

1995

# Cardiac education as a means to reduce risk factors in the outpatient setting

Henretta N. Milton  
*San Jose State University*

Follow this and additional works at: [https://scholarworks.sjsu.edu/etd\\_theses](https://scholarworks.sjsu.edu/etd_theses)

---

## Recommended Citation

Milton, Henretta N., "Cardiac education as a means to reduce risk factors in the outpatient setting" (1995). *Master's Theses*. 1091.  
DOI: <https://doi.org/10.31979/etd.z7ws-me6b>  
[https://scholarworks.sjsu.edu/etd\\_theses/1091](https://scholarworks.sjsu.edu/etd_theses/1091)

This Thesis is brought to you for free and open access by the Master's Theses and Graduate Research at SJSU ScholarWorks. It has been accepted for inclusion in Master's Theses by an authorized administrator of SJSU ScholarWorks. For more information, please contact [scholarworks@sjsu.edu](mailto:scholarworks@sjsu.edu).

## **INFORMATION TO USERS**

**This manuscript has been reproduced from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.**

**The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.**

**In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.**

**Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps. Each original is also photographed in one exposure and is included in reduced form at the back of the book.**

**Photographs included in the original manuscript have been reproduced xerographically in this copy. Higher quality 6" x 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.**

# **UMI**

A Bell & Howell Information Company  
300 North Zeeb Road, Ann Arbor, MI 48106-1346 USA  
313/761-4700 800/521-0600



CARDIAC EDUCATION AS A MEANS TO REDUCE  
RISK FACTORS IN THE OUTPATIENT SETTING

A Thesis

Presented to

The Faculty of the School of Nursing  
San Jose State University

In Partial Fulfillment  
of the Requirements for the Degree  
Master of Science

by

Henretta N. Milton

August, 1995

**UMI Number: 1375715**

---

**UMI Microform 1375715**

**Copyright 1995, by UMI Company. All rights reserved.**

**This microform edition is protected against unauthorized  
copying under Title 17, United States Code.**

---

**UMI**

**300 North Zeeb Road  
Ann Arbor, MI 48103**

Copyright 1995

Henretta N. Milton

ALL RIGHTS RESERVED

APPROVED FOR THE DEPARTMENT OF NURSING

*Marcia E. Canton*

---

Marcia E. Canton, R.N., Ph.D.

*Coleen R. Saylor*

---

Coleen R. Saylor, R.N., Ph.D.

*Sharon Goldsby Barnett*

---

Sharon Goldsby Barnett, R.N., M.S.

APPROVED FOR THE UNIVERSITY

*M. Lou Lewandowski*

---

## ABSTRACT

### CARDIAC EDUCATION AS A MEANS TO REDUCE RISK FACTORS IN THE OUTPATIENT SETTING

by Henretta N. Milton

This study investigated cardiac education as a means for reducing risk factors in patients diagnosed with cardiovascular disease (CVD) in an outpatient setting. The investigation was conducted at an outpatient cardiac rehabilitation program while patients (N=30) were attending the cardiac outpatient classes. Using the Health Belief Model as a conceptual framework, the patients' predispositions to changing behavior were explored in eight areas. Changes in the behavior were measured through a structured questionnaire that was developed and utilized in previous studies. The most frequent factors identified by the results showed that the participants in the Cardiac Education Program (CEP) were able to make lifestyle changes to reduce risk factors. The results supported the need for more research and development of programs to encourage both health promotion and rehabilitation to increase the quality of life for people with CVD.



### ACKNOWLEDGEMENTS

To God who guided me while writing my thesis. To my advisors, Marcia Canton, Coleen Saylor, and Sharon Barnett, for assistance and support. To Barbara Lustig, Associate Director of the Cardiac Therapy Foundation, and the participants of the program who provided advice and information that was valuable. To my editor and typists who assisted me along the way. To JCFANS for their support and prayers. To my family who believed in me.

TABLE OF CONTENTS

	Page
List of Tables . . . . .	viii
<b>CHAPTER</b>	
1. INTRODUCTION . . . . .	1
Statement of Problem . . . . .	4
Objective and Question . . . . .	7
The Purpose of the Study . . . . .	7
Definitions . . . . .	8
Sample and Setting . . . . .	9
Research Design . . . . .	10
Scope and Limitations . . . . .	10
2. CONCEPTUAL FRAMEWORK AND REVIEW OF RELATED LITERATURE . . . . .	12
Conceptual Framework . . . . .	12
Health Belief Model . . . . .	13
Literature Review . . . . .	16
3. METHODOLOGY . . . . .	23
Research Design . . . . .	23
Subjects . . . . .	24
Data Collection Instrument . . . . .	25
Research Procedure . . . . .	26
4. FINDINGS AND INTERPRETATION . . . . .	28
Analysis of Data . . . . .	28
Demographic Characteristics . . . . .	28

Risk Factors Before and After CEP . . . . .	31
Health Motivation . . . . .	31
Cues to Action . . . . .	33
Perceived Seriousness and Susceptibility . . . . .	34
Perceived Benefits . . . . .	34
Data Interpretation . . . . .	37
5. CONCLUSIONS AND RECOMMENDATIONS . . . . .	40
Summary . . . . .	40
Conclusion . . . . .	41
Implications for Nursing . . . . .	42
Limitations . . . . .	44
Recommendations . . . . .	45
REFERENCES . . . . .	48
APPENDIXES . . . . .	52
A. Human Subjects' Approval . . . . .	53
B. Request For and Approval From Cardiac Therapy Program . . . . .	55
C. Consent Form . . . . .	58
D. Request For and Approval From Barbara Lustig. . . . .	60
E. Survey Questionnaire . . . . .	63

LIST OF TABLES

TABLE	Page
1. Demographic Characteristics of the Participants Enrolled in the Cardiac Education Program (CEP)	29
2. Income and Age Distribution of the Participants Enrolled in the Cardiac Education Program (CEP)	30
3. Perception of Risk Factors by Participants Before and After Enrollment in the Cardiac Education Program (CEP) . . . . .	32
4. External Variables that Initiated Participation in Cardiac Education Program (CEP) . . . . .	33
5. Perceived Seriousness and Susceptibility of the Participants Enrolled in the Cardiac Education Program (CEP) . . . . .	35
6. Perceived Benefits from the Cardiac Education Program (CEP) by the Participants . . . . .	36
7. Perceived Threat of Disease by the Participants Enrolled in the Cardiac Education Program (CEP) . . . . .	37

## Chapter 1

### INTRODUCTION

Cardiovascular disease has a major impact on American society today. It is the leading cause of death in the United States. Approximately 6 million people each year have symptomatic coronary artery disease. Over 700,000 of them are hospitalized for cardiac events, and more than 1.5 million die (Kaplan, 1988). Approximately 20% of Americans develop coronary heart disease by age 60, and 11% die suddenly. Among Americans who are hospitalized, 44% will receive treatment and rehabilitation (Gattiker, Goins, & Dennis, 1992). According to Kaplan (1988), the direct and indirect costs of heart disease and its treatment in the United States have been estimated to exceed \$100 billion per year.

According to Lustig (1991), cardiac nurses are in a unique position to assist patients hospitalized for coronary artery disease with behavioral changes that may lessen the risk for future cardiac events. During hospitalization, patient care focuses on the short-term goals of patient rehabilitation after a cardiac event and the return to the outpatient setting. These include: (a) physical reconditioning, (b) resuming the activities of daily living, (c) educating patients and family about the cardiac disease

process, and (d) providing psychological support during hospitalization.

Hospitalized patients are instructed by cardiac nurses regarding behavior and lifestyle changes required for reducing the incidence of cardiac events. Patients are encouraged by the cardiac education nurse to make lifestyle changes during their hospital stay. The nurses utilize: (a) individual instruction, (b) group cardiac discharge classes, and (c) outpatient cardiac classes to encourage the patient. Although patients are given adequate tools and information to make lifestyle changes, these changes are not always achieved (Briody, 1984). Emphasis placed on providing information, rather than changing attitudes and perceptions, has proven ineffective for hospitalized patients.

Gattiker et al. (1992) suggested that long term objectives should be established for cardiac patients and these should include: (a) identifying and treating risk factors that influence the progression of the disease, (b) teaching and reinforcing the health behaviors that improve prognosis, (c) optimizing physical conditioning, and (d) facilitating a return to past health status. Stovsky (1992) states that nursing plays a major role in assisting people to assume responsibility for their health behaviors to prevent the development and progression of heart disease. She suggests that nurses should be involved with

reinforcement of information after discharge through patient follow-up in the outpatient area.

Lustig (1991) studied techniques to reduce cardiac risk factors in patients after hospitalization. She utilized cardiac education and support as a way of reducing cardiac risk factors after hospitalization by telephone follow-up. She investigated the behavioral changes a patient was able to make after returning home with continued support from a hospital Cardiac Educator Nurse (CEN). The results of her study were positive, showing that cardiac education to cardiac patients in the outpatient setting did increase behavioral changes and decrease cardiac events. The patients perceived themselves as having control over the disease process and demonstrated increased behavioral changes. This investigation led to more studies regarding patient education in the outpatient setting to reduce risk factors for heart disease.

