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UNIVERSITY OF ALBERTA

SATISFACTION AND RISK FACTOR LIFESTYLE MODIFICATION IN A PHASE III CARDIAC REHABILITATION PROGRAM

BY

M. L. PHYLLIS CASTELEIN

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF NURSING

FACULTY OF NURSING

EDMONTON, ALBERTA

FALL, 1991

ISBN 0-315-70223-0

UNIVERSITY OF ALBERTA

RELEASE FORM

NAME OF AUTHOR: M. L. Phyllis Castelein

TITLE OF THESIS: Satisfaction and Risk Factor Lifestyle Modification in a Phase III Cardiac Rehabilitation Program

DEGREE: Master of Nursing

YEAR THIS DEGREE GRANTED: 1991

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DEDICATION

This manuscript is dedicated to those family members and close friends who provided their unwavering support and encouragement throughout this endeavor.

ABSTRACT

The purpose of this study was to contribute toward the search for the golden key to compliance with the health care regimen of a cardiac rehabilitation program. An evaluation of the lifestyle modification of seventy-two individuals who were participants in an existing phase III cardiac rehabilitation program, consisting of exercise, group education and individual counseling, and their level of satisfaction with the program was undertaken. A descriptive, correlational approach was utilized. A retrospective approach was used to identify subjects. Participants, once they were one year postprogram, were evaluated using the Cardiac Lifestyle Questionnaire (CLQ) and the Program Satisfaction Questionnaire (PSQ). The results were analyzed for a relationship between program satisfaction and lifestyle modification.

Sociodemographic findings from this study supported previous findings in relation to risk factors. Both success and nonsuccess results were evident in each of the eight lifestyle modification components. Successful lifestyle modification was evident in relation to exercise, tobacco, alcohol and weight lifestyles; diet, stress and hypertension lifestyles were unsuccessful. Diabetes lifestyle could not be classified as either. With factor analysis, four components of program satisfaction were identified; these included activity, education, relationships and authority. Satisfaction scales for each of these components tended to be positive: average scores ranged between 76% and 87%. Two open ended questions about satisfaction with the program revealed that caring and interest by the health care personnel and an individualized approach were most

favored by the participants. Discriminant analysis results indicated that a statistically significant separation of successful and nonsuccessful groups in terms of lifestyle modification could not be made on the basis of program satisfaction information. Crosstabulation analysis of tobacco lifestyle with household income produced a chi-square of 19.06 ($p = 0.001$).

Findings related to lifestyle modification may alert nurses working in the cardiac rehabilitation program that further investigation of components such as diet, stress and hypertension is indicated. As well, the practice of utilizing an individualized care approach and establishing good rapport with participants in this setting is supported. The search for the golden key related to compliance, satisfaction, lifestyle modification and cardiac rehabilitation warrants further examination of the research question initially posed in this study. Further modification of the tools in question is suggested.

ACKNOWLEDGMENTS

I wish to express my deep appreciation to the Chairperson of my thesis committee, Janet C. Kerr, for the guidance and encouragement given to me through all aspects of this study. I also sincerely thank the other members of my committee, Stephen Hunka, for his time and energy in assisting me with the statistical analysis of the study, and, to Anita Molzahn, for her ongoing support, interest and guidance.

I also wish to acknowledge the cooperation and assistance I received from the staff at the Northern Alberta Cardiac Rehabilitation Program. A very special thank you to Dr. W.R. Black for his guidance and to Alaire Zavers, for her assistance with data collection for this study.

I wish to express my gratitude to the Alberta Foundation for Nursing Research and the Royal Alexandra Hospital School of Nursing for their monetary contributions toward this project.

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Chapter I

Introduction

The nature of coronary heart disease (CHD) is such that it creates a great need for interventions aimed at the alleviation or amelioration of its effects. One accepted approach is the alleviation of risk factors associated with cardiovascular disease. Cardiac rehabilitation programs, through the provision of health care regimens, serve as the major intervention aimed at the elimination of risk factors for individuals with CHD. Compliance with prescribed health care regimens then, should serve as the golden key in CHD.

Coronary Heart Disease

Cardiovascular disease knows no boundaries: not age, gender, race, locality or class of people. Patterns of occurrence related to certain sociodemographic characteristics have become evident. CHD remains the leading cause of death in men over age 40 and in women after menopause (Blumenthal & Emery, 1988; Clarke, 1990). Pathologic changes appear predominantly in persons over 40, but individuals in their 20's and 30's have been known to suffer from CHD (Luckmann & Sorensen, 1987). Men are four times as likely to suffer from CHD as are women. This difference evens out after women reach menopause (Murdaugh, 1990). White males die more frequently from CHD than do nonwhites. The rate of deaths among white females is lower than among nonwhite females. However, among elderly women, the death rates are not influenced by race (Burch, 1977; Luckmann & Sorensen, 1987). CHD is

seven times more prevalent in North America, Australia, New Zealand and Europe than in Africa, Japan and South America (Guzzetta & Dossey, 1984; Luckmann & Sorensen, 1987). It is responsible for nearly 50% of all deaths in Canada and the United States every year (Canadian Heart Foundation, 1988; Guzzetta & Dossey, 1984).

