate Support	4	9
Lack of Resources	3	7
Poor Health/Fatigue	7	15
Habitual Worrier	6	13
Beyond my Control	4	9
Other Reasons	6	13
No Barriers	1	0

Other barriers reported included barriers to stress management, such as, one subject's husband "left" (separated from) her and another subject's husband died of a massive heart attack while she was recovering from her MI. Other subjects complained of being "alone" in this experience and of being frightened about what could happen. One subject told about the difficulties in learning to say "No" and trying to become more assertive.

The nurse researcher asked subjects to identify factors that enhanced their efforts to modify their risk factors or describe what helped them the most in managing or elimin-

ating their risks. Their responses were categorized and appear in Table 4-39.

The most common response was self-determination, to get better or prevent another MI. Subjects stated "I just knew I had to..." and "I was determined to..." Several commented on how "wonderful" their husband and family or friends had been in supporting their efforts to modify their risk factors. Other enhancers related to learning to relax, pills prescribed for anxiety, and learning to say "no" to

Table 4-39.   Frequency of Self-Identified Enhancers to Risk Modification   (N = 46)

Enhancer	Frequency	%
Self-determination-get Well	19	41.3
Self-determination-prevent MI	2	4.3
Family/Friend Support	8	17.4
Health Team Support	4	8.7
Fear	3	6.5
Distraction (Self-talk)	3	6.5
Other Reasons	3	6.5
Nothing Identified	3	6.5
Missing	1	2.2

people who tend to impose. When asked if they were able to eliminate or control any of their risk factors, 20 subjects stated yes, four stated no, and 18 were not identified, plus four were missing data. The risk factors that the 20 subjects were able to eliminate and control included: Smoking cessation (four subjects), cholesterol control (two subjects), weight control (three subjects), blood pressure control (four subjects), diabetes control (three subjects), and stress control (four subjects). Others were continuing to work toward specific goals.

<u>Life-Style changes continued</u>: Life-style changes, other than major risk factor modifications, included getting back into family and social life role functions, dealing with changes, keeping spirits up, integrating information into own plans for change, and getting motivated to make the necessary changes. The majority of subjects (33%, 72%) felt they were able to deal fairly well to very well with the changes since their MI. Twenty-eight (61%) felt there had not been any major changes in their roles since their MI, whereas 17 subjects (37%) perceived some major role changes. Twenty-seven subjects (59%) self-rated either pretty good (3) or excellent (4) in terms of becoming socially active. Most subjects (N=34, 74%) were able to keep their "spirits" up for the most part, eight (17%) self-rated only fair, and two (4%) reported low morale.

The nurse researcher asked subjects if they believed they had received or obtained adequate information to make the necessary changes. Their responses were as follows: 14 subjects (30%) rated excellent, 28 subjects (61%) rated pretty good, and only four subjects (9%) rated fair. Forty-one subjects (89%) self-rated their motivation as excellent or pretty good, three subjects (7%) rated their motivation as fair, one subject rated her motivation as poor, and one subjecct rated "no" motivation to make the necessary changes.

When asked to identify the major overall barriers to rehabilitation during the recovery period, subjects

responded in a variety of ways. These responses were categorized and are presented in Table 4-40.

Table 4-40. Barriers to Overall Rehabilitation Success
(N = 46)

Barriers	Frequency	%
Regime Adherence (act.restricted)	9	19.5
Lack of Support	3	6.5
Declining physical strength (& age)	13	28.3
Fatigue, weakness, short of breath	7	15.2
Depression	3	6.5
Fear (of overdoing or recurrence of MI)	3	6.5
Financial problems (work loss/insurance)	1	2.2
Other reasons (set backs, weather,stress)	7	15.2

The most frequent response mentioned as a barrier to rehabilitation was lack of physical strength. Some subjects alluded to the fact that they "couldn't do as much" as they used to do and that they were getting older. The MI appeared to serve as a "reminder" of aging, regardless of the subjects age. Nine subjects had difficulty adhering to the restriction and made comments such as "I wanted to do more than I should have been doing at the time." Some subjects experienced setbacks in their health recovery, such as heart complications. One subject fractured an ankle. One subject's husband died and one subject's husband separated from her. Others complained of the weather and lack of motivation as barriers to rehabilitation.

The nurse researcher ask subjects what they felt was the major factor that helped them get through the recovery period or enhanced their successful rehabilitation. Their responses are presented in Table 4-41.

Table 4-41.   Enhancers to Overall Rehabilitation Success
(N = 46)

Enhancers	Frequency	%
Own Self Reliance	4	8.7
Desire to Get Well	4	8.7
Desire to Prevent Another MI	1	2.2
Family/Friend Support	27	58.7
Support from Health Care Team	7	15.2
Cardiac Rehab Program Team	2	4.3
Spiritual Beliefs	1	2.2

The most prevalent response from subjects was the
support they were able to get and receive from others,
ranging from family (husbands, daughters, and close friends)
to health-care providers (doctors, nurses, physical
therapist, and Cardiac Rehabilitation Team members).   Other
subjects credited their own persistence and self reliance to
get well or prevent another MI.

As a matter of interest, subjects were asked whether
they thought men or women had the most difficult time during
rehabilitation and why. Twenty-one subjects thought men had
the most difficult time after an MI. Seventeen subjects
responded that women had the most difficult time, four
subjects just couldn't answer the question, and three
subjects thought both men and women had their problems
during post-MI recovery. Their reasons for their choices
were collated and are presented in Table 4-42.

Table 4-42. Gender Choice and Reason for Rehabilitation
Difficulties

Gender	Reason	N	%
Men	Men are "babies" when sick	7	15.2
Men	Men must preserve Macho image	5	10.9
Men	Men don't adhere to Rehab regime	7	15.2
Women	Still have to care for others	5	10.9
Women	Still have housework/child care	10	21.7
Women	Hard asking others to do her work	2	4.3
Both	Because both are alone and afraid	3	6.5
Both	Neither, depends on person, etc.	3	6.5
No Ans.	No basis for opinion, dont know	4	8.7

Nineteen subjects said that men had the most difficult
time during the recovery period. Seventeen subjects
believed that women had more problems because they still had
housework to do or "worry about" and others to care for.
Some responded that they would enlist help (i.e. for
vacuuming) but that it might not get done until the next day
or so and this could be quite annoying. Others learned to
cope with this delay. Some women admitted it was difficult
to ask for assistance or it made them feel useless if they
asked others to do "their" work.

Subjects said that men may have more difficulty because
of the image men seem to project, such as not wanting to
give in to physical "weakness." Several subjects made
statements referring to "man of the house", "bread winner",
"fear of losing sexual function", and "job changes" as
potential difficulties for men.

The nurse researcher asked subjects what advice they
would give other women who had an MI regarding recovery and

rehabilitation. Responses were categorized and are presented in Table 4-43.

Table 4-43. Advice to Other Post-MI Women Regarding Rehabilitation Advice

	N	%
Listen to Your Body	1	2.2
Follow Advice of Health Care Team	10	21.7
Take Care of Yourself	13	28.3
Take Each Day as it Comes, Keep Going	6	13.0
Modify Your Risk Factors	4	8.7
Join Cardiac Rehab Program	8	17.4
Start living Again, Don't Dwell on MI	2	4.3
Other (Find Support, Faith, Share Problems)	2	4.3

The majority of responses dealt with taking care of yourself and following the prescribed regime as advised by the health care team. Several subjects stated that it should be a requirement to attend Cardiac Rehabilitation Programs because the benefits were so great in terms of physical progress and emotional support. Several subjects also mentioned their desire for a support group to be formed just for women to share problems and experiences.

The nurse researcher asked subjects how long they waited before seeking medical care after the onset of symptoms. The hours ranged from zero for four subjects who were in the hospital (for reasons other than heart) to four days (96 hours) one subject who waited four days with symptoms. Only three subjects reported that they had the typical chest pain and arm pain. While thirteen subjects had chest pressure, eight had arm pain alone, and five

others experienced fatigue and shortness of breath with no chest discomfort at all. Symptoms that might have alerted subjects to seek help earlier were missing during the onset and early phases of MI.

CHAPTER FOUR SUMMARY

Summary of Hypotheses:

1. Women who perceive themselves as self-efficacious for self-care related to the following will perceive themselves as having a more successful recovery and rehabilitation in the areas of:
   a. dietary management
   b. medication taking (nitroglycerine)
   c. activity and exercise
   d. negotiating social support
   e. life-style adjustment.

Self-efficacy expectation was positively and significantly correlated (r=.69, p= .001) with successful recovery and rehabilitation, as measured by instruments developed for the pilot and main study. Total Self-efficacy accounted for 47% of the explained variance (adjusted R square = .47, DF = 1,38; sig.F = .0000). Correlation studies revealed significant positive correlation among the five Self-efficacy subscales and the Rehabilitation Success subscales. Negotiating Social Support was the subscale that carried the most Beta weight (.41) in accounting for the explained variance in Rehabilitation Success. Hypothesis one was supported by the data analysis.

2. Women who have a basic knowledge of diet, medications, activity level and factors related to disease and healing process will perceive themselves as having a more successful recovery and rehabilitation.

Hypothesis two could not be supported by the data in this study. All but three subjects scored high on the Knowledge test. No positive linear significant correlations were observed between Knowledge and Rehabilitation Success. Several explanations have been posited, which include 1. the instrument used to test knowledge was not adequate, 2. the subjects were highly knowledgeable, and 3. knowledge may be necessary but not sufficient for successful recovery and rehabilitation.

3. Women who have a higher level of Knowledge and also a higher level of Self-efficacy are more likely to perceive themselves as having a higher level of rehabilitation.

The nurse researcher believed that women who had a higher level of knowledge and greater self-efficacy would also experience a higher level of recovery and rehabilitation. Since the hypothesis related to knowledge was not supported, this hypothesis cannot be fully supported. Subjects who achieved higher average scores on the Self-efficacy scale, also achieved higher average Rehabilitation Success scores.

The results of the main study were presented in this chapter. Data collection took place on two occasions, one day prior to hospital discharge and approximately 10 weeks

post discharge. The sample characteristics were described including social-demographic; physical status and complications, and risk factors; and self-reported barriers and enhancing factors to recovery and rehabilitation. The reliability and validity of the three constructed scales, Knowledge, Self-Efficacy, and Rehabilitation Success were described and the statistical data was reported. Results of the data analysis and hypotheses testing were also presented. Self-efficacy provided the best explanation of the variation in Rehabilitation Success.

CHAPTER V

CONCLUSIONS, DISCUSSION, IMPLICATIONS, AND RECOMMENDATIONS

INTRODUCTION: The purpose of this study was to explore the relationship of self-efficacy and knowledge to perceived rehabilitation success of women during recovery from myocardial infarction (MI). The study was designed to describe the natural course of events women face as they attempt to put their lives back together after an MI. Various researchers have given credit to knowledge (Moynihan, 1984; Mills, Barnes, & Rodell, 1985) and other researchers have given credit to self-efficacy (Bandura, 1982; Jenkins, 1985; O'Leary, 1985; Crabtree,1986) for being the most helpful in the rehabilitation process of patients with acute and chronic illnesses. The results of this study were presented in Chapter Four and will now be interpreted in light of Bandura's Self-Efficacy Theory. Implications and recommendations for teaching and practice, and future research are also offered.

CONCLUSIONS

The major hypotheses tested in this research study included the variables Self-efficacy, Knowledge, and perceived Rehabilitation Success. Conclusions about each hypothesis are presented, followed by a discussion of issues raised in this research study.

<u>Self-efficacy</u> - The first hypothesis states:

Women who perceive themselves as self-efficacious for self-care related to dietary management, medication taking, activity and exercise, negotiated social support, and life-style adjustment will perceive themselves as having a more successful recovery and rehabilitation.

Hypothesis one was supported by the data in this research study. Subjects who perceived higher levels of self-efficacy related to self-care behaviors prior to discharge also perceived higher levels of rehabilitation success during the recovery period at home. Self-efficacy was the major predictor of Rehabilitation Success. Negotiated Social Support, one of the components of the Self-efficacy variable, was an important positive influence on Rehabilitation Success. Subjects who negotiated for social support during recovery and rehabilitation were significantly less likely to perceive stress, as their number one major risk factor. Self-efficacy was the major predictor of Rehabilitation Success.