An outpatient Cardiac Education Program (CEP) that provides a structured environment for learning about coronary artery disease (CAD) was the focus of this study. CEP is a formal outpatient program that patients are encouraged to attend as they maintain their health and reduce risk factors for heart disease. This program is open to patients with various heart conditions such as:

- (a) angina, (b) angioplasty, (c) heart attack, (d) heart surgery, and (e) multiple risk factors for heart disease.

The program has personnel that supervise safe care for patient activities. They include a medical team of: (a) physicians, (b) medical consultants, (c) registered nurses, (d) exercise physiologists, and (e) physical educators to enhance lifestyle changes and reduce risk factors. Gattiker et al. (1992) emphasized the importance of a cardiac rehabilitation program that provided class sessions for an extended period of time. This kind of program incorporated techniques for: (a) educating patients, (b) enhancing compliance, and (c) establishing social support, which were far more effective than short, uninformative sessions. In this type of rehabilitation program, health behaviors were introduced, molded, and reinforced more effectively, bringing about lifestyle changes in the patient. This study will attempt to evaluate the effectiveness of this cardiac education program to assist patients in reducing risk factors for heart disease.

#### Statement of the Problem

Cardiac disease has been one of the leading killers of Americans, and many cardiac patients need follow-up care after hospital discharge. This follow-up care should be through an extended educational or cardiac rehabilitation program. Patients are motivated to decrease the risk factors associated with heart disease, but the outpatient setting hinders achievement of this goal. Merely teaching information to hospitalized patients, rather than actually



changing attitudes and perceptions, has proven ineffective (Briody, 1984).

Literature over the past 25 years shows a proliferation of information regarding cardiac teaching programs for patients with diagnosed myocardial infarction (MI). Documented research on prevention programs before a MI has occurred is only now beginning to emerge (Ornish et al., 1990). The study by Ornish and associates was the first conducted on patients outside the hospital setting. The results revealed strong evidence that lifestyle changes alone could bring about regression of severe coronary artery disease within 1 year. The authors of the study recommended that further research be carried out on patients with coronary artery disease to determine the effectiveness that making lifestyle changes has in reducing the risk for a MI (Ornish et al., 1990).

The lack of continuity and support for patients after discharge has been identified as another obstacle to the increasing lifestyle changes in patients to reduce cardiac events. The hospitalized patients who do express a sincere desire to: (a) stop smoking, (b) lose weight, (c) exercise on a regular basis, (d) lower cholesterol levels, and (e) utilize stress reduction techniques often fail to accomplish any of these goals after they are discharged (Steele & Ruzicki, 1987). Without frequent reinforcement and support, they lose incentive and motivation and fail in

their attempts to embark on a risk reduction program upon returning home (Scalzi, Burke, & Greenland, 1980). These patients require a plan that will enable them to carry out their desired goals.

Educating patients in the outpatient setting as an effective intervention for risk reduction has been substantiated by numerous studies (Cave, 1989; Hagopian & Rubenstein, 1990; Lando, Hellerstedt, Pirie, & McGovern, 1992; Hemmelgarn, 1991; Lustig, 1991). There are many potential advantages to using the outpatient setting for teaching patients: (a) cost effectiveness in providing reinforcement to stable patients over time, (b) convenience for the consumer, and (c) delivery of information to the patient in the setting in which the behavioral changes are to take place. Gattiker et al. (1992) found that structured cardiac rehabilitation programs have a greater impact on behavior changes than clinic counseling. Therefore, CEP has been demonstrated to be potentially effective as an intervention with patients after discharge from the hospital.

The positive aspects of teaching and educating patients in the outpatient setting outweighs the negatives. There are several factors which hinder the teaching of hospitalized patients: (a) limited time allowance for staff nurses, (b) shortened length of hospital stay, and (c) patients' inability to focus on the material presented by the nurse.

Providing information to patients about their disease while they are still hospitalized does not appear to increase compliance (Lustig, 1991). Garding, Kerr, and Bay (1988) stated that readiness to learn may not occur until adjustments to lifestyle changes are made at home after discharge. Therefore, CEP intervention may be more practical, cost-effective, and more meaningful for the patient.

#### Objective and Question

The objective was to utilize education and continued support through the Outpatient Cardiac Rehabilitation Program as an intervention to increase patients' compliance to lifestyle changes. Patients were evaluated by self-reports of behavioral changes by utilizing a survey during attendance at an outpatient program. The survey assisted in identifying the factors that influence a client's compliance to reduce risk factors for heart disease in the outpatient setting.

The question to be answered was: How effective is a Cardiac Education Program in assisting patients to reduce risk factors for heart disease?

#### The Purpose of the Study

The purpose of this study was to evaluate the effectiveness of a cardiac education program to assist patients in reducing risk factors for heart disease. The findings will assist in the future development of more

outpatient educational and rehabilitation programs, which may increase lifestyle changes and reduce risk factors for heart disease in clients. Also, the findings may encourage health care providers to refer more cardiac clients to outpatient programs to improve quality of life. This study will contribute to the literature on motivation for behavioral/lifestyle changes in cardiac clients for risk reduction and will enable health care providers to plan more effective health promotion interventions in the outpatient setting.

#### Definitions

1. Cardiac Educator Nurse (CEN) is a registered nurse who has had extensive advanced education in coronary disease and treatments, including teaching and communication.

2. Angina (pectoris) refers to paroxysmal thoracic pain, with a feeling of suffocation and impending death, resulting from spasm of the coronary arteries and often relieved by nitroglycerine (Stovsky, 1992).

3. Risk factors are the lifestyle habits affecting one's predisposition to coronary heart disease. These five factors are: (a) smoking, (b) high blood pressure, (c) obesity, (d) high serum cholesterol level, and (e) stress (Stovsky, 1992).

4. Cardiac rehabilitation is defined as the process by which clients with cardiac disease are returned to their

optimal physical, psychological, social, emotional, vocational, and economic state (Gattiker et al., 1992).

5. Primary care is associated with care a patient receives in the hospital such as the identification and treatment of the disease process (Gattiker et al., 1992).

6. Secondary care begins after the diagnosis and treatment of heart disease. It includes: (a) training, (b) smoking cessation and abstinence, (c) cholesterol evaluation and treatment, (d) stress management, (e) counseling, and (f) education (Gattiker et al., 1992).

7. Cardiac Education Program is a structured program which offers: (a) supervision, (b) exercise, (c) psychological support, and (d) risk factor education to clients with coronary heart disease.

#### Sample and Setting

A convenience sample was used. The sample was made up of patients who were attending or enrolled in an outpatient cardiac education and rehabilitation program and who have had a diagnosis of cardiovascular disease for at least 3 months. Their ages were 80 years or younger. Other demographics described were native language, cultural background, income, and educational level. The participants and the cardiac education program were located in an urban neighborhood in northern California.

### Research Design

The design of this study was descriptive and exploratory in nature. The following components were lacking for this to be a true experimental design:

(a) randomization, (b) control groups, and (c) manipulation of the treatment. There was no randomization due to the lack of accessibility of the target population. The study identified opinions, facts, beliefs, and attitudes from the clients attending the cardiac rehabilitation program regarding their abilities to make lifestyle changes.

Descriptive statistics were used to organize and summarize the data. Frequency distributions for qualitative data with conversion to percentages were used. The variables were: (a) age, (b) sex, (c) marital status, (d) level of education, (e) ethnicity, (f) knowledge of one's risk factors, (g) perception of seriousness of disease, (h) perception of susceptibility to heart disease, (i) motivational factor to enter the program, and (j) perception of lifestyle changes. Controlled variables were: (a) membership in the CEP, (b) diagnosis of cardiac disease, and (c) 3 months participation in program.

### Scope and Limitations

There was no randomization of subjects to groups. The sample size was limited to the number of patients returning survey materials. The data were subjective because the subjects gave answers based on their own perceptions,

beliefs, and opinions. Answers might be biased based on experiences, demographics, and knowledge level. The investigator relied upon the veracity of the respondents. There was no way to prove validity of responses. There was no control over extraneous variables, such as: (a) medical management, (b) degree of coronary artery disease, (c) the amount or kind of social support present for the patient at home, (d) the sites where research was conducted, and (e) time constraints to complete information on the questionnaires. The sample cannot be presented as representative of all patients attending cardiac education programs, although the results may apply to participants with the same attributes. Therefore, the results of the study cannot be generalized to the total population of cardiac education outpatient programs and participants.