The impact of CHD is not restricted to its effects on mortality. The majority of patients do not die immediately. These individuals are faced with physical, social, psychological, and economic morbidity (Blumenthal & Emery, 1988). While attempting to live a full, vital and productive life, they must remain within the limits of their heart's ability to respond to increases in activity and stress. The ramifications of a compromised heart may include decreased activity tolerance, anxiety or emotional stress, and occupational modifications.

Activity tolerance is dependent on the functioning of the heart. Individuals with CHD may experience severe limitations to their activities of daily living or only slight decreases in activity tolerance may be evident. Secondary to this, occupational modifications may be necessary. Approximately two thirds of patients who have suffered a myocardial infarction are able to return to their former occupations (Luckmann & Sorensen, 1987). Work-related responsibilities may need to be altered; this may result in the delegation of some duties to others where possible. However, certain occupations are too hazardous; these individuals must find more suitable work. Some patients are forced to retire altogether. The psychological implications of having CHD stem from

the manifestations and complications of CHD. These vary from one individual to another and may include denial, euphoria, anger, intellectualization, regression and depression (Luckmann & Sorensen, 1987).

Risk Factors

The usual underlying disease process in CHD is coronary atherosclerosis, "characterized by an abnormal accumulation of lipid substances and fibrous tissues in the vessel wall that leads to changes in arterial structure and function and reduction of blood flow to the myocardium" (Brunner & Suddarth, 1984, p.626). Findings from Dawber's Framingham study (Guzzetta & Dossey, 1984) identified characteristics related to atherosclerosis that tend to make an individual more prone to CHD. Hypertension, smoking and hypercholesterolemia were identified as risk factors that have a statistically significant relationship to CHD. The study also identified contributing risk factors: age, gender, obesity, inactivity, stress, alcohol and glucose intolerance.

Hypertension is a significant major risk factor. It plays a dominant role at all ages and in both sexes, and elevations in blood pressure related to normal aging are far from harmless (Guzzetta & Dossey, 1984). Cigarette smoking increases the risk of CHD two and a half times that of nonsmokers in one pack per day smokers and four times with 2 or more packs per day (Guzzetta & Dossey, 1984). Hypercholesterolemia has a strong relationship with the development of CHD. Certain fractions of cholesterol lipoproteins have been found to be atherogenic whereas others are nonatherogenic (Guzzetta &

Dossey, 1984; Luckmann & Sorensen, 1987). These fractions are influenced by exercise, diet, cigarette smoking, alcohol use, weight and blood pressure (Guzzetta & Dossey, 1984). Inactivity is associated with a decrease in non-atherogenic lipoproteins (Guzzetta & Dossey, 1984; Luckmann & Sorensen, 1987). The obese person demonstrates an increase in cholesterol synthesis and a decrease in nonatherogenic lipoproteins. Also, obesity appears to be the major determinant of glucose intolerance and subsequent adult onset diabetes mellitus. Diabetes carries a twofold risk of CHD in men and a threefold risk in women (Guzzetta & Dossey, 1984). The contribution of both positive and negative stressors to CHD is related to increases in blood pressure that accompany the stress response (Guzzetta & Dossey, 1984; Luckmann & Sorensen, 1987). The use of two or less alcoholic drinks per day has been reported to have a protective effect through an increase in nonatherogenic lipoproteins (Guzzetta & Dossey, 1984).

Intervention Approaches

Hospital use statistics show that each year thousands of individuals experience the effects of CHD (Commission on Professional and Hospital Activities, 1986) and undergo cardiac rehabilitation. Cardiac rehabilitation begins in the coronary care unit, progresses through the convalescent period, and continues in the outpatient program. Surgical therapies, medications and behavioral modification of established risk factors have become widely accepted

cardiac rehabilitation interventions (Blumenthal & Emery, 1988; Guzzetta & Dossey, 1984; Wilson, 1988).

Surgical treatment for CHD is commonplace and includes coronary artery bypass grafting (CABG) and percutaneous transluminal coronary angioplasty (PTCA). Both approaches have increased the life expectancy of individuals with CHD (Blumenthal & Emery, 1988). Medications such as beta blockers, calcium channel blockers and digitalis are common approaches to the medical treatment of CHD. Enzymatic dissolution of coronary thrombi with pharmacological fibrinolytic agents, like streptokinase or tissue-type plasminogen activator (t-PA), is quickly becoming an accepted state of the art technique. Lipid lowering drugs have been shown to reduce cholesterol levels (Blumenthal & Emery, 1988). Behavioral modification of established risk factors has become a widely accepted cardiac rehabilitation intervention (Blumenthal & Emery, 1988; Guzzetta & Dossey, 1984; Wilson, 1988).