<u>Knowledge</u> - The second hypothesis tested by this research study states:

Women who have a basic knowledge of diet, medications, activity level and factors related to disease and healing process will perceive themselves as having a more successful recovery and rehabilitation.

Hypothesis number two was not supported by the data in this research study. Subjects in this study were all very knowledgeable according to the Knowledge test. The lack of variability in the subjects scores did not provide a basis for comparison between low and high scores and perceived

very knowledgeable, the influence of self-care knowledge on Rehabilitation Success cannot be totally discounted. Further, subjects reported that they believed they had enough information to achieve self-care Rehabilitation goals. The nurse researcher believes that knowledge of self-care behaviors is necessary but not sufficient.

Interaction of Self-efficacy and Knowledge - The third hypothesis states:

> Women who have a higher level of Knowledge and also a higher level of Self-efficacy are more likely to perceive themselves as having a higher level of rehabilitation.

Hypothesis three was not completely supported by the data in this research study. This is because the Knowledge component of the hypothesis could not be supported. However the Self-efficacy component was supported. Self-efficacy was a necessary and sufficient component for Rehabilitation Success. Knowledge may be a necessary but not sufficient component of Rehabilitation Success. If or how the two variables interacted to enhance Rehabilitation Success, was not discovered by this research. Therefore, hypothesis three cannot be supported.

In conclusion, the Self-efficacy hypothesis was the only hypothesis supported by the data in this research study. The role of knowledge in successful rehabilitation is yet to be demonstrated. Self-efficacy is an important construct for consideration in the areas of teaching, practice and research.

construct for consideration in the areas of teaching, practice and research.

LIMITATIONS OF THE STUDY

There are several limitations to the study related to methodology, analysis, population, and circumstances. These limitations will be discussed along with recommendations.

1. All subjects were Caucasians. There were no Black, Hispanic, or Asian Post-MI women available as potential subjects during the eight month data collection period from the two area hospitals. A third area hospital was contacted to inquire about their population of post-MI women. Reports were that although they kept records of women with acute MI, information regarding race was not readily available.

The U.S. population of Black compared to White female heart attack victims was examined. According to the American Heart Association (1991) the death rate for black women from coronary heart disease is nearly 22% higher and from stroke 78% higher than for white women. When looking at <u>numbers</u>, however, 222,229 white women died compared to 79,810 black women in 1988. This could mean that because there are fewer black women in the population there are also fewer entering the hospital. It could also mean that they are dying before they ever get to the hospital. It could also mean that black women are more likely to die of strokes and therefore don't appear in the statistics for heart attacks. An investigation to discover the experiences that

Black women have should be conducted and then compared with the results in this study.

2. This research was a cross-sectional study of pre- and post-MI women and therefore, the long term picture of how self-efficacy influences rehabilitation over time cannot be generalized. In the Jenkins study (1985), self-efficacy stability was tested using repeated measures and found to be relatively stable over a period of four to six weeks.

3. The Knowledge test did not produce the degree of discrimination desired between knowledgeable and non-knowledgeable participants. A more discriminating test should be developed to determine the role of knowledge in predicting rehabilitation levels of success. Also the relationship between self-efficacy and knowledge should be investigated.

4. Almost all of the data collected was by self-report. The results of the study are based on the assumption that the subjects provided honest and forthright answers. There is no evidence to the contrary. Family members were not polled to validate subjects' responses.

DISCUSSION

There are several issues related to the variables that were raised by the results of this research study. A discussion of these issues and some possible explanations follows.

Self-Efficacy - Model Testing: The first issue to be discussed relates to testing the conceptual model. Both

agreements and disagreements with Bandura's model will be discussed. The results of the main study will be discussed according to the Self-efficacy Expectation revised model presented in Figure 5-1.

Explanation of the Model: In his model of Self-efficacy Expectation, Bandura describes a reciprocal relationship among self-efficacy (personal), physical (behavior) and (social) environment. The focus of this study was the relationship of self-efficacy and knowledge of self-care (two personal variables) to self-care behaviors during recovery and rehabilitation. The arrow in the drawing from self-efficacy to Rehabilitation self-care behaviors displays this relationship conceptually. The social environment has also been partially included as the variable Negotiated Social Support within Self-efficacy. Negotiated Social Support is considered a part of Self-efficacy because the focus is on enlisting support, not necessarily on available support in the environment. Because negotiating social support is considered a self-efficacious behavior, there is an arrow from self-efficacy to the social environment. Also there are two way arrows with partial arrowheads drawn between all three points indicating a probable reciprocal relationship according to Bandura's model. However, the other relationships were not the focus of this study.

The Self-efficacy domain-specific sub-variables, shown at the base of the model, have arrows directed at

SELF-EFFICACY*
(Diet, Meds, Activity & Exercise,
Negotiated Social Support, & Life Style)
KNOWLEDGE

Social Environment
  Cardiac Rehab Teaching
    Family, Friends
      Community Resources

REHAB Self-Care Behaviors
    Diet, Meds, Activity,
      Life-Style Adjustment
        & Risk Modification

*Self-Efficacy including:
1. Diet management ⟶ Dietary management
2. Medication taking ⟶ Taking medication
3. Activity & Exercise ⟶ Activity & exercise
4. Negotiating Social Support ⟶ Soc. Sup. Negotiated
5. Life-Style Adjustment ⟶ Life-Style Adjust

Rehab Success including:

Figure 5-1. Revised Self-Efficacy Expectation Model

corresponding Rehabilitation sub-variables to reflect the hypothesized relationships. Domain specificity, suggested by Bandura (1986) and utilized in the Jenkins (1985) study, was the conceptual guide for creating the Self-efficacy subscales to test the sub-variables.

Self-efficacy (total) accounted for the highest explained variance (47%) of Rehabilitation Success. The results of this study were consistent with Bandura's model. The total Self-efficacy variable is composed of the five sub-variables, Diet, Medication, Activity and Exercise, Negotiating Social Support, and Life-style Adjustments. The five sub-variables were domain specific and correlated with the five corresponding Rehabilitation Success sub-variables resulting in significant (p=>.001) positive linear relationships among the sub-variables. These findings also supported Bandura's theory and were consistent with his model.

<u>Self-efficacy Issues Raised by Study Results</u>: The first issue is whether Self-efficacy is "domain specific" or "global." Several researchers, including Bandura (1986) have attempted to deal with this issue . One may ask, for example, "if different types of activities require sub-skills and actions that are similar, then why isn't it feasible to expect some generality of self-efficacy judgements?" Bandura (1986) believes that a general (global) test of perceived control over health is a poor predictor of perceived control over a specific (domain)

behavior. He offers smoking cessation as an example and further suggests that a test designed to measure perceived personal control of non-smoking behavior (domain-specific) under different circumstances or temptations is a much better measure of self-efficacy related to smoking cessation.

Because of the controversy surrounding this issue, the Self-efficacy sub-variables were analyzed to reflect "domain-specificity." The composite or total Self-efficacy variable was analyzed to explore the global aspect. The results of the analysis provided some interesting data to consider relative to the domain-specific or global issue.

The nurse researcher used correlation and multiple regression procedures to analyze the Self-efficacy sub-variables: Diet, Meds, Activity and Exercise, Negotiated Social Support, and Life-Style Adjustment. The significant correlations between the Self-efficacy subscales and the corresponding Rehabilitation Success subscales were higher then any of the correlation values across subscales. This would support domain specificity. However, there also were some moderately high and significant correlations between the Self-efficacy subscales and the Rehabilitation non-corresponding subscales. For example, the correlation between Self-Efficacy's Negotiated Social Support and Rehabilitation's Life-Style Adjustment subscales was moderately high and significant ($r=.51$, $p=.001$), suggesting a global influence. These results could suggest that in

support of generality, self-efficacious behavior, at least
for Negotiated Social Support, operates across domains. It
could also indicate a lack of specificity in the subscale
measuring Rehabilitation Life-Style Adjustment, but the
reliability tests for all the subscales were satisfactory.
Multicollinearity between Negotiated Social Support and
Life-Style Adjustments, discussed previously, could also be
a factor.

The nurse researcher used multiple regression procedure
to detect if one of the sub-variables accounted for more of
the explained variance in Rehabilitation Success. When all
five of the sub-variables were in the equation, Negotiated
Social Support carried a substantially heavier weight (Beta
weight =.41, p=.08) than any of the others in predicting
Rehabilitation Success. From this perspective, the results
of the regression analysis supports a global effect.

On the other hand, the regression analysis indicated
that none of the sub-variables were significantly strong
enough to explain the total Rehabilitation Success variance
independently when all five Self-efficacy sub-variables had
been entered into the equation. From this view, the results
would support domain specificity rather than generality of
behaviors across domains.

Role of Social Support and Domain versus Global Issue:
To shed light on this issue the nurse researcher reviewed
comments made by the subjects. Comments by several subjects
indicated that it was easier to make the necessary life-

style changes due to their family's excellent support, whether it was negotiated social support or offered support. Support ranged from encouraging and assisting with regime adherence, exercising with the subject, to simply not bringing home tempting foods or smoking in the presence of the subject. Social support, whether enlisted or offered, appears to cross all domains. The effects of social support could also be influenced by the nature of questions asked in the subscales and was most apparent when subjects were asked to identify "enhancing factors" to rehabilitation. Another explanation in favor of generality is that the Negotiated Social Support sub-variable is very strong in terms of Rehabilitation Success and is involved in all aspects of rehabilitation.

In nearly every domain (subscale) family support was identified as most helpful in facilitating the rehabilitation process (second only to self-determination). Bandura (1996, p.19) attempts to end the argument by stating "one can derive a degree of generality from multi-domain scales, but one cannot extract the patterning of perceived personal efficacy from conglomerate omnibus tests."

In conclusion, the nurse researcher supports domain-specificity for the sub-variables Diet, Medication, Activity, and Life-style Adjustments. The self-efficacy skills involved in Negotiating Social Support appear to operate across all domains, supporting the generality theory.

<u>Extending the Support for Self-Efficacy Expectation</u>:
In either case, domain specific or generality, Self-
efficacy was the best predictor of self-care performance
during recovery and rehabilitation. This finding is
consistent with the results reported by others who have
conducted research on self-efficacy (Bandura, et al.,1986;
Ewart et al., 1983; Kaplan, et al., 1984; Jenkins 1985;
Taylor et al., 1985; Crabtree, 1986). In previous research
studies, Self-efficacy theory has been used to predict
behavior among people dealing with chronic conditions or
recovering from acute illnesses as well as health
seeking/maintenance behavior. Conditions such as myocardial
infarction, diabetes, and chronic lung diseases were
studied. Also studied were people in smoking cessation
programs, weight management, and people undergoing exercise
stress testing. However Self-efficacy in post-MI women, as
a group, has not been studied previously. Therefore, the
results of this study extend the theory of self-efficacy to
another group of people, post-MI women. Self-efficacy to
carry out prescribed self-care behaviors during recovery and
rehabilitation proved to be an important determinant of
regime adherence and health promoting behaviors for
successful rehabilitation.

Bandura (1986) identified several sources of efficacy
information. Sources include: <u>Enactive</u> information,
involving actual performance accomplishment; <u>Vicarious</u>
information; acquired by observing others of similar ability

achieving success, <u>Persuasary Communication</u>, persuading a person that he or she can perform the task; and <u>Physiological</u> information, information from one's own body concerning capability.

Several possible sources of efficacy information were evident from extra information gathered by interviews in this study. <u>Enactive</u> information has been considered the most effective source because it involves the person directly in the task or activity. This was apparent from subjects who were engaged in Cardiac Rehabilitation Exercise programs and who commented on feeling a marked sense of accomplishment and wellbeing. This type of direct involvement serves to reinforce and enhance self-efficacy. Performance mastery is an effective way of enhancing self-efficacy and influencing adherence through positive self-appraisal. Performance mastery was also reported by subjects who were placed on home exercise programs. Some subjects reported feeling more confident every day in their ability to perform the exercise and to continue as part of their routine..."for life."