## Chapter 2

### CONCEPTUAL FRAMEWORK AND REVIEW OF RELATED LITERATURE

#### Conceptual Framework

Investigators have tried for many years to understand the potential determinants of preventive behaviors. The Health Belief Model (HBM) was developed in the early 1950's to provide a framework for preventive behaviors (Rosenstock, 1966b; Hochbaum, 1956; Kegeles, 1963; Leventhal, 1965; & Becker, 1974). Becker (1974) further developed the HBM of Rosenstock to explain patients' compliance in following the prescribed treatment regime to improve quality of life and reduce risk factors. He reported that compliance is a complex issue and that knowledge of the therapeutic regime was a potential factor in influencing behaviors. Because all behaviors are motivated by some force (Rosenstock, 1966a), it is critical for health care professionals to develop effective interventions to assist clients in altering behaviors that increase risk for specific diseases (Becker, Marman, Kirscht, Haefner, & Drachman, 1977). Becker and Janz (1984) elaborated on the many interventions needed to influence compliance behaviors; these included: (a) raising information and skill levels, (b) improving various aspects of the relationships between the provider and patient,



- (c) enlisting social supports, such as the family, and
- (d) utilizing all members of the health care team.

#### Health Belief Model

The Health Belief Model (HBM) was the conceptual framework of this study. The HBM provided a framework to explore why some people who are illness-free take actions to avoid illness while others fail to take such protective actions. This model (HBM) was derived primarily from Lewin's (1935, p. 52) Social Psychological Theory, which proposed that behaviors may be regarded as a function of a person's motives and beliefs about various opportunities for action. Therefore, preventive behaviors are strategies used by an individual when there is a perceived threat to his or her environment whether by disease or illness. According to the HBM, a person is likely to engage in health preventive behaviors because of: (a) susceptibility to a specific disease, (b) a belief that a specific disease will have serious effects on his or her life if contracted, (c) certain actions that can minimize the severity of the disease or likelihood of contracting the disease, and (d) the efforts of taking action are less than the threat of the disease itself (Rosenstock, 1966a).

Becker modified the Health Belief Model (HBM) in 1977. He divided it into: (a) individual perceptions, (b) modifying factors, and (c) variables affecting the likelihood of initiating actions. The individual's

perception has a direct effect that causes an individual to take action, whereas the modifying factors (such as the demographics, sociopsychological factors, and structural variables) act to effect action tendencies for health promotion.

An individual's perception consists of perceived susceptibility and perceived illness (Becker, 1974). Perceived susceptibility refers to the individual's personal belief that he or she will contract a specific health problem, disease, or the recurrence of a specific disease previously experienced. Perceived severity or seriousness refers to the individual's degree of emotional arousal created by the thought of the disease or the difficulties the condition can create. For instance, a person with coronary artery disease (CAD) may have a second cardiac event or other symptom related to CAD. The perceived consequences of this illness may have harmful effects on: (a) the ability to work, (b) family life or other social relationships, (c) finances, (d) occupation, and (e) role functions (Becker, 1974). The individual may take action because of a combination of perceived susceptibility and seriousness motivating the health protecting behaviors.

The modifying factors include the demographics, the sociopsychological factors, and structural factors, and they may initiate an individual's action for health promotion. Demographic factors such as: (a) sex, (b) age, (c) income,

and (d) education correlate with an individual's use of health services and preventive services. These are identified as modifying factors in the HBM.

Sociopsychological variables such as social pressure or social influence can stimulate a change in behavior and motivate one to adopt new health practices. Structural variables such as knowledge about the target disease and prior contact with it may effect motivational action. According to Becker (1974), further research is needed to clarify the relationship of knowledge about a disease or previous experience with it and for preventive actions.

Individuals' perceptions of their medical risk and their knowledge of the risk-modifying factors stimulate specific healthy behaviors. These are called cues to action by Becker (1974). The cue can be external or internal. The internal cues include clinical signs of illness, and the external cues can be the media, advice from friends, or counseling from a health professional. The variables affecting the likelihood of an individual initiating preventive health actions consist of perceived benefits and perceived barriers. Perceived benefits are the individual's beliefs of effectiveness of the health protecting behavior to reduce the threat of the environment (Champion, 1984). The perceived barriers are the individual's perceived or real blockages engaged in preventive behaviors. These can be cost, inconvenience, unpleasantness, or extent of life

changes to engage in the preventive behavior (Champion, 1984).

This study explored the relationship of information received at a Cardiac Education Program (CEP) and the reduction of risk factors for heart disease. The results of this study are useful in planning other rehabilitation programs and may assist in health promotion.

#### Literature Review

Coronary artery disease (CAD) has been and still contends to be the leading killer of Americans today. Many cardiac patients need continued and structured support after hospital discharge. Balady et al. (1994) stated that continued major efforts in primary prevention were critical to reduce the overall incidence of CAD. Cardiac rehabilitation should be introduced during the in-hospital recovery phase with subsequent referral to an outpatient program to begin immediately upon discharge. The goal of rehabilitation is to restore and maintain an individual's physiological, psychological, social, and vocational status. The goal of the cardiac rehabilitation program is to combine prescriptive exercise training with coronary risk factor modification in patients with established heart disease. The program seeks to: (a) improve functional capacity, (b) lessen related symptoms, (c) reduce disability, and

(d) identify and modify coronary risk factors in an attempt to reduce morbidity and mortality rates (Balady et al., 1994).

Clinical and epidemiological data support the correlation of the lifestyle pattern and the incidence of heart disease. The lifestyle patterns that influence the clinical status and likelihood of further coronary events are: (a) exercise, (b) cholesterol levels, (c) high blood pressure, (d) cigarette smoking, and (e) diet. Cardiac rehabilitation efforts are targeted toward: (a) exercise, (b) lipid management, (c) hypertension control, and (d) smoking cessation, which can reduce CAD mortality, improve functional capacity, retard progress of disease, and reduce the risk factors of further coronary events (Jenkins, 1988).

Health professionals should promote programs in the outpatient arena to assist patients with continuing lifestyle changes in the outpatient setting. Gattiker et al. (1992) assert that cardiac rehabilitation programs should continue after the client has been discharged from the hospital to assist them to be effective with lifestyle changes. Cardiac rehabilitation should include primary and secondary prevention. Primary prevention occurs while the patient is in the hospital until discharge. Secondary prevention begins when the patient leaves the hospital to include: (a) smoking prevention and cessation, (b) exercise

training, (c) treatment and evaluation, (d) cholesterol evaluation and treatment, (e) stress management, and (f) counseling. According to Gattiker et al. (1992), secondary prevention is the most cost effective means of improving cardiac conditions and decreasing costly hospital visits.

Balady et al. (1994) stated that comprehensive cardiac rehabilitation programs have been shown to reduce rehospitalization rates, lessen the need for cardiac medications, and increase the rates of return to work. Ornish et al. (1990) completed a study on patients with severe atherosclerosis which showed no regression of the disease after a year of lifestyle change. Recent evidence demonstrates the reversibility of atherosclerosis in patients with CAD who were treated with diet and drug therapy which lowered their serum cholesterol levels (Blankenhorn et al., 1987; Levy, Brensike, & Epstein, 1984).

Increasing patients' knowledge and awareness of health was thought to result in change of lifestyle and, therefore, a decrease in the risk for further cardiovascular disease. Many such programs have demonstrated effectiveness in increasing patients' knowledge (Barbarowicz, Nelson, DeBusk, & Haskell, 1982; Murdaugh, 1982; Scalzi et al., 1980). However, it has been shown that knowledge alone does not change behavior or lead to compliance with medical regimens (Sivarajan et al., 1982; Steele & Ruzicki, 1987). In

addition, anxiety is highest in patients early in the illness, immediately after transfer from the critical care unit and prior to discharge from the hospital, which can lead to a learning barrier (Murdaugh, 1982).

In an investigation of knowledge gains in patients with cardiac disease, Scalzi et al. (1980) concluded that retention of information was limited after negligible gains from teaching programs during hospitalization. There was evidence to suggest that a postdischarge teaching program had a positive effect on knowledge and reported compliance with medications, exercise, weight reduction, and symptom management. Scalzi et al. (1980) noted that during the first 6 weeks after discharge, patients and families seemed to have more questions and needed more guidance. "This may be the period when patients are receptive to instruction. However, the current structure of follow-up care tends to perpetuate the disruption in continuity of the instructional process" (Scalzi et al., 1980, p. 853). Pozen et al. (1977) were able to demonstrate that instruction given by a hospital-based rehabilitation nurse was effective in facilitating return to work, improving patient knowledge, and decreasing smoking.

Fletcher (1986) studied the effect of rehabilitation after coronary angioplasty and reported the low knowledge retention rate of patients while in the hospital. Although patients were educated by staff nurses on risk factors and

behavior modification while hospitalized, 30 postangioplasty patients showed very low compliance 3 months after discharge. Results of the study showed a need for posthospitalization follow-up when patients are better equipped to assimilate the information provided by the educator. Pender (1987) points out that health-promoting behavior relies on the ability of the guide to help patients explore their health situation and define concerns. A nurse has the necessary skills to assist clients in activities, including: (a) value clarification, (b) self-assessment, (c) goal setting, (d) information acquisition, (e) decision making, (f) planning behavioral change, (g) implementing lifestyle changes, (h) sustaining health-promoting behaviors over time, and (i) social support building.

The effectiveness of the nurse as an educator for patients with cardiac disease has been well documented (Scalzi et al., 1980). Interventions, such as imparting information and including family members in teaching sessions, have not consistently enhanced compliance. Becker and Janz (1984) and Scalzi et al. (1980) concluded that knowledge retention is limited during the inpatient phase of hospitalization and that reinforcement after discharge may help improve knowledge and compliance. This is noted during the first 6 to 8 weeks after hospitalization when patients and families have many questions. Gattiker et al. (1992) emphasized the importance of a cardiac rehabilitation



program that provided class sessions over a 6-week period. This program could incorporate techniques for educating patients, enhancing and monitoring compliance, and establishing social support. In such a way, health behaviors could be introduced, molded, and reinforced more effectively.

Balady et al. (1994) did a study of college alumni relating to the effects of physical activity to decrease risk factors for disease. The result was that physical fitness reduced subsequent cardiovascular risk of those who were active participants more than those who were inactive. The trends showed that the survival rate increased among cardiac patients enrolled in rehabilitation programs. In this study patients perceived the benefits as support, counseling, and surveillance to maintain health behavior changes. Therapists and clinical attention directed toward them was also perceived as important.

Similarly, Gattiker et al. (1992) stated that cardiac programs should provide three areas of general support: (a) exercise training, (b) risk factor evaluation, and (c) education and counseling. In this study of Harvard alumni and multiple risk factor interventions, it was found that physical activity provided primary protection from the development of CAD and influenced the prognosis of persons with coronary disease. This incorporated with education and counseling enhanced quality of life and improved

self-efficacy (Gattiker et al., 1992). Self-efficacy, a person's judgment regarding his or her capacity to do a task, was an important determinant of whether the task was attempted (Bandura, 1977). It was an important component in developing and establishing healthy behaviors.

The HBM concepts were not revealed in much of the literature. Balady et al. (1994) demonstrated a correlation between the HBM concept of susceptibility, seriousness, and benefits with the utilization of potential services. Arborelius and Bremberg (1994) used HBM in their studies to analyze counseling efforts of health practitioners to discuss lifestyle issues with their patients in preventive practice. However, more studies are needed in nursing research using the HBM framework.

## Chapter 3

### METHODOLOGY

#### Research Design

The design of this study was descriptive and exploratory in nature. Three of the following components were lacking for this to be a true experimental design: (a) randomization, (b) control groups, and (c) manipulation of the treatment. There was no randomization due to lack of accessibility of the target population. The study identified opinions, facts, beliefs, and attitudes of clients attending the cardiac rehabilitation program with regard to their abilities to make lifestyle changes that reduce risk factors.

Questionnaires and surveys are a popular way to assess the health status and health related behavior, knowledge, and beliefs of various populations (Hemmelgarn, 1991). A structured questionnaire was used to obtain the data from the participants. Descriptive statistics were used to organize and summarize the data. Frequency distributions of qualitative data expressed as percentages were used. The variables were: (a) age, (b) sex, (c) marital status, (d) level of education, (e) ethnicity, (f) knowledge of one's risk factors, (g) perception of seriousness of disease, (h) perception of susceptibility to heart disease, (i) motivational factor to enter the program, and

(j) perception of lifestyle changes. The controlled variables were: (a) membership of the Cardiac Education Program (CEP), (b) diagnosis of cardiac disease, and (c) length of participation in the program.

### Subjects

The sample was a convenience sample of subjects that were attending an outpatient cardiac education and therapy program in northern California. All participants were diagnosed with cardiovascular disease. The group consisted of female and male subjects between the ages of 45 and 80 years, and all were English speaking. The majority of the subjects were Caucasian, married, with a college degree or some form of college education, and retired. The subjects were self-selected because each agreed to fill out the survey based upon the explanation by the investigator on the purpose of the study. The subjects attended CEP on Monday and Tuesday for one of the three different classes scheduled per day. Each class was given Monday, Wednesday, and Friday for one group, and Tuesday, Thursday, and Saturday for the other group. Questionnaires were administered to classes on Monday and Tuesday for all six classes.

Approval was obtained from the Institutional Review Board for Protection of Human Subjects of San Jose State University for the study proposal and the data collection instrument (Appendix A). The director and associate director of the cardiac therapy program permitted the investigator to

use their population for the study (Appendix B). Each sample client signed a consent form before participating in the study (Appendix C).

#### Data Collection Instrument

Permission was requested from Barbara Lustig to use the composite of questions she had developed (Appendix D). The clarity and validity was established after piloting the questionnaire at a cardiac rehabilitation program and a transitional care unit at a local hospital. The clarity was tested by having five clients fill out the questionnaire; adjustments were minimal. Validity was established by presenting it for evaluation by cardiac rehabilitation nurses and cardiologists for analysis. The questionnaire was found to be an acceptable tool for determining patients' risk factor and knowledge of health status. The questionnaire (Appendix E) consisted of 44 questions encompassing eight Health Belief Model (HBM) variables that may assist the clients with evaluating lifestyle changes while attending the CEP. These eight variables were: (a) demographics, (b) sociopsychological, (c) structural, (d) health motivation, (e) cues to action, and (f) perceived seriousness of benefits to CEP. In addition, two questions were added which were part of the concept of the HBM to obtain information regarding lifestyle changes to reduce risk factors for heart disease. The first eight questions related to the demographics of the client and questions 9

through 12 related to participation in CEP and risk factors to cardiac disease. The second set of questions, numbers 13 through 16, related to the clients' perception of susceptibility to disease and seriousness of disease. Questions 17 through 44 were designed to elicit information on the clients' motivation to enter the program, cues to action, sociopsychological, structural, and perception of lifestyle changes as a result of continued support and education.

#### Research Procedure

A letter was sent requesting permission to use the CEP population for the research and outlining the goals and nature of the research (Appendix B). As soon as the permission was granted, an appointment was scheduled to meet with the clients of the CEP to explain the purpose of the study and the questionnaire. The contacts were made with the subjects after obtaining approval from the program director. The investigator attended classes for 2 weeks to distribute questionnaires and receive completed questionnaires. The clients who wished to participate in the study were requested to fill out the questionnaire after signing the consent form (Appendix C). There were 20 questionnaires distributed after each class on each visit. The questionnaires were taken home by 79 participants and one was filled out after the class. Thirty-five questionnaires were returned to the associate director of the program and

received by the nurse investigator within a period of 3 weeks. Due to the age restriction and the amount of time in the CEP, there were five questionnaires that were not applicable to this study. The remaining 30 questionnaires met the criteria of this study.

Descriptive statistics were used to summarize and organize the data. The data were categorized in tables for eight HBM variables.

## Chapter 4

### FINDINGS AND INTERPRETATION

#### Analysis of Data

The purpose of this study was to evaluate the effectiveness of a cardiac education program that assists patients in reducing risk factors for heart disease. This was determined by evaluating patients' perception of risk factors before and after attending an outpatient Cardiac Education Program (CEP) and exploring for a change of healthy habits and lifestyle. The concepts from the Health Belief Model were used to identify the actions, beliefs, opinions, and attitudes of the participants to determine lifestyle changes made to reduce risk factors while participating in the outpatient program.

#### Demographic Characteristics

There were a total of 30 participants in this study. They were enrolled in the cardiac therapy program (CTP) after they were diagnosed as having had cardiovascular diseases (CVD) for at least 3 months. Data were collected by a questionnaire which showed that 63% ( $n = 19$ ) of the participants were male and 37% were females ( $n = 11$ ). Table 1 shows that the ethnicity of the population was comprised of 96.7% ( $n = 21$ ) Caucasian and 3.3% ( $n = 1$ ) African American. The majority of the sample were married (86.7%). A large number of the participants held a college level



**Table 1**  
**Demographic Characteristics of the Participants Enrolled in**  
**the Cardiac Education Program (CEP) (N=30)**

Modifying Factors Characteristics	Number of Responses	Percentage
<b>Gender</b>		
Female	11	36.7
Male	19	63.3
<b>Ethnicity</b>		
Caucasian	29	96.7
African American	1	3.3
<b>Marital status</b>		
Single	1	3.3
Married	26	86.7
Divorced	2	6.7
Separated	1	3.3
<b>Educational level</b>		
High school	5	16.7
Vocational	2	6.7
College	13	43.3
Advanced	10	33.3
<b>Occupation</b>		
Retired	19	63.3
White collar job	6	20.0
Blue collar job	2	6.7
Homemaker	2	6.7
Unemployed	1	3.3
<b>Spouse support or significant other support</b>		
Yes	27	90.0
No	2	6.7
Declined to answer	1	3.3
<b>Peer support</b>		
Yes	30	100.0
No	0	0.0

education ( $n = 13$ , 43.3%) or an advanced degree ( $n = 10$ , 33.3%). The predominant occupation was listed as either retired (63.3%) or a white collar job (20%). Data in Table 1 show that the participants received emotional support from a spouse or significant other (90%) as well as from peer groups (100%). This may have been a major sociopsychological factor attributing to lifestyle changes while attending the program.