Several subjects commented on the benefits of seeing other post-MI patients performing exercises in the Cardiac Rehabilitation Exercise programs who were a few weeks more advance in their rehabilitation. Observing others similar to oneself is an example of <u>vicarious</u> information. This was especially evident for one subject who reported watching talking with another post-MI patient who was also

participating in the program. The other participant told the subject that she was in much worse physical condition then the subject appeared to be in when first starting the exercise program. This participant modeled and persuaded the subject that she too could perform the task, both potential sources of efficacy information.

Cardiac Rehabilitation teaching programs are based on the persuasary communication format to induce efficacy information concerning effort, goals and achievement. The degree to which this is effective depends upon how much people assimilate and believe what is communicated. In this study, subjects frequently commented on the helpfulness of the teaching and encouragement from various health team members. Several subjects stated "Tell them to keep pushing us, we need it." Some subjects commented on feelings of uncertainly from time to time and stated that they would have liked more contact with other post-MI women during their recovery to share experiences and pick up pointers. This has implications for home follow-up programs such as the one described by Nicklin (1986). In Nicklin's program, telephone follow-up calls were made to cardiac patients to answer questions, provide and clarify information and offer encouragement.

Following MI, most people are quite aware of their bodies and of information concerning their physiologic state. Patients are taught to monitor their activity and assess signs and symptoms, such as chest pain. The positive

effects of self-monitoring are progress and safety. On the
other hand, one can become too aware of bodily functions
resulting in overconcern and fear.

Several women in this study waited "too long to seek
medical attention" initially because they failed to
recognize their symptoms as MI. These women reported being
fearful when they were first discharged home. Others
reported amazement at their progress and felt greater
confidence in their activities now that they were monitoring
their body. A strong message from several subjects was
"Listen to your body."

Setbacks among the subjects in this study occurred both
pre- and post-discharge due to physical reasons. For
example, some subjects who developed congestive heart
failure (CHF) reported feeling discouraged in their exercise
efforts, when having to start "all over" again. When asked
how she coped with this, one subject stated that her doctors
and nurses told her she would more quickly regain her
stamina if she started right in again. Another subject
stated that she knew "I just had to for myself." Bandura
(1986) points out that if one is not convinced of their own
efficacy, personal attempts to perform the skills previously
developed are abandoned rapidly, particularly when one fails
to get quick results or suffers setbacks. He calls for an
induction of the four modes of efficacy information to
override or reverse the difficulties and to instill a sense
of resilient perceived self-efficacy. The induction of

efficacy information has many implications for practice and teaching.

It is interesting to consider a sense of self-efficacy resiliency in light of the working women who did not return to their jobs. The question remains "Why didn't they return to their jobs and are their reasons the same reasons men give? Subjects in this study offered various reasons, such as; "declining health", MI occurred near "planned retirement date", the type of work was physically "too hard", and "I've worked long and hard enough. . .it just isn't worth it." Shanfield's (1990) review of the literature on return to work after acute MI suggests that women are less likely to return to work than men for several reasons. These reasons include, the fact that most women are older than men when they have their first MI, spouses often discourage wives from returning to work, and women may have a different "attachment" to work thereby making it easier for them to leave a job. Responses from subjects in the main study, except for physically demanding jobs, implied that they decided not to return to work. Further exploration was beyond the focus of this study but should be pursued in future research.

Summary: Self-efficacy Expectation is an important construct, which can predict Rehabilitation Success. A high level of Self-efficacy is associated with a high level of perceived rehabilitation success. The role of Self-efficacy's Negotiated Social Support may be more global than

domain specific because it appears to influence both
Rehabilitation Negotiated Social Support and Life-Style
Adjustments. The Self-efficacy hypothesis was supported by
the data in this research study.

Knowledge Issues: There were a number of analyses of
the results of the Knowledge test. The Kuder-Richardson
KR-20 test for reliability was minimal (KR-20 .43). But the
KR-20 may not be appropriate for a mastery level test.
Second, although the agreement coefficient for reliability
was very satisfactory (Po=.90), the Kappa was unsatis-
factory, indicating that there was little or no gain in
reliability by administering the Knowledge test. Third, the
Pearson correlation studies between the total Knowledge test
and the total Rehabilitation Success scale were
insignificant, as were the correlations between their
corresponding subscales. Fourth, when the Knowledge test
was entered into the regression equation it contributed very
little to the explained variance of Rehabilitation Success.
Fifth, the scores of the subjects were all very high
(X=.94), possibly indicating the subjects in this group were
very knowledgeable; or that the test was too easy. Sixth,
in the Rehabilitation Success telephone interview, responses
indicated that the perception of the majority (N= 42, 91%)
of subjects felt they had pretty good to excellent
information to make the necessary life-style changes.

The high test results could well mean that the Cardiac
Rehabilitation Team is doing an excellent job of educating

their post-MI patients and that the patients are learning a great deal from the teaching sessions. The high knowledge scores of this group did not correlate with high Rehabilitation Success scores and provided little weight to the explained variation in Rehabilitation Success. In either case, the lack of variability in the group would render the reliability of the test inadequate.

Summary: The hypotheses related to Knowledge cannot be supported in view of the research data. However, in view of the high Knowledge scores in this study, knowledge of selfcare content cannot be disregarded. The most plausible explanation is that knowledge is necessary, but not sufficient for successful rehabilitation.

Qualitative Responses

Enhancers and Barriers: In this descriptive, exploratory study it was important to examine other factors that might influence self-care behaviors during recovery and therefore alter the perceived Rehabilitation level of Success. Five domains were explored for key points.

1. Dietary management: Subjects reported that the major barrier to staying on their prescribed diet was craving a favorite food or snack. Precipi-tators for non-adherence included social and holiday gatherings, emotional stress, and boredom. This is similar to the findings of Marlatt & Gordon (1985) in their work with addictive behaviors. These researchers identified precipitants of breakdowns in self-regulation of overeating behavior. The

precipitants included social pressures to engage in the adverse behavior, interpersonal conflicts and inability to cope with negative emotions. For the most part, subjects rated their overall dietary management fairly high, attributing their own self-determination as their major enhancer to dietary adherence.

2. <u>Medication taking:</u> Very few barriers were identified in taking medication. Apparently, if there was a problem in taking medications, the subject reported to the physician and the medication was adjusted. The little effort and the routinization of taking medication adds to the ease of adherence. Subjects simply reported "no problems" with taking medication.

3. <u>Activity and Exercise:</u> Returning to work and sexual activity are frequently cited by health care providers as endpoints to measure return to normal activity for men. Return to housework may be a similar outcome for women. There is one rather disturbing finding in the study related to women who were working prior to their MI. Fifteen subjects were working full time (N=13) and part time (N=2) prior to their MI. At the end of this study, only seven had returned to work full time and one part time. The remaining seven subjects planned not to return to work. Reasons for this decision were not clear, except that three women mentioned the physical demands of there job. One subject was a cook in a school cafeteria, one was a child care worker for two, two-year old children, and the other

subject was a professional housekeeper. All had jobs requiring physical strength and stamina.

This finding is similar to what Mikus (1986) discovered in her study comparing pre-and post-MI activities of daily living in women. She found that her 25 women subjects spent 60% less time after their MI engaged in activities, which included working at a job, doing housework and sexual activity. Reasons given by her subjects related to physical symptoms such as, tires easily, angina related to too much exertion, and no ambition.

If decreasing physical stamina is a major reason for not returning to work perhaps job counseling or retraining for different positions should be offered to women who find it desirable to return to work.

In the Mikus study, 75% of her subjects eventually returned to work and 65% returned to sexual activity. The reason for sexual inactivity in the main study was not explored to any extent but perhaps should be in future studies. The unmarried subjects implied that the unavailability of a partner was the main reason for sexual inactivity. In studies by Boogaard (1984) and Foley, et.al. (1983) the return to work by women ranged from 33% to 59%; and the return to sexual activity ranged from 40% to 100%. Apparently, returning to work is more difficult then sexual activity for post-MI women.

On the positive side of results is that the majority of subjects were able to perform in their previous homemaker

roles by the end of approximately 10 weeks. Activities
included personal selfcare (100%), walking around inside
their homes, meal preparation, cleaning, vacuuming (37%),
driving a car, and taking care of their families. Comments
related to resumption of activities were "pacing myself",
"rest when I'm tired", "get someone else to do it" and "not
as fussy." The difference between the subjects who were
able to walk outside their home/apartment and the subjects
who were able to walk one to two or more miles was not
significant (p=<.07) in terms of self-rating their perceived
overall Activity success, but did reflect a trend.

The major barrier for activity was physical symptoms,
such as fatigue, weakness and shortness of breath. The
major barrier for walking exercise was the weather and lack
of a convenient community resource center. This has
implications for the development of community based exercise
facilities, which include providing opportunities for people
to walk in school halls or gymnasiums after school hours,
providing bus pickup services for senior citizens fearful of
winter driving, and developing swimming or water aerobic
exercise programs.

Factors reported to enhance activity and exercise were
self-determination and support received from family and
health care providers particularly at Cardiac Rehabilitation
Centers. Cardiac Rehabilitation Centers should also
consider extending their services to surrounding
communities. For example, nurses and exercise physical

therapists could travel to smaller more isolated communities to conduct rehabilitation programs.

4. Negotiated Social Support: The Negotiated Social Support subscale questions were incorporated within each of the other Rehabilitation Success subscales. Two obvious barriers to Negotiating Social Support emerged during the interviews. One barrier to Negotiating Social Support was the number of women living alone and the apparent lack of live-in support resources. The other barrier to Negotiating Social Support related to womens' natural reluctance to ask others to assume some of their homemaker role functions. Whether this reluctance is due to feelings of unworthiness or role possessiveness was not clear.

What was clear from this study was the amount of social support these subjects were able to enlist during recovery and rehabilitation. Both affirmation and physical assistance were considered social support. Subjects reported that husbands learned to cook and clean, daughters shopped, prepared meals and ran errands, and the subjects themselves learned to direct their spouses in laundry and household chores. Subjects living alone commented on friends and neighbors who offered assistance and how they learned to accept this help. One subject utilized her church group for assistance. Some subjects utilized community resources for the first time, such as Meals on Wheels and Visiting Nurses Association for assistance during the early recovery period. Other subjects hired

housekeepers for heavier work. Through their own creative efforts, the majority of subjects were able to get the kind of social support they needed.

One barrier mentioned before related to lack of Community resources and supports, especially in outlying communities. Subjects mentioned several resources that were lacking in their community: Cardiac exercise programs, post-MI support groups for women, and places to walk during inclement weather. Several subjects also mentioned that they lacked a means of transportation to Cardiac Rehabilitation Programs.

5. <u>Life-Style Adjustments, Including Risk Modification:</u> Subjects reported several barriers to risk factor modification. They identified stress, followed by obesity as the major risk factors. They also identified temptations (food & smoking), fatigue, habitual worrying and reasons beyond personal control most frequently as barriers. The identification of stress by the majority of subjects has implications for rehabilitation programs. For example, practicing stress management techniques could be incorporated into the educational unit when stress management is discussed.

Of special interest were the comments from some subjects that expressed the feeling of being "alone in the whole experience" regardless of family support. These subjects stated that they would like to talk with other women who had a heart attack. This feeling of "aloneness"

and desire to share experiences with other post-MI women has implications for Cardiac Rehabilitation programs, such as establishing group support sessions for women to talk to one another.

Enhancing factors for risk factor modification were self-determination and family or friend social support. Some subjects commented on the fact that "you just have to make up you mind and do it," in reference to their particular risk factor. Other subjects stated that they could not have been so successful in reducing or eliminating their risk factor without the support of their family.

Subjects on the whole, were quite pleased with their progress in terms of getting back into family and social roles again, regaining physical strength, keeping up their spirits, and integrating the information and knowledge into their own routines.

In summary, subjects reported major barriers to rehabilitation were physical symptoms, such as fatigue, weakness, and shortness of breath; adherence to activity prescriptions; and physical setbacks. Subjects reported that the major overall enhancer to rehabilitation was support from family, friends, and health care team members.

IMPLICATIONS FOR TEACHING and PRACTICE

There are two basic assumptions underlying this study: First, health care providers want to facilitate the rehabilitation process through their teaching programs and second, patients want to get well and back to living their lives to the fullest extent possible. Many rehabilitation programs have emphasized teaching content to facilitate knowledge useful for self-care. Based on the results of this study, health educators should emphasize methods to enhance patients' self-efficacy. The health educational model should be expanded to include methods to assess a patient's level of self-efficacy. Simple, yet specific, self-efficacy questions should be developed by various specialty units and included in current assessment forms.

Educational models should also include strategies to increase self-efficacy and to facilitate problem-solving during recovery and rehabilitation. Health educators should use the four modes of efficacy information to override or reverse the difficulties and to instill a sense of resilient perceived self-efficacy if set-backs occur.

Self-efficacy Expectation Assessment: A commonly held value among health care providers is that rehabilitation should start on admission. This implies that assessment of the patients needs for recovery should begin and continually be updated. Self-efficacy assessment could be incorporated in the assessment format. During the admission phase, the nurse could gain insight into the patient's response when

performing certain tasks, such as walking or taking a bath. Mastery of walking and the nurses supportive feedback could enhance self-efficacy.

Self-efficacy Educations: During cardiac teaching sessions, seeing and hearing other cardiac patients as they progress could vicariously enhance self-efficacy. Problem-solving sessions guided by professionals could provide opportunities for patients to share concerns and develop strategies for the future.

Video instruction is becoming prevalent in cardiac teaching programs and are apparently quite effective for imparting content. It is possible that new patients can be shown tapes of successful experienced patients. However, a precautionary note regarding the use of tapes should be injected. Video tapes can be used to enhance the educational process but should not take the place of personal contact with health care professionals. Personal contact with health care professional is crucial to focus on the patients individual self-efficacy needs and to provide anticipatory guidance for discharge. For example, risk factor modification for smoking cessation or weight loss is likely to require post-discharge management strategies and reinforcement. Physical symptoms, such as angina, may occur to undermine self-efficacy. Health care educators need to provide anticipatory guidance and encouragement. This guidance should help patients build confidence in managing their own angina after discharge and also help allay their

fears. In addition to teaching skills, health care educators should provide practice sessions for patients to practice how to deal with chest pain, manage stress and to practice other skills needed for recovery and rehabilitation. This "dry run" provides opportunities to boost self-efficacy through mastery.

One distressing discovery in this study was the length of time subjects waited before seeking medical attention. The majority of subjects' reported that they did not experience the typical signs and symptoms. Health care professionals must inform the public about subtle signs and impress upon people the urgency of seeking help immediately. Women need to be alerted to take action when they perceive less typical signs and symptoms, such as back pain or shortness of breath. Health care providers need to become more alert to the subtle signs women present, support their efforts in seeking care, and make the diagnosis without delay.

Self-efficacy and Social Support Implications: Common practice in Cardiac educational programs is to invite the wife of the post-MI male patient to attend the teaching sessions, particularly the diet classes. The classes are usually held during the day, when more members of the health team are available. The offer to attend sessions should be extended to husbands and/or family of post-MI women should be offered at a convenient time to encourage their attendance. Health educators should expect the patients

family members or a close friend to attend and learn as much as possible about how they can best facilitate the patient's rehabilitation. Husbands or family and friends might have been very valuable for women in this study if they had attended sessions on stress management and risk modification. The assistance and affirmation that could be encouraged with this type of support is unlimited.

Family and friends should be included in content and skills educational sessions, such as how to administer nitroglycerine to the patient in case of emergency. Additionally, skill learning could increase the partner's self-efficacy and provide opportunities for the group to problem-solve and devise an emergency plan should an emergency occur. Telephone follow-up calls by health care educators could be a very valuable source of persuasary self-efficacy enhancement during recovery. This could be an opportunity to assess progress, to clarify instructions, to help resolve concerns, to suggest community resources, and discuss future plans. Follow up calls could also be provided by cardiac lay support groups to provide social support.

Self-efficacy and Community Support Implications: Community workers, health care providers and special interest groups should all work together to develop programs offering emotional support, exercise classes and places to walk, and transportation. Some women in their later years are afraid to drive in the winter months and may

only venture outside to keep doctor's appointments. Community transportation or volunteer car pools could offer post-MI women the opportunity to attend the Cardiac Rehabilitation programs and form social support groups to discuss their experiences and share strategies.

Summary: There are many opportunities to induce efficacy expectation and support Self-efficacy during the rehabilitation process for post-MI women. Health care providers must involve the patient, family members, and community resources in designing programs that enhance Self-efficacy expectation.

IMPLICATIONS FOR FUTURE RESEARCH

The results of this study provided evidence that Self-efficacy was an important factor in the rehabilitation of post-MI women. The pursuit of future research could be potentially productive in developing a more encompassing educational model for the rehabilitation of recovering post-MI women. The following are potential areas to consider in the pursuit of future research.

1. The long term influences of self-efficacy should be studied. For example, a follow-up study of the subjects in the main study could be conducted to discover their status in terms of self-efficacy, functional ability and life-style readjustment. Additionally, objectively determined measures should be developed to compare rehabilitation success with perceived Rehabilitation Success.

2. Cross cultural studies, particularly including Black, Hispanic and Asian women, should be conducted to broaden the scope of the research on self-efficacy on post-MI women.

3. The effects of MI on working women should be studied in more depth. The number of working women is growing and as the population ages this information will become increasingly more important for womens' health issues.

4. The Rehabilitation Success scale should be revised for ease of administration (and analysis). The number of questions should be limited so that the scale could be administered in 30 minutes. In addition, the Rehabilitation Success scale should be validated against objective measures.

5. The theoretical model tested was self-efficacy expectation. Self-efficacy outcome expectations were not addressed in this study. The value placed on outcome expectations may well serve to enhance self-efficacy performance. For a more comprehensive view of factors influencing self-efficacy self-care among post-MI women, outcome expectations should also be addressed.

6. The nature of "stress" in women should be studied since this risk factor was identified by 80% of the subjects.

7. Negotiated Social Support proved to be a strong influence on successful rehabilitation. The social support environment should also be measured in future studies and

compared with social support negotiated by subjects. This could provide insight into the relationship between "enlisted" and "offered" social support.

8. The study should be repeated, with the suggested minor revisions, using larger numbers of subjects.

SUMMARY:

The research study supported the hypotheses that self-efficacy promotes the perception of successful rehabilitation among post-MI women. This research increased the understanding of the relationship between self-efficacy expectation and rehabilitation level of success in women recovering from myocardial infarction as they attempt to integrate their experiences and life-style changes. The study provides empirical support for self-efficacy expectation assessment and the need for self-efficacy interventions.

Implications for practice and teaching have been advocated and strategies to increase self-efficacy sources have been suggested. Factors that enhance and serve as barriers have been described. Limitations of the study and implications for future research have been addressed.

This research also extends self-efficacy theory to another group of subjects ... post-MI women, and adds to the growing body of knowledge in cardiac rehabilitation.

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APPENDIX A

PATIENT CONSENT FORM: VERBAL EXPLANATION

"HELLO, I'M SUZANNE BUDD FROM MICHIGAN STATE UNIVERSITY."

Present card.   _____

HOSPITAL HAS GIVEN ME PERMISSION

TO CONTACT WOMEN WHO HAVE HAD A

HEART ATTACK.   THE DECISION TO

PARTICIPATE IN THE HEART STUDY

IS ENTIRELY YOURS.   YOU MAY

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517/355-6523 or 517/676-2639 (H)

DECIDE NOT TO PARTICIPATE AT ALL OR TO DISCONTINUE PARTICI-

PATION AT ANY TIME.   WHAT HAS YOUR DOCTOR TOLD YOU ABOUT YOUR

HEART?"   (If client confirms heart attack, continue with

explanation . . . as on consent form):   CARDIOVASCULAR

NURSING, MORE SPECIFICALLY, CARDIAC REHABILITATION AND

RECOVERY FOLLOWING A HEART ATTACK IS MY PRIMARY AREA OF

RESEARCH INTEREST IN THE NURSING FIELD.   AS YOU MAY KNOW, MUCH

RESEARCH HAS BEEN CARRIED OUT WITH MEN WHO HAVE HAD HEART

ATTACKS, BUT LITTLE OR NO RESEARCH HAS BEEN CONDUCTED FOR

WOMEN.   IN ORDER TO ADVANCE THE KNOWLEDGE IN THIS AREA, I HAVE

CHOSEN TO WRITE MY DOCTORAL DISSERTATION ON WOMEN WHO HAVE HAD

A HEART ATTACK . . . AND FOR THIS, I AM ASKING YOUR

ASSISTANCE.   I AM INTERESTED IN THE EXPERIENCES AND BELIEFS

WOMEN HAVE DURING THE POST-HOSPITAL RECOVERY AND

REHABILITATION PERIOD.   YOU WILL BE ASKED TO PROVIDE

INFORMATION FOR MY STUDY THAT I BELIEVE IS CENTRAL TO THE

ADVANCEMENT OF TEACHING OTHER POST-HEART ATTACK WOMEN, CARDIAC REHABILITATION PROGRAM DEVELOPMENT AND CURRICULUM DEVELOPMENT FOR CARDIAC REHABILITATION NURSES AND OTHERS.

MS. X., WOULD YOU BE INTERESTED? IT WILL TAKE ABOUT 25 MINUTES AND ABOUT 40 MINUTES FOR A FOLLOW-UP PHONE CALL AFTER YOU'VE BEEN HOME A FEW WEEKS . . ."

If client is interested, present consent form with specific explanation of participation (see Consent Form) and explain questionnaires. Obtain signatures and photocopy for patient. Thank client for her time.

APPENDIX B

APPENDIX B

WOMEN'S HEART STUDY

CONSENT FORM

· Heart disease in women, especially rehabilitation and recovery following a heart attack, is my primary area of research interest in the nursing field. As you may know, much research has been carried out with men who have had heart attacks, but little or no research has been conducted for women. In order to advance the knowledge in this area, I have chosen to conduct a research study on women who have had a heart attack . . . and for this, I am asking your assistance. I am interested in the experiences and beliefs women have during the post-hospital recovery and rehabilitation period. You would be asked to provide information for my study that I believe is very important for the advancement of nursing care for women with heart disease so that we may better assist them during recovery and rehabilitation.

The information I would ask you to share would be the following:

1.   I would like you to respond to a questionnaire before you are discharged from the hospital . . . which deals with what you know about your heart attack, how to take care of yourself at home (medications, diet, activity, etc.), what you believe about your ability to care for yourself, and how you respond to things in general. This three-part questionnaire will take approximately 20-25 minutes to complete and consists mainly of answers to check or circle or very short responses.

2. Approximately four weeks after you are discharged from the hospital, I would like to telephone you for an interview. This "telephone interview" would be for the purpose of finding out just how recovery and rehabilitation from you heart attack has been for you. For example, what part of the recovery was easy for you, what part, if any, was difficult, what assistance was available, and what advice would you give other women who have had a heart attack? Also, what advice would you give health care professionals? This telephone interview would take approximately 40 minutes and, of course, would be billed to my phone if the call is long distance. (If you have difficulty hearing on the phone, I would be glad to arrange a home interview.)

3. I would also like your permission to look at your patient record to determine the severity of your heart disease and note your discharge orders for diet, medications, activity and follow-up doctor's appointment.

ALL INFORMATION IS STRICTLY CONFIDENTIAL . . . NAMES ARE CHANGED TO CODE NUMBERS! RESULTS OF THE STUDY ARE REPORTED AS GROUP RESULTS.

While your participation in this study may not benefit you personally, it may benefit others when overall research data is shared with Health Care Professionals. It may also help to advance our understanding of what women with heart disease experience during recovery and the rehabilitation process. This, in turn, may lead to new methods and care. All information will be treated as confidential and names will be changed to code numbers to guard against breach of privacy. Your decision to participate will not affect your care and you may withdraw from the study at any time.

The research study has been explained to me, and I understand the purpose of the research is to find out what experiences women have after a heart attack. I also understand that participation in this study is voluntary and that refusal will not affect my care in any way.