Table 2 reveals that the economic status of the population was very affluent with the majority (60%) earning over \$50,000 annually. The age range was 51-80 years with a mean of 69.8.

Table 2

Income and Age Distribution of the Participants Enrolled in the Cardiac Education Program (CEP) (N=30)

Income/ Age Group	Number of Responses	Percentage
<b>Annual income</b>		
\$15,000 - \$25,000	3	10.0
\$25,001 - \$35,000	3	10.0
\$35,001 - \$50,000	4	13.3
over \$50,000	18	60.0
Declined to answer	2	6.7
<b>Age (in years)</b>		
51 - 55	1	3.3
56 - 60	4	13.3
61 - 65	1	3.3
66 - 70	9	30.0
71 - 75	9	30.0
76 - 80	6	20.0

### Risk Factors Before and After CEP

The participants had knowledge of the different risk factors to CVD that applied to them. The past risk factors reflect the perceived lifestyle before attending the outpatient class and after hospital discharge. The present reflects their perceived lifestyle after attending the cardiac outpatient class for an extended period of time. A comparison of the perceived risk factors before and after participating in the CEP is shown in Table 3 and indicate changes toward healthy habits and lifestyle. Significant lifestyle improvement occurred in the present data as compared to the past lifestyle data for the following percentages of the subjects: (a) decreased cholesterol in diet (94%), (b) increased regular exercise (93%), (c) abstinence from smoking (87.5%), (d) lower blood pressure (55.5%), (e) decreased high blood cholesterol (66.6%), and (f) decreased type A competitive personality (43.7%). Other risk factors were only moderately improved: (a) decreased level of emotional stress (18%) and (b) decreased weight (31%).

### Health Motivation

Some actions of lifestyle showed a motivation toward decreasing risk factors. While attending the outpatient program, high percentages of the sample maintained a low cholesterol diet (93.3%). Many (70%) felt enabled for more

Table 3

Perception of Risk Factors by Participants Before and After Enrollment in the Cardiac Education Program (CEP) (N=30)

Risk Factors Perceived as Problems	Before CEP	After CEP	Percent of Change
Family history	17	15	11.7
Diet high in cholesterol	17	1	94.0
Lack of regular exercise	14	1	93.0
Smoking	16	2	87.5
Hypertension	18	8	55.5
High blood cholesterol	15	5	66.6
Type-A personality	16	9	43.8
Emotional stress	11	9	18.0
Overweight	13	9	31.0

positive changes in lifestyle by the information received at the outpatient program, which was more detailed than that of the hospital. Other changes included: (a) decreased salt intake (90%), (b) decreased fried foods (90%), (c) regular checkups (96.7%), (d) abstained from smoking (93.3%), (e) better understanding of medications (76.7%), and (f) decreased stress (83%). A smaller number from the sample practiced meditation and relaxation exercises to relieve stress (33.3%); however 36.7% of the population now abstain from alcohol.

### Cues to Action

Cues to action can be external and internal. The primary external motivation for initiating the patient referral to the outpatient program was the physician. While Table 4 shows that the physician's advice was a cue to action for the majority of the subjects (76.7%), the data indicated that the cardiac rehabilitation nurse has been a significant motivating factor for a number of the subjects (26.3%) when the nurse introduced the outpatient cardiac program to the patient while hospitalized. The other cues to action that initiated enrollment to the CEP were: (a) fear of CVD recurrence (23.3%), (b) persuasion from family members and friends (33.3%), (c) personal knowledge of

Table 4

External Variables that Initiated Participation in Cardiac Education Program (CEP) (N=30)

External Variables	Number of Responses	Percentage
Advice from physician	23	76.7
Persuasion from family and friends	10	33.3
Advice from Cardiac Rehabilitation Nurse	8	26.7
Fear of CVD recurrence	7	23.3
Knowledge of benefits	7	23.3
Newspaper and magazine advertisement	1	3.3

\* Note. Some individuals had multiple responses.

the benefits of the program (23.3%), and (d) newspaper and magazine advertisement (3.3%).

The patient could be motivated to participate in the outpatient program by internal variables. These were usually clinical manifestations of illness or other conditions that initiated action to change lifestyle: (a) heart attack (53.3%), (b) high blood pressure (56.7%), (c) atherosclerosis (43.3%), (d) coronary artery disease (43.3%), (e) angioplasty (50%), and (f) angina (23.3%).

#### Perceived Seriousness and Susceptibility

The majority of the clients showed a good understanding of the risk factors which made them susceptible to heart disease. Sixty-three percent of the sample perceived their heart disease to be life threatening and wanted to change their lifestyle to increase their quality of life. On the other hand, 36.7% did not perceive their disease process to be serious. The responses to perceived susceptibility to heart disease showed 3.3% believed they were not susceptible, 66.7% moderately susceptible, and 30% very susceptible. Data are shown in Table 5.

#### Perceived Benefits

The percentage of clients who perceived the following benefits from attending the cardiac education program are: (a) safe exercise program (100%), (b) relevant information regarding health (96.7%), (c) increased confidence to return

Table 5

Perceived Seriousness and Susceptibility of the Participants Enrolled in the Cardiac Education Program (CEP) (N=30)

Individual Perceptions	Number of Responses	Percentage
Perceived seriousness to CVD		
Yes	19	63.3
No	11	36.7
Perceived susceptibility to CVD		
Not susceptible	1	3.3
Moderately susceptible	20	66.7
Very susceptible	9	30.0

to desired physical activity (90%), (d) a good source of peer support (100%), (e) increased feeling of strength to do pleasurable activities (93.3%), (f) reduced the possibility of CVD symptom recurrence (93.3%), (g) reduced emotional stress (83%), (h) increased their knowledge and ability to change unhealthy behaviors (83.3%), and (i) weight loss (60%). Table 6 displays these data. The percentage of patients who reported these other factors as perceived benefits to changing the lifestyle while attending the CEP were: (a) improved feeling of well-being and quality of life (83.3%), (b) structured program to improve health (86.7%), (c) relevant information (96.7%), (d) confident of lifestyle changes (90%), (e) increased confidence of reducing risk factors (90%), (f) suitable class schedule (90%), and (g) supportive staff (100%).

Table 6

Perceived Benefits from the Cardiac Education Program (CEP)  
by the Participants (N=30)

Benefits	Number of Responses	Percentage
Safe physical exercise		
Yes	30	100.0
No	0	0.0
Relevant information regarding health		
Yes	29	96.7
No	1	3.3
Increased confidence to return to desired physical activity		
Yes	27	90.0
No	3	10.0
Source of peer support		
Yes	30	100.0
No	0	0.0
Increased feeling of strength to do pleasurable activities		
Yes	28	93.3
No	2	6.7
Reduced possibility of CVD symptoms recurrence		
Yes	28	93.3
No	1	3.3
Declined to answer	1	3.3
Reduced emotional stress		
Yes	25	83.3
No	5	16.7
Modification towards healthy lifestyle		
Yes	25	83.3
No	4	13.3
Declined to answer	1	3.3
Weight loss		
Yes	18	60.0
No	9	30.0
Declined to answer	3	10.0



### Data Interpretation

The data collected in this study suggest that a reduction of risk factors for heart disease occurred with cardiac education in the outpatient setting. The clients in this study had been diagnosed with CVD and had been attending the CEP for more than 3 months. Many have been able to change unhealthy lifestyles as well as decrease other risk factors. The Health Belief Model provided useful concepts to organize and categorize the identified factors. The participants showed increased tendencies toward a continuation of changes made in lifestyle. Table 7 showed that a majority of the participants in the CEP perceived that the program would reduce the recurrence or heart disease or a cardiac event.

Pender and Pender (1986) pointed out that demographic factors such as sex, education, and ethnicity associated

Table 7

Perceived Threat of Disease by the Participants Enrolled in the Cardiac Education Program (CEP) (N=30)

	Number of Responses	Percentage
Participation in the program will reduce recurrence of heart disease or cardiac event		
Yes	28	93.3
No	1	3.3
Declined to answer	1	3.3

with higher socioeconomic levels had been shown to be correlated with the use of health services. A majority of the clients in the sample reported that being retired gave them more time to spend at the CEP and take care of themselves. The most common demographic characteristics of this sample were: (a) Caucasian belonging to a higher income bracket, (b) higher educational attainment, (c) retired from work, and (d) having engaged in white collar jobs; these have been shown to correlate with the use of health services and preventive services. However, because there was no comparison group, this study cannot conclude that these demographic characteristics are correlated with an increased ability to make lifestyle changes.

Social support and structure may well have increased the confidence and motivation to make lifestyle changes, especially the support from the significant other and the peer group. Knowledge of individual risk factors also may have increased the ability to make changes. Enrollment to the cardiac education program was often initiated by the advice from the physician and cardiac rehabilitation nurse. This study showed the importance of both the physician and cardiac rehabilitation nurse in referring and encouraging clients with known cardiac disease to attend a cardiac outpatient education program.