I have read this consent form and understand the project. I agree to participate in the following ways:

1. Complete the questionnaire prior to hospital discharge.
2. Respond to the telephone interview approximately four weeks following hospital discharge.
3. Permit the nurse researcher to obtain information from my chart related to my heart attack and my discharge orders.

If you are willing to participate in this study, please complete the following:

Patient's Phone number: __(___)_____

Best day(s) to call: _____

Best time(s) of day to call: _____

Do you prefer a home interview? _____ If so, I will phone for an appointment.

Patient's
Signature _____ Date _____

Witness's
Signature _____ Code # _____

Research
Nurse's Signature _____

If you have any further questions, I would be happy to respond. Please call SUZANNE BUDD, R.N., Nurse Researcher, at: (517) 353-6671 Days, or (517) 676-2639 after 6:00 p.m.

I acknowledge receipt of a copy of this consent form _____
_____Participant's photo copy   _____Research Nurse's Copy

APPENDIX C

QUESTIONNAIRE - PART A

Before we begin, can you tell me a little about what happened to you (your heart), starting when you first knew something was wrong? The following questions ask general things about you. Please answer all of the questions to the best of your ability.

1. What is your age_____.

2. What is your racial or ethnic background? (check one)
   ___ White   ___ American Indian
   ___ Black   ___ Oriental
   ___ Mexican-American   ___ Other (specify)_____

3. What is your marital status? (please check one)
   ___ Married   ___ Divorced
   ___ Single, never married   ___ Widowed
   ___ Separated

4. How many children do you have? (include number and ages)

5. Who lives in your household, besides yourself? (check all that apply)
   ___ No one else
   ___ Spouse/significant other
   ___ Children: number living at home _____,
        age range_____ _____
   Other relatives_____
   Non-related persons_____

6. What is the highest grade you completed in school? (please check one)
   ___ None or some grammar school (less than 7 grades)
   ___ Junior high school (9 grades)
   ___ Some high school (10 or 11 grades)
   ___ Graduated high school
   ___ Technical, business or trade school
   ___ Some college (less than 4 yrs.)
   ___ Graduated college
   ___ Postgraduate college or professional degree

7. Were you working at a regular job outside the home for money prior to your heart attack?
   ___ yes, I was working ___ full time, ___ part time.
   ___ no, I am ___ unemployed, ___ retired, ___ disabled,
   ___ housewife, ___ other (if other,please specify)

_____

8. What is/was your main occupation? Circle the one that best describes your job: Professional, Technical, Clerical Supervisory, Laborer, Full-time homemaker, other (if other, write in the type of work you do or did).

_____

9. Is anyone in your household dependent upon you for:
   a. Financial support?_____. If yes, who?_____
                                          (relationship).
   b. Personal assistance?_____. If yes, who?_____
                                          (relationship).
   c. Emotional support, guidance, or supervision?_____
      If yes, who? _____ (relationship).

10. The following risk factors have been associated with heart attacks. Please check all those risk factors that you believe you have, and indicate with a number "1" which risk you think is your biggest/worst risk factor:
   ___ High blood pressure   ___ Physical inactivity
   ___ High blood cholesterol   ___ Obesity
   ___ Cigarette smoking   ___ Stress
   ___ My age   ___ Diabetes
   ___ Family history of   ___ Post-menopause
       heart attacks

11. Prior to this heart attack, what type of heart problems, if any, did you have? Check all that apply. (If none at all please check and go to 13)
   ___ none at all   ___ chest pain
   ___ previous heart attack   ___ heart surgery
   ___ conjestive heart   ___ rheumatic heart disease
          failure
   ___ other (please describe) _____

12. How many times have you been hospitalized in the past year for heart problems? _____

13. Do you have any other chronic health problems?
   ___ yes   ___ no
   If yes, please check if any apply:
   ___ arthritis   ___ cancer
   ___ ulcer   ___ lung disease
   ___ diabetes   ___ hypertension
   ___ other? _____

14. Do you have any financial worries related to your health problems or your heart attack? _____ No,_____ Yes (If yes please specify) _____

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15. Who would you most likely ask if you needed help with each of the following?
    a) personal care (bathing, dressing, eating, etc)
       _____
    b) cooking _____
    c) cleaning _____
    d) laundry_____
    e) grocery shopping _____
    f) driving to appointments _____
    g) other errands _____

16. Who would you turn to for emotional support and under-standing, such as:
    a) reassurance _____
    b) sympathy_____
    c) encouragement_____
    d) assistance in following your perscribed plan (e.g. medications, diet, activity) _____

17. Are there any problems or hassles about asking someone to help you (e.g. perhaps you dislike having to ask others, or you hate to bother them, or you don't want to be obligated to anyone, or no one has offered)?_____
    _____
    _____

18. Have you ever used any community health services?_____
    (If yes, which one?) _____
    Were you satisfied with the service?_____

19. Please select the statement that most closely represents how your body feels physically today. Select only one response from the following four.

    ___ Ordinary physical activity does not cause me any chest pain or pressure, or shortness of breath or fatigue.
    ___ I am very comfortable at rest. If I get up and walk around the hall I soon become tired, or short of breath or feel chest pain or pressure.
    ___ I am comfortable only at rest. If I get up and walk a short distance (such as walking to the bathroom) I become very tired, or very short of breath or feel chest pain or pressure.
    ___ Even at rest I usually feel some discomfort such as chest pressure or pain, or short of breath or I feel tired all the time.

20. Regardless of what you have been told about your activity level, what activity and restrictions do <u>you</u> believe should be prescribed for you? Select only <u>one</u> response from the following:

___ There should be no limitation on my ordinary physical activity.

___ There should be only slignt limitation on my ordinary physical activity.

___ There should be moderate limitation on my ordinary physical activity.

___ There should be extreme limitation on my ordinary physical activity.

APPENDIX D

KNOWLEDGE LEVEL CHECK LIST - PART B

This part of the questionnaire addresses what patients learn and remember about their heart attack. Please answer questions A, B, & C first.

A. Have you had any teaching about heart attacks and how to take care of yourself from the cardiac health team: nurses, doctors, physical therapist, social worker, dietician, pharmacist, (circle members), if other, who? _____

B. Have you attended a cardiac rehab class while in the hospital? __ yes,___ no.

C. Has a family member or someone close to you attended a cardiac rehab class with you or received formal instruction? __ yes __ no; if yes, who? _____.

The following are general questions about heart attack and the treatments. Please answer each question to the best of your knowledge by yourself.

QUESTIONS: For all questions circle a "T" if you believe the statement is true, or an "F" if you believe the statement is false. Please mark every response.

1. T F MY HEART is a muscle that pumps blood to all parts of my body.

2. T F MY HEART, if working right, stores excess water in my lungs.

3. T F MY HEART speeds up when I'm active and slows down when I rest.

4. T F A HEART ATTACK MEANS that part of the heart muscle is damaged.

5. T F A HEART ATTACK MEANS that the whole heart muscle is damaged.

6. T F A HEART ATTACK MEANS that there is no damage to the heart muscle at all, only a temporarily lack of oxygen.

7. T F A HEART ATTACK CAN BE CAUSED BY a blood clot in the heart arteries (blood vessels).

8. T F A HEART ATTACK CAN BE CAUSED BY fatty deposits in arteries blocking blood flow to the heart.

9. T F A HEART ATTACK CAN BE CAUSED BY spasms (constriction) of the heart arteries.

10. T F AFTER A HEART ATTACK, WHEN THE HEART IS HEALING: small blood vessels develop (collateral circulation) to provide blood and oxygen to help repair the damage.

11. T F AFTER A HEART ATTACK, the heart heals gradually forming a firm scar by the end of approximately six to eight weeks.

12. T F AFTER A HEART ATTACK, progressive exercise helps to further develop collateral circulation and aide in healing.

13. T F AFTER A HEART ATTACK, the heart heals best when one is inactive and confined to bed.

14. T F CHEST PAIN always means you are having another heart attack.

15. T F CHEST PAIN may indicate the need to stop the activity and rest.

16. T F CHEST PAIN will go away if you keep active and take your mind off the pain.

17. T F A HEALTHY HEART DIET limits fat and cholesterol like ham & eggs.

18. T F A HEALTHY HEART DIET increases the amount of simple carbohydrates, such as honey and pancakes or sherbert.

19. T F A HEALTHY HEART DIET limits salty foods like pretzels or hotdogs.

20. T F A HEALTHY HEART DIET encourages using complex carbohydrates, such as whole grains, vegetables and fruits.

21. T F A HEALTHY HEART DIET should only be followed by heart patients.

22. T F A HEALTHY HEART DIET is too difficult to follow when eating out, therefore one should not eat out at restaurants or at a friend's.

23. T F A HEALTHY HEART DIET provides the nutrition the body needs and helps the heart to heal.

24. T F A HEALTHY HEART DIET limits calories for overweight people.

25. T F FOLLOWING A HEART ATTACK, ACTIVITY is gradually increased to prevent over-stressing the healing heart.

26. T F FOLLOWING A HEART ATTACK, ACTIVITY is no longer restricted once you are discharged home.

27. T F FOLLOWING A HEART ATTACK, ACTIVITY is restricted to limit all activity except bed rest once you are discharged home.

28. T F FOLLOWING A HEART ATTACK, ACTIVITY is spaced with rest periods between light work or mild exercise.

29. T F MILD EXERCISE AFTER A HEART ATTACK INCLUDES SUCH THINGS AS: walking, leisure swimming, golfing.

30. T F MILD ACTIVITY AFTER A HEART ATTACK INCLUDES SUCH THINGS AS: washing windows, hanging drapes, raking leaves.

31. T F NITROGLYCERINE SHOULD BE taken at the first sign of chest pain.

32. T F   NITROGLYCERINE SHOULD BE taken only after your chest pain has lasted for at least 15 minutes.

33. T F   IF I HAVE CHEST PAIN I SHOULD contact my doctor immediately or drive myself to the emergency room.

34. T F   IF I HAVE CHEST PAIN I SHOULD take my nitro-glycerine, then if no relief after taking nitro 5 minutes apart for 15 - 20 minutes, contact my doctor or emergency services.

35. T F   IF I HAVE CHEST PAIN I SHOULD take my antacid, put my heating pad on my back and go take a nap since it is most likely heart burn or a strained back muscle.

36. T F   IF I HAVE CHEST PAIN I SHOULD stop the activity I'm doing & rest.

SOME RISK FACTORS ASSOCIATED WITH HEART DISEASE CAN BE CONTROLLED. MARK "T" FOR TRUE IF THE RISK FACTOR CAN BE CONTROLLED BY ONE'S EFFORT. MARK "F" FOR FALSE IF THE RISK FACTOR CANNOT BE CONTROLLED by one's effort:

37. Heredity ___   38. Smoking ___   39. Cholesterol level ___
40. Stress ___   41. Hypertension ___   42. Obesity ___
43. Age ___

APPENDIX E

SELF-EFFICACY QUESTIONNAIRE - Part C

WOMEN'S BELIEFS AND PERCEPTIONS ABOUT SELF-CARE AFTER A HEART ATTACK

The statements below describe what some people believe about managing their own care and recovery following a heart attack. Please circle the number which best describes how confident you are in your ability to manage after your heart attack once you are discharged home.

```
0 = NOT AT ALL CONFIDENT
1 = SOMEWHAT CONFIDENT
2 = MODERATELY CONFIDENT
3 = VERY CONFIDENT
4 = COMPLETELY CONFIDENT
```

MANAGING YOUR DIET - HOW CONFIDENT ARE YOU THAT YOU COULD:

1. Adjust your family diet to meet your heart diet needs.

   0   1   2   3   4

2. Eat out and still stay on your heart diet.

   0   1   2   3   4

3. Prepare the foods recommended on your healthy heart diet.

   0   1   2   3   4

4. Reduce animal fats and cholesterol in your diet.

   0   1   2   3   4

5. Stay on your healthy heart diet (avoid temptation). at a party or family holiday gathering.

   0   1   2   3   4

TAKING MEDICATIONS - HOW CONFIDENT ARE YOU THAT YOU COULD:

6. Recognize the need to take nitroglycerine.

   0   1   2   3   4

7. Take nitroglycerine if needed for chest pain.

   0   1   2   3   4

8. Determine if nitroglycerine relieves your chest pain.

   0   1   2   3   4

9. Recognize the temporary side effects of nitroglycerine (ie. headaches, dizziness).

                                          0   1   2   3   4

10. Deal effectively with the side effects of nitroglycerine.

                                          0   1   2   3   4

REST, ACTIVITY AND EXERCISE - HOW CONFIDENT ARE YOU THAT YOU COULD:

11. Rest after meals.   0   1   2   3   4

12. Use Rehab guidelines for increasing your activity level.

              0   1   2   3   4

13. Inform visitors when you are tired and need to rest.

              0   1   2   3   4

14. Do mild exercise without fear that it would damage your heart.   0   1   2   3   4

15. Monitor your own exercise or activity and note progress.

              0   1   2   3   4

16. Gradually increase your activity level safely.

              0   1   2   3   4

17. Resume previous sexual patterns when activity permits.

              0   1   2   3   4

ARRANGING FOR SOCIAL SUPPORTS AND/OR ASKING FOR ASSISTANCE - HOW CONFIDENT ARE YOU THAT YOU COULD:

18. Ask your family to vacuum or scrub the floor for you.

              0   1   2   3   4

19. Call your nurse at the hospital to explain things again.

              0   1   2   3   4

20. Ask someone else to do your household chores during your recovery period.   0   1   2   3   4

21. Ask someone to grocery shop for you.   0   1   2   3   4

22. Confide in your spouse or friend about how you feel.

              0   1   2   3   4

23. Get emotional support from your friend or spouse.

              0   1   2   3   4

24. Ask for cooperation to help modify your life-style.

              0   1   2   3   4

25. Rearrange job responsibilities or tasks at work to prevent over-working yourself.

          0   1   2   3   4

26. Take care of yourself even if it means you would have to limit the care you provide for your family or others.

          0   1   2   3   4

27. Obtain community services if needed, such as, visiting nurses, meals on wheels or social services.

          0   1   2   3   4

28. Obtain community **emergency** services quickly if needed.

          0   1   2   3   4

LIFE-STYLE ADJUSTMENTS, INCLUDING DEALING WITH EMERGENCIES, STRESS MANAGEMENT & RISK FACTOR REDUCTION - HOW CONFIDEENT ARE YOU THAT YOU COULD:

29. Recognize the danger signs to report to your doctor.

          0   1   2   3   4

30. Manage chest pain by yourself if you were alone.

          0   1   2   3   4

31. Get help quickly if you experience severe chest pain.

          0   1   2   3   4

32. Devise an emergency plan should one become necessary.

          0   1   2   3   4

33. Get more information about your heart disease if needed.

          0   1   2   3   4

34. Reduce your risk factors for a healthier life-style.

          0   1   2   3   4

35. Deal with life-style changes imposed by your heart attack

          0   1   2   3   4

36. Manage financially as well as you did before your heart attack.

          0   1   2   3   4

37. Join a Heart Rehab exercise class if recommended.

          0   1   2   3   4

38. Take family disagreements in stride without feeling stressed

          0   1   2   3   4

39. Perform relaxation techniques to ward off stress.
                                        0   1   2   3   4

40. Devise a plan to manage your own stress should stress
    occur.   0   1   2   3   4

DID YOU HAVE PROBLEMS IN ANSWERING ANY OF THE QUESTIONS?
IF YES, please write in the question number(s) that gave you
              problems. _____

APPENDIX F

M S U

WOMENS HEART STUDY

CHART DATA

BY SUZANNE BUDD

DIAGNOSIS: DIET:

SPECIAL PROCEDURES: MEDICATIONS
(TPA   CAS   PTCA   etc)

HEART ENZYMES:

CHOLESTEROL LEVEL:

OTHER SIG. LAB:

RISKS FACTORS   ACTIVITY LEVEL

OTHER PROBLEMS

APPENDIX G

APPENDIX G

CRITERIA FOR REHABILITATION SUCCESS:
Post-discharge Telephone Interview-Part D

The questions you will be asked have to do with how you have been able to manage during your rehabilitation at home and what this experience has been like for you. There are no right or wrong answers and there may be questions you prefer not to answer. If you're ready, we'll begin.

```
0 = not at all
1 = seldom/poorly
2 = occasionally/fair
3 = usually /pretty good
4 = most the time/excell.
NA= not applicable
```

TELEPHONE INTERVIEW QUESTIONS

To what extent have you been able to manage in the following areas, now that you've been home for a few weeks?

A. Dietary Management:

TO WHAT EXTENT ARE YOU ABLE TO:

1. State the guidelines for your recom   mended   0 1 2 3 4 NA
    diet (states low fat, low chol., low
    calorie, no added salt) diet?

2. Stay on your healthy heart diet   0 1 2 3 4 NA
    when eating at home?

3. Maintain your desired weight or   0 1 2 3 4 NA
    - lose weight, if advised?

4. Select the recommended foods at   0 1 2 3 4 NA
    the grocery store?

5. Dine out and stay on your diet?   0 1 2 3 4 NA
    (ie., at a restaurant).

6. Obtain more information on your diet   0 1 2 3 4 NA
    if needed, from community resources (i.e.,
    hospital or Rehab team dietician)?

7. Get your family to help support your   0 1 2 3 4 NA
    efforts to stay on your diet?

8. Go to a party and stay on your diet?   0 1 2 3 4 NA

9. Ask your friends or host/hostess   0 1 2 3 4 NA
    to support your diet efforts?

What experiences can you share about trying to stay on your healthy heart diet?

Helpful (i.e.family support, self-determination)? _____

_____

Non-helpful (i.e.family sabotage, cravings, taste, etc.)? _____

_____

Score _____

B.   **MANAGEMENT OF MEDICATION SELF-ADMINISTRATION:**
     Prototype - Medication related to nitroglycerine (NTG)

     Have you had chest pain or pressure since you've been home? (Y/N)
     Have you taken nitroglycerine since you've been home? (Y/N)
     If yes, how many times per day _____ or times per week _____?

TO WHAT EXTENT:

10. Can you state the basic guidelines   0 1 2 3 4 NA
     for <u>taking</u> NTG? (identify chest pain
     or pressure, time &/or sequence, placement
     under tongue, and carrying NTG with her)

11. Can you identify the <u>action</u> of NTG?   0 1 2 3 4 NA
     (vasodilates, relaxes arteries,etc.)

12. Can you identify the <u>side effects</u> of NTG? 0 1 2 3 4 NA
     (dizziness, headaches, etc.)

13. Can you manage the side effects of   0 1 2 3 4 NA
     NTG (or state how to do so)?
     (sit down; take tylenol, etc.)

14. Can you evaluate if NTG is effective   0 1 2 3 4 NA
     (relief of chest pain, etc.)
     _____

15. Can you identify what to do if NTG   0 1 2 3 4 NA
     is <u>not</u> effective? (call Dr. or E.R.)
     _____

16. Can you count on your family or friend   0 1 2 3 4 NA
     to give you NTG if you were unable?

17. Can you count on your family or friend   0 1 2 3 4 NA
     to recognize if you should need NTG?

Have any family members or friends given you NTG? (Y/N)
     If yes, describe circumstances _____
Have you encountered any problems taking NTG? (Y/N) If yes, please
     explain _____

                                        Score _____

PLEASE LIST THE HEART MEDS YOU ARE NOW TAKING AND WHAT EACH IS FOR:
MED_____   FOR _____   ANY SIDE EFFECTS __
_____   _____   _____
_____   _____   _____
_____   _____   _____
_____   _____   _____
_____   _____   _____

IN YOUR EXPERIENCE WITH TAKING MEDICATIONS, WHAT HAS HELPED YOU THE MOST?
_____
WHAT HAS BEEN THE MOST DIFFICULT? _____
_____

C. MANAGEMENT OF PHYSICAL ACTIVITY AND EXERCISE

Please state what guidelines you were given for activity and exercise at discharge. (Subject's Comments) _____
_____

TO WHAT EXTENT :

18. Have you followed your prescribed   0 1 2 3 4 NA
    activity level since discharge?
    (Subject's Comments) _____

19. Do you monitor your own activity   0 1 2 3 4 NA
    (ie. take pulse, note s.o.b.)?

20. Can you state the symptoms that would   0 1 2 3 4 NA
    alert you to stop an activity so as
    to prevent over stressing your heart.
    (Ht. rate no > 20 bpm higher than
    at rest, stop and rest if short of
    breath, or feel chest pain, fatigued,
    faint, dizzy, or hrt palpitations.)

21. Do you follow the guidelines for safe   0 1 2 3 4 NA
    activity (ie. paced activity)?

22. Have you increased your activity   0 1 2 3 4 NA
    level since you've been home?

PLEASE STATE WHICH OF THE FOLLOWING ACTIVITIES YOU NOW DO ON YOUR OWN
___ · Personal care (bathing, grooming, dressing)?
___ Meal preparation for self? ___For family? ___ Kitchen clean up?
___ Bedmaking? ___ Bed changing? ___ Dusting? ___ Laundry?
___ Ironing? ___ Scrubbing kitchen/bathroom fixtures and appliences?
___ Vacumming/mopping floors? ____ other? _____
___ Grocery shopping? ___ Driving car? ___ Child/grandchild care?
___ Working on a hobby? ___ Volunteer work?

23. Do you engage in cardiac exercises?   0 1 2 3 4 NA
    If not, why? _____

PLEASE INDICATE WHICH OF THE FOLLOWING EXERCISES YOU ENGAGE IN NOW:
___ Walking inside your home? ___ Walking outside around your home?
___ Walking less than 1 mile?/___ 1 to 2 miles?/___ more than 2 miles?
    Indicate how many times per week you usually walk _____
___ Bicycling (stationary or mobile)? How much time or miles ____ ?
    and how many times ____ per/week?
___ Swimming? How much time ___ (hr.) and how many times/wk ___ ?
___ Other exercise?(_____) Amount of time? ___ Frequency?___

24. Do you follow the basic guidelines   0 1 2 3 4 NA
    for exercise, (warm up, cool down)?

25. Are you exercising more now then   0 1 2 3 4 NA
    prior to your hospitalization?
    (rate 0 if less, 1=1Xwk,2=2Xwk 3=Xwk,
    4=Xwk plus, NA if ordered not to).

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TO WHAT EXTENT:

If you WORK FOR PAY?
26. . Have you returned to work, if you   0 1 2 3 4 NA
    work. (1=24%,2=50%,3=75%,4=100%)

27. Do you follow the guidelines for   0 1 2 3 4 NA
    work, if you work? (ie. gradually
    work up to previous level/time. Comments)_____

If you work for pay but have not yet returned to work, what plans do you
have? ie. Return to same job?_____ Change to new job?_____
Retire?_____. Have you discussed this with your Dr.? _____
Indicate type of job planned: _____

28. Are you able to follow the   0 1 2 3 4 NA
    guidelines for sexual activity,
    if sexually active? _____

29. Have you negotiated any household   0 1 2 3 4 NA
    responsibilities with family/friends?
    Explain: _____

30. Does your family/friendnd participate in   0 1 2 3 4 NA
    your exercise program with you?

31. Have you considered attending a   0 1 2 3 4 NA
    Heart Rehab class or program?

32. Have you sought answers to your   0 1 2 3 4 NA
    · questions that have come up since
    discharge, from Health Professionals
    (i.e., Dr., Nurse, Rehab team, etc.)?
    Please explain _____

33. Are you pursuing follow-up health care?   0 1 2 3 4 NA
    (i.e., have you returned for doctor's
    appointment, checked into an exercise
    program, know when allowed to drive, etc.)
    _____

34. Have you begun to participate in   0 1 2 3 4 NA
    family or friend social functions?
    (within activity limits?) _____

What has helped you the most in carrying out recommended activities and
exercises? Please explain: _____
_____
_____

What has been your biggest activity/exercise barrier or hassle?
_____
_____

RATE YOUR CURRENT PHYSICAL ACTIVITY LEVEL: LOW = 1- -2- -3- -4 = HIGH

                                         Score _____

RISK FACTOR MODIFICATION

In the hospital, you were asked to identify your risk factors that are associated with heart disease. Please list them again.