Most participants have attended the program for many years and have not experienced any cardiac event since

attending the program; therefore, the confidence level has increased and the fear of the disease process has decreased. However, a majority of the clients did perceive that they were susceptible to heart disease. This was due to the increased knowledge about their disease process. The disease is still present even if there is no clinical manifestation, but it can remain under control with lifestyle changes to reduce the risk factors of heart disease.

Data analysis indicated the most frequent factor that influenced lifestyle changes to reduce cardiac risk factor was the attendance in a CEP. The majority of the sample reported that the structured program, the support, and the feeling of not being alone to make changes after being discharged from the hospital were very positive benefits. They felt that their quality of life and sense of well-being had been improved by the program. The participants perceived the information from the CEP to be more relevant and more detailed than the information received while in the hospital. The program has increased their motivation to reduce risk factors by changing their lifestyle and eliminating unhealthy habits.

## Chapter 5

### CONCLUSIONS AND RECOMMENDATIONS

The purpose of this study was to evaluate the effectiveness of cardiac education and reduction of risk factors in an outpatient setting. In addition, recommendations for further research and the implication of the study are discussed.

#### Summary

In the original population there was a potential for 79 subjects; however, only 30 questionnaires were used due to restrictions of age, amount of time in the program, and questionnaires returned. The participants in the study stated that, with continued participation in the outpatient cardiac therapy program (CTP), they indeed felt healthier. The program gave the participants the support that they needed to make lifestyle changes as recommended by their physicians. Most of the participants were: (a) highly motivated, (b) had good knowledge of risk factors, (c) were satisfied with the program and staff, (d) believed in the efficacy of the program, (e) continued to make lifestyle changes, and (f) believed that the continued support and the structure increased their ability to live a healthier life and reduce the risk factors for heart disease or its recurrence. A positive aspect of using this population was that they were knowledgeable about their heart disease and

were motivated to change their unhealthy lifestyles. They were willing to attend the program for as many years as necessary.

The majority of respondents stated that attending the outpatient program made them feel more confident about lifestyle changes and reducing risk factors for heart disease. The responses reflected a perception that increased knowledge through outpatient education did increase their own ability to change unhealthy behaviors. More patients should be referred to educational outpatient programs to assist and support the lifestyle changes as instructed in the hospital setting.

#### Conclusion

The results of this study cannot be generalized to the general population of cardiac rehabilitation clients. The small convenience sample group, coming from a well-educated, affluent urban area in northern California is not representative of all cardiac rehabilitation clients. The results may be applicable to cardiac rehabilitation clients with similar attributes.

This study has validity in demonstrating the need for further research into outpatient interventions for changing risk behaviors in patients after discharge in the outpatient area. While hospitalized patients exhibit readiness to learn (Steele & Ruzicki, 1987), it might also be effective to explore the possibility of providing ongoing contact with

patients who have not been hospitalized but who may be diagnosed with angina or coronary heart disease. Engaging these patients in activities that raise cognitive perceptions of health behaviors could lead to positive results in long-term health promotion and prevention of illness (Pender, 1987).

The results of this study support the idea that physicians and other health care professionals should encourage and motivate patients to take control of their own health. Motivating patients to participate in a health promotion program is vitally important and must be an ongoing goal for the nurse. Patients need to be empowered to move forward toward a goal of health and thus make lifestyle changes to enhance the quality of their lives.

#### Implications for Nursing

The interventions elicited by the cardiac education program increased compliance with behaviors such as stopping smoking or improving diet, improving relationships between provider and patient, enlisting social supports such as the family, and utilizing all members of the health care team. These treatments appeared to improve quality of life and reduce risk factors as reported by clients in the outpatient cardiac program.

The cardiac education and therapy program motivated the participants to increase their quality of life. They were motivated to voluntarily participate in the health

maintenance and health promotion program. The participants felt that the CEP was excellent because it was structured, organized, educational, and the exercise programs were for individuals with known cardiovascular disease history. Therefore, it assisted them in changing lifestyles. They also stated that the CEP provided high quality medical care, emotional support, and health education to enhance lifestyle changes by improving cardiovascular functions and lowering risk factors.

Orem (1980) stated that an individual has a need for self-care action and support on a continuing basis in order to sustain life and health, to recover from disease, and to cope with the effects of the disease after an event. The CEP personnel functioned to provide these principles to their clients. The clients were evaluated and treated with individual care according to their disease process. Physicians, hospitals, and nurses should be responsible as a team to refer patients to community outpatient resources after hospitalization. Patients do want to change their unhealthy lifestyles that led to the cardiac event, but often they are not able to. The support from programs in the outpatient setting will help them to make life-long commitment to change as members of a CEP. There is a need for more referral and more outpatient cardiac and rehabilitation programs to be developed everywhere. Many people are taking control of their health in order to live

as healthy a life as they can. Much of the population is living past the age of 75 and utilizing self-care activities to maintain life, health, and well-being. Cardiac education for the outpatient does decrease the factors for heart disease. This decrease occurred mainly because the patient had been discharged and received instructions in the environment where the changes were to occur. As the patients learned in the outpatient program daily, they were able to apply the lifestyle changes at home.

#### Limitations

This study had some limitations. The design was nonexperimental, so it cannot establish a cause and effect relationship between cardiac education and risk reduction. A convenience sample was used due to the accessibility of the target population. There was no randomization of the subjects to groups, and lack of randomization of the sample could have led to selection bias. The sample size limited comparisons and generalizability of the study's results. Therefore, it is impossible to generalize this sample or to support statistical conclusions.

The sample size was further limited by the number of individuals returning the questionnaires. The subjects were asked to take the questionnaires home to complete, but some refused to comply even after agreeing to participate and after being urged to return the questionnaires in each class. Many of the questionnaires were not returned. Another



method is needed to increase the responses from the participants in the outpatient programs.

The utilization of self-reports for data collection presents the question of accuracy. It was beyond the scope of this study to determine if patients were responding factually or whether they may have been answering according to their social awareness and knowledge realm. Self-reporting may lead to bias of the responses. The investigator must rely on the veracity of the respondents. There is no way to prove validity of the responses. The research utilized subjective data, which were based on perceptions, beliefs, and opinions in response to the questionnaire. There were no controls over the variables such as: (a) degree of coronary artery disease, (b) patient's educational level, (c) the amount or kind of social support received, (d) perception of lifestyle changes attained since attending the outpatient program, (e) sites where research was conducted, or (f) time constraints. Therefore, conclusions could not be presented as representative for all cardiac rehabilitation programs.

#### Recommendations

The recommendation for further study is to replicate the study. The replicated study should include:

- (a) increased sample size,
- (b) longer period of time for data collection,
- (c) decreased number of variables,

(d) varied demographics and sociocultural characteristics to reduce the possibility of sample bias affecting the results, and (e) increased resources. This increase of sample size and varied demographics could be obtained by using a variety of cardiac rehabilitation and outpatient settings. Therefore, randomization of the sample would be applicable and possibly decrease bias.

Future studies should evaluate other methods for obtaining information from groups. Although questionnaires have been used in many studies (Hemmelgarn, 1991; Steele & Ruzicki, 1987) and the group response rate in the present study is acceptable, it is recommended that future studies be modified by conducting face-to-face interviews along with the questionnaire. The data could be obtained, explanations given as needed, and variables could more easily be controlled, which would increase confidence in the validity of the study. This may also increase response rate and decrease bias in opinion of subjects. Other resources should include staff to retrieve and record data and assist in obtaining completed questionnaires from the subjects in the study.

To obtain more in-depth information about the topic, a basic experimental or correlational study design should be used. Objective data such as blood pressure, blood level of cholesterol, or blood level to determine if one has been

smoking could be included as variables to measure for a healthier lifestyle.

## REFERENCES

## References

- Arborelius, E., & Bremberg, S. (1994). Prevention in practice: How do general practitioners discuss life-style issues with their patients? Patient Education and Counseling, 23, 23-31.
- Balady, G. T., Fletcher, B. J., Froelicher, E. S., Hartley, H. L., Kraus, R. M., Oberman, A., Pollack, M. L., & Taylor, B. (1994). Cardiac rehabilitation programs: A statement for healthcare professionals from the American Heart Association. Circulation, 90, 1602-1607.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. Psychological Review, 84, 119-215.
- Barbarowicz, P., Nelson, M., DeBusk, R. F., & Haskell, W. (1982). A comparison of in-hospital education approaches for coronary bypass patients. Heart and Lung, 9, 127-133.
- Becker, M. (1974). The health belief model and personal health behavior. Health Education Monogram, 2, 324-508.
- Becker, M., & Janz, N. (1984). The health belief model: A decade later. Health Education Quarterly, 11, 1-47.
- Becker, M. H., Marman, L. A., Kirscht, J. P., Haefner, D. P., & Drachman, R. H. (1977). The health belief model and prediction of dietary compliance: A field experiment. Journal of Health and Social Behavior, 18, 348-366.
- Blankenhorn, D. H., Messim, S. A., Johnson, R. L., Sanmarco, M. E., Azen, S. P., & Cashin-Hemphill, L. (1987). Beneficial effects of combined colestipol-niacin therapy on coronary atherosclerosis and coronary venous bypass grafts. Journal of American Medical Association, 257, 3233-3240.
- Briody, M. E. (1984). The role of the nurse in modification of cardiac risk factors. Nursing Clinics of North America, 19, 387-396.
- Cave, L. A. (1989). Follow up phone calls after discharge. American Journal of Nursing, 89, 942-943.
- Champion, V. L. (1984). Instrument development for health belief model contract. Advances in Nursing Science, 6, 73-85.
- Fletcher, G. F. (1986). Rehabilitation after coronary angioplasty—Is it effective? Archives of Physician Medical Rehabilitation, 67, 517-519.