_____

What is your priority risk factor, i.e., the one you are willing to work on, or feel you should work on?

_____

TO WHAT EXTENT:

35. Have you been working on controlling   0 1 2 3 4 NA
     your risk factors (effort)?

36. Have you been successful?   0 1 2 3 4 NA

_____

37. Have you made others aware of your   0 1 2 3 4 NA
     efforts to modify your risk factors?

38. Have you sought assistance from family/   0 1 2 3 4 NA
     friends to help you control your risk
     factors?

39. Have others encouraged you to modify   0 1 2 3 4 NA
     your risk factors?

40. Have others given you the kind of   0 1 2 3 4 NA
     support you need to reduce your risks?

What has enhanced your efforts to modify your risk factors?

_____

What has been the most difficult part in modifying your risk factors?

_____

RATE YOUR PROGRESS IN CONTROLING YOUR RISK FACTOR:

LOW = 1- -2- -3- -4 = HIGH

Score _____

198

E. LIFE-STYLE RE-ADJUSTMENTS

TO WHAT EXTENT:

43. Have you been able to deal with the changes   0 1 2 3 4 NA
the changes in your life since your heart
attack? (Subject's Comments) _____

44. Have others in your family helped you in   0 1 2 3 4 NA
the process of dealing with changes? How?
(i.e., emotionally, informationlly, physically)?

45. Have you been satisfied with this   0 1 2 3 4 NA
help or support? Explain.

_____

HAS YOUR MAJOR ROLE (homemaker? ___(spouse? ___;job? ___; child care?___;
financial manager?___other?____) CHANGED? (Ck Y/N if apply)
Subject's Comments) _____

46. Have you been able to negotiate or   0 1 2 3 4 NA
ask for support when needed at home?

47. Have you been able to negotiate or   0 1 2 3 4 NA
ask for support when at work?

DO YOU BELIEVE THAT YOU (OR YOUR MAJOR ROLES) ARE INFLUENCED BY SOCIAL OR
CULTURAL ASPECTS (i.e.,Man's work vs Woman's work)? Y/N If so, DO YOU
THINK THIS HAS INFLUNCED YOUR EFFORTS TO DO THE THINGS YOU NEED TO DO FOR
YOURSELF FOR REHABILITATION? Subject's comments:

_____

48. Do you utilize spiritual support?   0 1 2 3 4 NA

49. Has your spiritual support been   0 1 2 3 4 NA
helpful during your rehabilitation?

50. Have you started to become socially   0 1 2 3 4 NA
active again (attending community
functions and/or entertaining at home)?

51. Have you been able to keep your   0 1 2 3 4 NA
morale up?

52. Have you been able to successfully   0 1 2 3 4 NA
deal with "STRESS"? Explain type of stress_____

_____

53. Have you used stress management   0 1 2 3 4 NA
techniques?
If so, helpful? _____ If not, why? _____

54. Do you believe you have enough   0 1 2 3 4 NA
information about your therapy to
make decisions about life-style changes?

_____

55. Do you believe you have enough support   0 1 2 3 4 NA
    (family, friends, or community) to make
    the necessary changes? (Areas lacking)?_____

---

56. Do you believe you are motivated   0 1 2 3 4 NA
    to make life style changes?

RATE YOURSELF IN TERMS OF OVERALL SUCCESS   0 1 2 3 4 NA
IN THE REHABILITATION PROCESS

WHAT HAVE BEEN THE MAJOR BARRIERS TO REHABILITATION?
_____

WHAT HAS BEEN THE GREATEST HELP TO YOU IN THE REHABILITATION PROCESS?
_____

DO YOU THINK MEN OR WOMEN HAVE A MORE DIFFICULT TIME AFTER A HEART ATTACK?
_____ Why?_____

WHAT ADVICE WOULD YOU GIVE OTHER WOMEN WHO HAVE HAD A HEART ATTACK?
_____

WHAT ADVICE WOULD YOU GIVE CARDIAC REHAB NURSES AND EDUCATORS?
_____

Score _____

HOW MANY HOURS DID YOU WAIT BEFORE YOU CAME TO THE HOSPITAL? _____

APPENDIX H

APPENDIX H

PANEL OF EXPERTS FOR REVIEW OF INSTRUMENTS

NAME OF REVIEWER	AREA OF EXPERTISE	TEST REVIEWED
Catherine Lein, R.N., M.S.	Teaches Cardiac Nursing	Knowledge Test
Eleanore Toney, R.N., M.S.	Teaches Cardiac Nursing	Knowledge Test
Susan Stout, R.N., B.S.N.	Cardiac Rehab Nurse	Knowledge Test Rehab Scale
Linda Egan, R.N., M.S.	Exercise Specialist	Rehab Scale
Karen Doherty, R.N., B.S.	Cardiac Rehab Nurse	Knowledge Test Rehab Scale
Irvin Lehman, Ph.D.	Expert in Measurement	Knowledge Test Self-Efficacy
William Meherns, Ph.D.	Expert in Measurement	Criterion Ref.
Gwen Wyatt, R.N., Ph.D.	Qualitative Nurse	Self Efficacy Rehab Scale
Barbara Given, R.N., Ph.D.	Nurse Researcher	Self Efficacy Rehab Scale
Joan Predko, R.N., M.S.	Measurement Focus	Self-Efficacy
R. Lent, Ph.D.	Expert in Self-Efficacy	Self-Efficacy
Louise Jenkins, R.N., Ph.D.	Nurse Researcher	Self-Efficacy
Millie Omar, R.N., Ph.D.	Nurse Researcher	Self-Efficacy
Deb Stephens, R.N., B.S.	Cardiac Rehab Nurse	Rehab Scale Knowledge

APPENDIX I

REHAB TOTAL WITH KNOWLEDGE

```
            +---+----+----+----+----+----+----+----+
            |                                       |
R        4 +                                        +
            |                              1        |
E           |           1             1    1        |
            |                     1    1    2    1   |
H           |       1   1    2        1    1    1    |
      3.2  +           1         1         1         +
            |                     2    1    2        |
A           |           1         1    1         1   |
            |       1             1              2   |
B           |                         2    1    1    |
      2.4  +           3             2               +
            |                                        |
            |           1             1              |
            |   1                                    |
            |                                        |
            +---+----+----+----+----+----+----+----+
              3.375       3.625       3.875
          3.25        3.5         3.75          4

                K N O W L E D G E
```
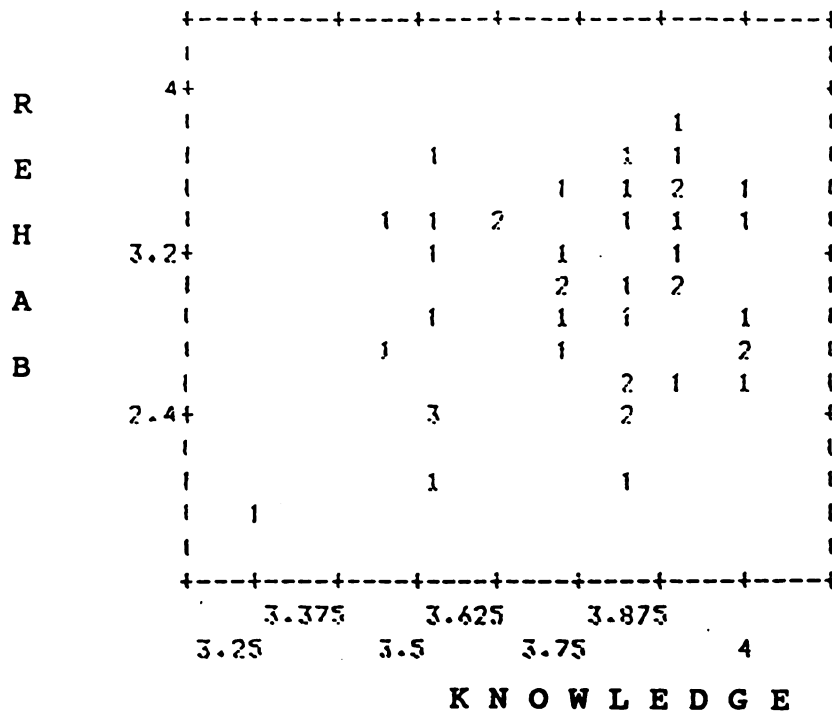
```
Frequency    Stem & Leaf

   1.00       32 .  5
    .00       33 .
   2.00       34 .  44
   8.00       35 .  33333333
   2.00       36 .  22
   7.00       37 .  2222222
  10.00       38 .  1111111111
  10.00       39 .  0000000000
   6.00       40 .  000000

Stem width:      .10
Each leaf:       1 case(s)
```

KNOWLEDGE STEM & LEAF GRAPH

APPENDIX J

APPENDIX J

REHABILITATION SUBSCALES WITH SELF-EFFICACY SUBSCALES

REHAB DIET WITH SELF-EFFICACY DIET

```
                +----+----+----+----+----+----+----+---+
            4+  |                                  1 1  +
             |              1                         1 1
        D    |                           1    2          |
    R        |                        1   2 1 2 1 1 1     |
    E   I    |                     1      2               |
    H      3.2+                     1 1 3                 +
    A   E    |        1   2   2          1 1 1 1 1 1      |
    B        |                           1   1 1          |
        T    |                           1   1            |
            1 1         1       1              1          |
          2.4+                                            +
             |              1                             |
             |                                            |
             |              1                             |
             |                                            |
          1.6+         1       1                          +
                +----+----+----+----+----+----+----+---+
                    1.425    2.375     3.325
                .95      1.9      2.85      3.8
```

SELF-EFFICACY-DIET

REHAB MEDS WITH SELF-EFFICACY MEDS

```
                +----+----+----+----+----+----+----+---+
          4.5+                                          +
             |                                           |
    R   M    |              1           1  3  1    4 |
    E   E    |                     1    1  2  1    4 |
    H   D    |              1   1          3  1    1 |
    A   S   3+        1                         1   2+
    B        |          1   1          3  1       1 |
             |     1              1  1              |
            1 1        2          1       1          |
             |                          1            |
          1.5+                                        +
             |                                         |
             |                                         |
             |                                         |
             |                                         |
            0+                   1                     +
                +----+----+----+----+----+----+----+---+
                    2.475    3.025     3.575
                2.2      2.75      3.3      3.85
```

SELF-EFFICACY-MEDS

REHABILITATION ACTIVITY/EXERCISES
WITH SELF-EFFICACY ACTIVITY/EXERCISES

```
              ++----+----+----+----+----+----+----+--+
              |                                      |
              |             1        1        1    2 |
R        3.75+|             1        1     1 1      1+
E    A        |       1          1           1 1 1  1|
H    C        |                                      1|
A    T        |        1      1 1    1   2 1       1  |
B             |                                      |
         2.5+ |          1        1       11      · +
              |            1       1 11    11 1       |
              |          1         1  1    11         |
              |                                      |
              | 1       1         1                  |
        1.25+ |                                      +
              |                                     1 |
              |        1                             |
              |                                      |
              ++----+----+----+----+----+----+----+--+
          1.625     2.275     2.925     3.375
              1.95        2.6       3.25        3.9
```
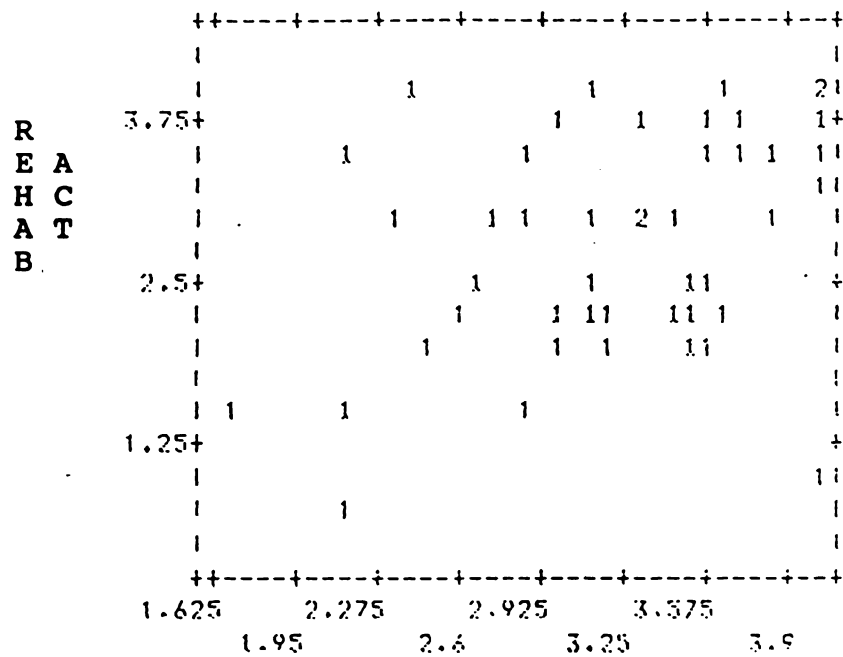
SELF-EFFICACY
ACT

REHABILITATION SOCIAL SUPPORT WITH
SELF-EFFICACY SOCIAL SUPPORT

```
              +--+----+----+----+----+----+----+----++
         4+   |                              3     1+
              |                           1        111|
              |                           1        1 |
R    S        |                    1              1 1 |
E    O        |             1    1       1  111  1111|
H    C   3+   |                           1      1 1+
A    S        |           1              1  2     3 |
B    U        |                          1          |
     P        |      1        1      1 1     1       |
              |          1        1                  |
         2+ 1 |                                     +
              |                 1                    |
              |                          1          |
              |                                     |
              |    1                     1          |
         1+   |                                     +
              +--+----+----+----+----+----+----+----++
          1.2        2       2.8       3.6
              1.6        2.4       3.2          4
```
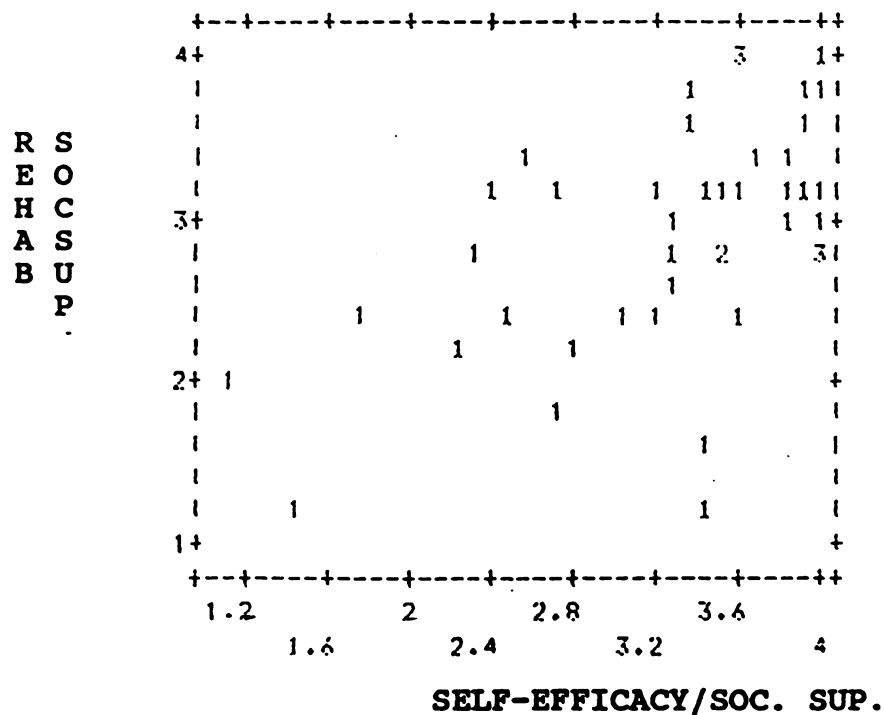
SELF-EFFICACY/SOC. SUP.

204

SELF-EFFICACY LIFESTYLE WITH REHABILITATION LIFESTYLE

```
         +-+----+----+----+----+----+----+-+
         I                                I
      4+                          1       +
         I               1        1   1   I
         I                  1       2      I
  L      I                  11    12 1 1   I
  I      I             111  1    1 1 1     I
R F   3+ 1                1      1     1   . +
E E      I  1            12  1  112   1    I
H S      I               1 11  1          I
A T      I              1     1      1     I
B Y      I         1                      I
  L   2+                     1            +
  E .    I                                I
         I                                I
         I                                I
         I              1                 I
         +-+----+----+----+----+----+----+-+
         1.2       2       2.8       3.6
            1.6      2.4       3.2       4
```
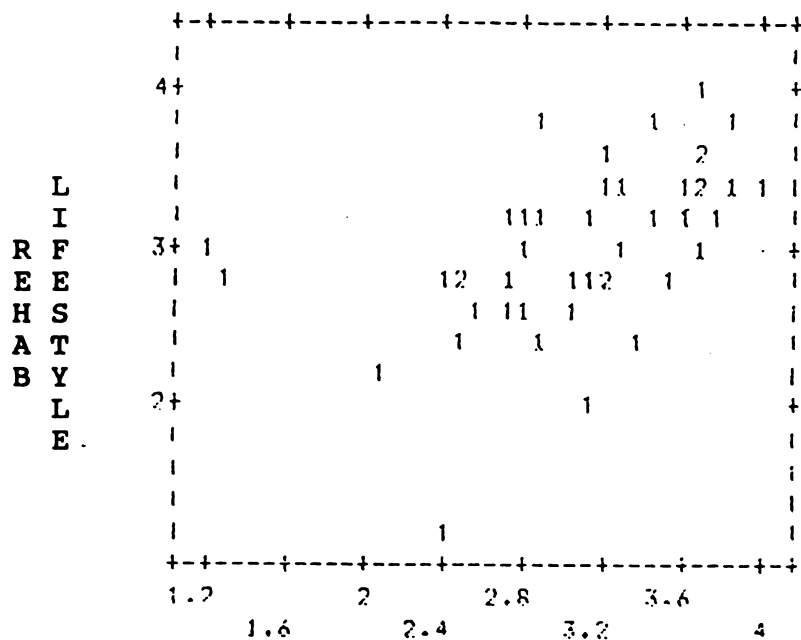
         SELF EFFICACY
          LIFESTYLE

TOTAL REHABILITATION WITH TOTAL SELF-EFFICACY

```
        ++----+----+----+----+----+----+--+
         I                               I
      4+                                 +
         I                         1     I
         I                1       11     I
  R      I          1        1  1 11     I
         I          1       1   111 1  1 I
E   3.2+         1       1        1      +
         I                     1 2  11   I
H        I                   111        I
         I        1          21         I
A   2.4+    1    1       1   1 1         +
         I      1     1    1             I
B        I   1                1          I
         I           1                   I
         I                               I
        ++----+----+----+----+----+----+--+
       1.625     2.275     2.925     3.575
          1.95      2.6       3.25      3.9
```
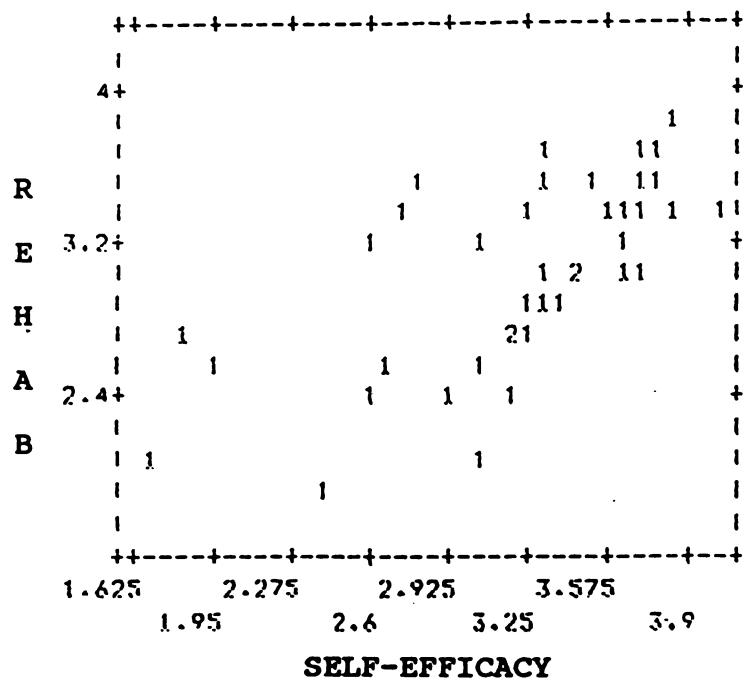
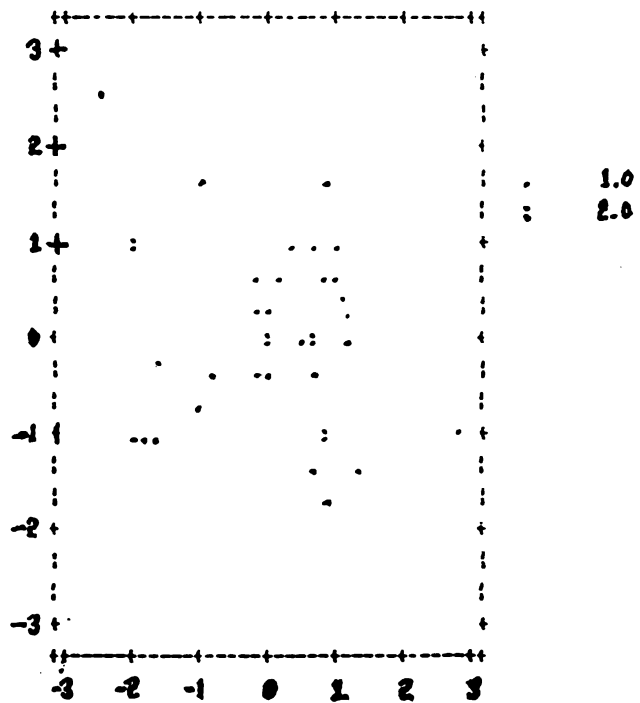   SELF-EFFICACY

APPENDIX K

SCATTERPLOT OF RESIDUALS

SELF-EFFICACY
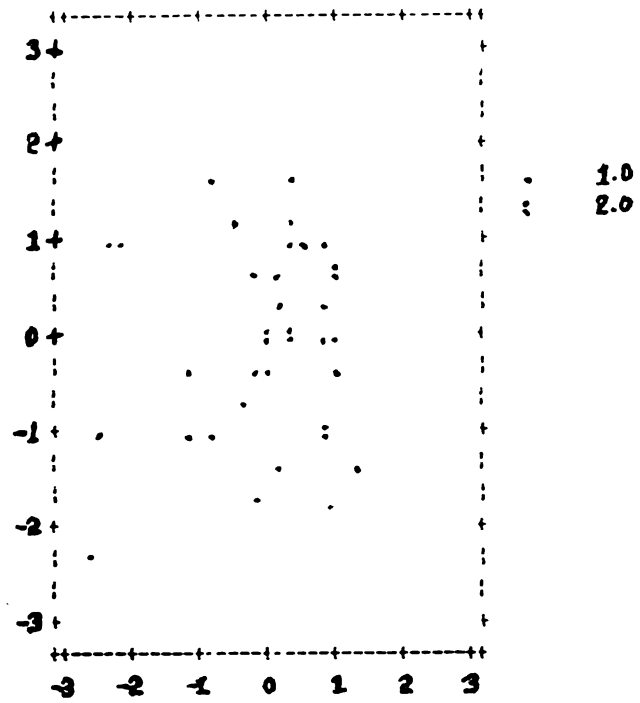
SOCIAL SUPPORT

APPENDIX L

APPENDIX L

CORRELATION AMONG SELF-EFFICACY SUBSCALES   [N = 40]

Self-Efficacy	**Self-Efficacy**					
	Diet	Meds	Active	N.SocSup	LifeSty	Total Self-Ef
Diet	1.00	.52**	.36	.51**	.58**	.70**
Meds		1.00	.54**	.65**	.58**	.75**
Activity			1.00	.57**	.59**	.72**
N.SocSup.				1.00	.82**	.92**
LifeSty.					1.00	.92**

1-tailed significance: * = 0.1; ** = .001