Garding, B. S., Kerr, J. C., & Bay, K. (1988). Effectiveness of a program of information and support for myocardial infarction patients recovering at home. Heart and Lung, 17, 355-362.

Gattiker, H., Goins, P., & Dennis, C. (1992). Cardiac rehabilitation: Current status and future directions. The Western Journal of Medicine, 156, 183-198.

Hagopian, G. A., & Rubenstein, J. H. (1990). Effects of telephone call interventions on patients' well-being in a radiation therapy program. Career Nursing, 13, 339-344.

Hemmelgarn, G. R. (1991). Increasing response rates in community health surveys. Canadian Journal of Public Health, 92, 353-354.

Hochbaum, G. M. (1956). Why people seek diagnostic x-rays. Public Health Reports, 71, 377.

Jenkins, D. C. (1988). Epidemiology of cardiovascular disease. Journal of Consulting and Clinical Psychology, 56(3), 324-332.

Kaplan, R. M. (1988). Health related quality of life in cardiovascular disease. Journal of Consulting and Clinical Psychology, 56, 382-392.

Kegeles, S. S. (1963). Why people seek dental care: A test of conceptual formulation. Journal of Health and Human Behavior, 4, 166.

Lando, H. L., Hellerstedt, W. L., Pirie, P. L., & McGovern, P. G. (1992). Brief supportive telephone outreach as a recruitment and intervention strategy for smoking cessation. American Journal of Public Health, 82, 41-46.

Leventhal, H. N. (1965). Fear of communication and the effectiums of preventive health practices. Bulletin of the New York Academy of Medicine, 41, 1144.

Levy, R. I., Brensike, J. F., & Epstein S. E. (1984). The influence of changes in lipid values by cholestyramine and diet on progression of coronary artery disease. Results of the NHLBI Type II coronary intervention study. Circulation, 69, 325-337.

Lewin, K. (1935). A dynamic theory of personality. New York: McGraw Hill.

Lustig, B. (1991). Reducing risk factors for heart disease by telephone follow up after hospitalization.

Published master's thesis, San Jose State University, San Jose, CA.

Murdaugh, C. (1982, June/July). Using Research in Practice. Focus, pp. 24-28.

Orem, D. E. (1980). Nursing: Concepts of practice. New York: McGraw Hill.

Ornish, D., Brown, S., Scherwitz, L., Billings, J., Armstrong, W., Ports, T., McLanahan, S., Kirkeeide, R., Brand, R., & Gould, K. (1990). Can lifestyle changes reverse coronary heart disease? The lifestyle heart trial. The Lancet, 336, 192-193.

Pender, N. J. (1987). Health promotion in nursing practice (2nd ed.). Norwalk, CT: Appleton-Lange.

Pender, N. J., & Pender, A. R. (1986). Attitudes, subjective norms and intentions to engage in health behaviors. Nursing Research, 35, 15-18.

Pozen, M. W., Stechmiller, J. A., Harris, W., Smith, S., Fried, D. D., & Voight, G. C. (1977). A nurse rehabilitator's impact on patients with myocardial infarction. Medical Care, 15, 830-837.

Rosenstock, I. M. (1966a). What research in motivation suggests for public health. American Journal of Public Health, 50, 295-302.

Rosenstock, I. M. (1966b). Why people use health services. Milbank Memorial Fund Quarterly, 44, 97-127.

Scalzi, C., Burke, L. E., & Greenland, S. (1980). Evaluation of an inpatient educational program for coronary patients and families. Heart and Lung, 9, 846-853.

Sivarajan, E., Newton, K. M., Almes, M. J., Kempf, T. M., Mansfield, L. W., & Bruce, R. A. (1982). Limited effects of out-patient teaching and counselling after myocardial infarction: A controlled study. Heart and Lung, 12, 65-73.

Steele, J. M., & Ruzicki, D. (1987). An evaluation of the effectiveness of cardiac teaching during hospitalization. Heart and Lung, 16, 306-311.

Stovsky, B. (1992). Nursing intervention for risk factor reduction. Nursing Clinics of North America, 27, 257-267.

**APPENDIXES**



**Appendix A**  
**Human Subjects' Approval**



A campus of The California State University.

---

Office of the Academic Vice President • Associate Academic Vice President • Graduate Studies and Research  
One Washington Square • San Jose, California 95192-0025 • 408/924-2480

TO: Henretta Milton  
1074 Summerain Ct.  
San Jose, CA 95122

FROM: Serena W. Stanford *Serena W. Stanford*  
AAVP, Graduate Studies & Research

DATE: October 10, 1994

The Human Subjects-Institutional Review Board has approved your request to use humans subjects in the study entitled:

"Cardiac Education as a Means to Reduce Risk Factors"

This approval is contingent upon the subjects participating in your research project being appropriately protected from risk. This includes the protection of the anonymity of the subjects' identity when they participate in your research project, and with regard to any and all data that may be collected from the subjects. The Board's approval includes continued monitoring of your research by the Board to assure that the subjects are being adequately and properly protected from such risks. If at any time a subject becomes injured or complains of injury, you must notify Dr. Serena Stanford immediately. Injury includes but is not limited to bodily harm, psychological trauma and release of potentially damaging personal information.

Please also be advised that each subject needs to be fully informed and aware that their participation in your research project is voluntary, and that he or she may withdraw from the project at any time. Further, a subject's participation, refusal to participate, or withdrawal, will not affect any services the subject is receiving or will receive at the institution in which the research is being conducted.

If you have any questions, please contact me at (408) 924-2480.

**Appendix B**  
**Request For and Approval From**  
**Cardiac Therapy Program**



A campus of The California State University

---

School of Applied Arts and Sciences • Department of Nursing • Graduate Program  
One Washington Square • San Jose, California 95192-0057 • 408/924-3134

Henretta Milton  
1074 Summerain Court  
San Jose, CA 95122  
(408)288-8804

**CARDIAC THERAPY FOUNDATION OF THE MID PENINSULA**  
655 Arastradero Road  
Palo Alto, CA 94306

To whom it may concern:

My name is Henretta Milton, I am a graduate student at San Jose State University.

I would like to request permission to use your Cardiac Rehabilitation program population for a research project investigating cardiac education as a means of risk reduction for heart disease (such as diet, exercise, medication, etc.) while participating in the rehabilitation program. In conjunction with this, I will secure consent from each of the clients participating in the project. This research project will constitute my thesis in partial fulfillment of the degree of Master of Science degree in Nursing.

I am looking forward to hearing from you. This is an ambitious study that has generated much enthusiasm since I have worked on the progressive coronary unit working with the cardiac patients. I would appreciate hearing from you soon. Please send your response in writing to comply with the Human Subjects Review Board of San Jose State University.

Thank you for your assistance in this study.

Sincerely yours,

Henretta Milton, RN

cc: Human Subjects Review Board  
San Jose State University

**The Cardiac Therapy Foundation  
Of the Midpeninsula  
Suite 200, 655 Arastradero Road  
Palo Alto, CA 94306  
415-494-1300**

May 4, 1995

Henretta Milton  
1074 Summerain Ct.  
San Jose, CA 95122

Dear Henretta,

It was our pleasure to have you meet the participants of the Cardiac Therapy Foundation of Palo Alto. This confirms our authorization for you to distribute questionnaires to our participants at CTF. We look forward to seeing your "results".

Sincerely, 7

A handwritten signature in cursive script, appearing to read "Robin Wedell", with a horizontal line extending to the right.

Robin Wedell, R.N.  
Associate Director

**Appendix C**  
**Consent Form**



A campus of The California State University

School of Applied Arts and Sciences • Department of Nursing • Graduate Program  
One Washington Square • San Jose, California 95192-0057 • 408/924-3134

### CONSENT FORM

RESPONSIBLE INVESTIGATOR: \_\_\_\_\_

TITLE OF PROTOCOL: CARDIAC EDUCATION AS A MEANS TO REDUCE RISK FACTORS.

I have been asked to participate in a research study that is investigating the effectiveness of a cardiac education program in reducing risk factors leading to heart disease in an outpatient setting. The results of this study should further our understanding of what means are needed to be established in an outpatient setting to assist cardiac clients in reducing risk factors and to improve their quality of life.

I understand that:

1. I was selected as a possible participant in the study because of my participation in the outpatient cardiac rehabilitation program offered by the Palo Alto YMCA.
2. If I decide to participate in the study, I will be given a questionnaire to fill out. It is simple and should not take over 15 minutes to complete.
3. I understand there are no foreseeable risks or discomforts to me in participating in this study.
4. The possible benefits are that I will increase my knowledge of cardiac risk factors, including diet, exercise, stress reduction, and other benefits.
5. The results from this study may be published, but any information from this study that can be identified with me will remain confidential and will be disclosed only with my permission or as required by law.
6. Any questions about my participation in this study will be answered by  
Henretta Milton Phone (408)288-8804

Complaints about the program may be presented to Colleen Saylor, Ph.D., Phone (408) 924-3100. For questions or complaints about the research, subject's rights, or in the event of research-related injury, please contact Serena Stanford, Ph.D., Associate Vice President of Graduate Studies and Research at (408) 924-2480.

7. My consent to participate is being given voluntarily without any coercion; I may refuse to participate in this study or in any part of this study, and I may withdraw at any time, without prejudice to my relation to the hospital.
8. I have received a copy of this consent form for my file.

I HAVE MADE A DECISION TO PARTICIPATE IN THIS STUDY. MY SIGNATURE INDICATES THAT I HAVE READ THE INFORMATION PROVIDED ABOVE AND HAVE DECIDED TO PARTICIPATE.

\_\_\_\_\_  
DATE

\_\_\_\_\_  
SUBJECT'S SIGNATURE

\_\_\_\_\_  
DATE

\_\_\_\_\_  
INVESTIGATOR'S SIGNATURE

**Appendix D**  
**Request For and Approval From**  
**Barbara Lustig**





*A campus of The California State University*

---

School of Applied Arts and Sciences • Department of Nursing • Graduate Program  
One Washington Square • San Jose, California 95192-0057 • 408/924-3134

Henretta Milton  
1074 Summerain Court  
San Jose, CA 95122

October 15, 1993

Barbara Lustig, R.N.  
Supervisor, TCU  
Kaiser Permanente Medical Center  
27400 Hesperian Boulevard  
Hayward, CA 94545

Dear Barbara:

I am delighted that you have given me approval by telephone to expand on your study: Cardiac education as a means of risk reduction. I am interested in using your questionnaire to obtain my results. The study will be conducted at the cardiac therapy program utilizing the cardiac patients attending outpatient classes.

Again, I would like to express my thanks. I would like to obtain an official letter of permission from you. Thanks again.

Sincerely,

Henretta Milton

Kaiser Foundation Hospitals  
27400 Hesperian Boulevard  
Hayward, California 94545-4299  
(510) 784-4000

Donald B. Oxley  
Hospital/Health Plan Administrator

Denna B. Medinas, R.N.  
Medical Group Administrator

Paul E. Jewett, M.D.  
Physician-in-Chief



January 20, 1994

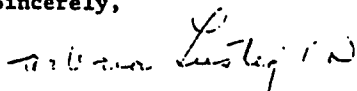
Henretta N. Milton  
2279 McLaughlin Avenue #4  
San Jose, CA 95122

Dear Henretta:

It is with great pleasure that I give you approval to replicate my study on telephone followup of angina patients after hospital discharge. I do have one suggestion you might consider. That is to telephone the patients right after hospital discharge in addition to the call after completion of the seven week classes. This would establish your contact and promote rapport with the patients.

Good luck with the study. Please let me know if I can be of any assistance, and please send me your results when completed.

Sincerely,

  
Barbara Lustig, RN, MSN  
Supervisor, TCU

**Appendix E**  
**Survey Questionnaire**

Questionnaire

64

1. Current age: \_\_\_\_\_
2. Sex: M \_\_\_\_\_ F \_\_\_\_\_
3. Marital status: S \_\_\_\_\_, M \_\_\_\_\_, D \_\_\_\_\_, Sep \_\_\_\_\_
4. Occupation: \_\_\_\_\_
5. Ethnicity:
  - White
  - Black
  - Hispanic
  - Asian
  - Other
6. Education:
  - Primary grade
  - High school
  - Vocational degree
  - College degree
  - Advanced degree
7. Number of children living at home: \_\_\_\_\_
8. Current annual family income:
  - Less than \$15,000
  - \$15,000 to \$25,000
  - \$25,000 to \$35,000
  - \$35,000 to \$50,000
  - Over \$50,000
9. How long have you been a participant in the Cardiac Therapy Program:  
\_\_\_\_\_ months
10. Check any of the following which apply to you:
  - Heart attack, how many? \_\_\_\_\_
  - Congenital or inborn heart defects
  - Atherosclerosis
  - Coronary artery bypass surgery
  - Angioplasty
  - High blood pressure
  - Rheumatic heart disease
  - Angina (chest pain)
  - Other cardiac diseases \_\_\_\_\_
  - Other non-cardiac diseases \_\_\_\_\_
11. Check the risk factor(s) that applied to you in the PAST:
  - Positive family history of heart disease
  - Competitive or type-A personality
  - Frequent emotional stress
  - Lack of regular exercise
  - High cholesterol diet
  - Diabetes
  - High blood pressure
  - Smoking
  - Overweight

- Elevated blood cholesterol  
 Other \_\_\_\_\_

12. Check the risk factor(s) that apply to you at **PRESENT**:

- Positive family history of heart disease  
 Competitive or type-A personality  
 Frequent emotional stress  
 Lack of regular exercise  
 High cholesterol diet  
 Diabetes  
 High blood pressure  
 Smoking  
 Overweight  
 Elevated blood cholesterol  
 Other \_\_\_\_\_

13. How susceptible do you think you are to heart disease?

- Not susceptible  
 Moderately susceptible  
 Very susceptible

14. What do you believe caused your heart disease?

\_\_\_\_\_

\_\_\_\_\_

15. Do you consider your heart disease potentially life-threatening?

- yes     no

16. Do you believe that regular participation in the outpatient program will significantly reduce recurrence of your heart disease?

- yes     no

17. What self-care activities do you regularly participate in:

- Maintaining a low cholesterol diet  
 Meditation, or relaxing hobbies  
 Abstinence from alcohol  
 Abstinence from smoking  
 Always use car seat belts  
 Regular check-ups

18. Check the factor(s) which initiated your enrollment in this program:

- Advice from physician  
 Advice from cardiac rehabilitation nurse  
 Persuasion from family member or friends  
 Personal knowledge of the benefits  
 Television advertisement about benefits  
 Newspaper/magazine article about benefits  
 Fear of recurrence of illness  
 Other \_\_\_\_\_

19. (a) Do you feel you need to lose weight?  
 yes     no
- (b) Do you believe that the participation in the exercise program will help you lose weight?  
 yes     no
20. Do you believe that participation in the exercise program will help you reduce emotional stress?  
 yes     no
21. Do you consider the program's exercises safe for you?  
 yes     no
22. Does the program significantly increase your confidence to return to desired physical activities?  
 yes     no
23. Does the program supply a good source of peer support?  
 yes     no
24. Does the class schedule suit your personal schedule?  
 yes     no
25. If your health insurance did not cover the program's fees would you still participate?  
 yes     no
26. Does the program offer relevant information regarding your health?  
 yes     no
27. Does the exercise program help you feel physically stronger to do the activities you enjoy or need to do?  
 yes     no
28. Do you consider your pre-illness lifestyle much different from your present lifestyle?  
 yes     no    If yes, in what ways?
- 
29. How many classes have you been unable to attend over the last 6 months?  
 0-4  
 5-10  
 11-20  
 more than 20

30. Since attending this program do you feel more confident about lifestyle changes?  
 yes     no
31. Does the program significantly increase your confidence in reducing your cardiac risk factors?  
 yes     no
33. Do you feel that increased knowledge through educational programs like this one increases one's ability to change unhealthy behaviors?  
 yes     no
34. Were you able to stop smoking?     yes     no  
Have you reduced the amount smoked?     yes     no
35. Has your knowledge increased regarding cholesterol?     yes     no
36. Do you think that you could have made any lifestyle changes without a structured program such as this?     yes     no
37. Do you have more understanding about your medications and how they are taken?     yes     no
38. Do you feel that more detailed information given in this program was more helpful than the teaching in the hospital?     yes     no
39. Is your spouse or significant other supportive of your participation in the exercise program?     yes     no
40. Please list any factors that influence your continued participation in this program.
- 
- 
41. Did you participate in leisure time physical exercise before you had your heart attack and/or diagnosis of cardiac disease?     yes     no
42. Has there been a significant change in your diet, such as salt intake?  
 yes     no  
Fried foods?     yes     no
43. Since your hospitalization, what kinds of changes have you made in your lifestyle to reduce the risk of having a heart attack?
- 
-