The present four-phase concept of behavioral modification was refined in the mid-1980s. "The patient with no complications is expected to progress from phase I through phase III within one year after an acute cardiac event. Phase IV, the unsupervised maintenance, is designed for lifelong participation" (Wilson, 1988, p.78). Phase I begins in the coronary care unit and continues through the inpatient hospital stay. Four to sixteen stages of activity are outlined; the patient is usually performing activities which require 3 to 5 metabolic equivalents of task (METs) at discharge. Phase II begins with discharge and continues until

healing has been completed. The patient is evaluated with a stress test that is symptom limited; this guides activity during this phase. Phase III begins 4 to 6 weeks after MI or surgery. This is a training phase where the patient exercises 2 to 5 times a week under supervision for several weeks. Patients should be able to perform at 10 METs or greater at the end of this phase. Phase IV begins at the end of the training phase and continues for another 3 to 6 months or as long as a lifetime. The patient maintains his level of training by exercising 2 or 3 times a week. Stress tests are usually done at yearly intervals to measure the effectiveness and to amend the exercise prescription (Guzzetta & Dossey, 1984; Wilson, 1988).

At this time, not all patients participate in all phases. Should they? Theoretically, many survivors of myocardial infarction stand to benefit from interventions aimed at alleviating modifiable risk factors. Does cardiac rehabilitation contribute in this direction? Different types of programs have emerged, each with its own agenda. Though generally positive results are evident (MacKenzie, 1990), the success rate of these programs is inconsistent. What is/are the cause(s) of these inconsistent results?

Purpose of the Study

This study begins to address these concerns. It addresses the relationship between satisfaction with a phase III cardiac rehabilitation program and risk factor related lifestyle modifications adopted post-program. Specifically, the purpose of this study is to answer the following question: Is there a significant

relationship between satisfaction with a phase III cardiac rehabilitation program consisting of exercise, group education and individual counseling and lifestyle modification post-program?

Terms

For the purposes of this study, the following definitions are requisite:

Participation: attendance at 30 or more supervised exercise sessions, attendance at 75% of the risk factor group education classes and attendance at all counseling sessions; measured by health facility personnel signatures on the participant's attendance card.

Phase III cardiac rehabilitation: outpatient program consisting of supervised training period of exercise which begins once healing of the myocardium has occurred, usually 6 weeks post-MI.

Exercise: aerobic activity sessions, which are a minimum of 20 minutes in duration, occur three times per week and sustain a prescribed target heart rate, determined by exercise tolerance test, that is 70 to 85% of the maximum heart rate.

Group Education: large group lecture presentations, supplemented by audiovisual aids, related to each of the risk factors; presented by multi-disciplinary team members.

Individual Counseling: provided by a multidisciplinary team of specialists; goal is to individualize participant's plans to modify lifestyle in order to alleviate risk factors.

Satisfaction: opinions of the clients about the program they have participated in; measured by the Program Satisfaction Questionnaire.

Lifestyle Modification: behaviors aimed at ensuring risk factor alleviation; only behavior aimed at those risk factors considered modifiable will be addressed; measured by the Cardiac Lifestyle Questionnaire.

Ethical Considerations

To ensure the protection of human subjects in this study, the proposal was submitted to the institutional review boards including the Faculty of Nursing at the University of Alberta and the selected program's hospital ethics committee. Because of the retrospective approach used for selection of the sample, the one year anniversary list of potential subjects was identified by a staff nurse at the rehabilitation unit. Through a contact letter from the director of the cardiac rehabilitation unit, these potential subjects were then asked to participate in the study. Potential subjects were told that (1) the study involved research regarding their lifestyle, and their opinions and comments related to the cardiac rehabilitation program, (2) that there were no risks or benefits related to participation in the study, and (3) that they could withdraw from the study without penalty at any time. A completed and returned questionnaire was accepted as evidence of informed consent. Subjects were informed that the data collected throughout the study would be kept in a locked area to ensure confidentiality. The descriptive results of this study provided valuable infor-

mation regarding the efficacy of the selected program. This, in turn, may have implications for the future development of the cardiac rehabilitation program.

Limitations of the Study

Internal validity was influenced by various factors. The effect of history, the significant or unplanned events at the program site (Windsor, Baranowski, Clark & Cutter, 1984), may have had a larger impact than it would if the sampling had not been retrospective in nature. Participant maturation since completion of the program could not be controlled for; survival rates were different between the participants; two individuals who met the study criteria were not included because they were deceased.

Chapter II

Review of the Literature

Cardiac Rehabilitation

A review of the literature to examine research data that investigates the efficacy of outpatient, phase III cardiac rehabilitation revealed that there are three basic approaches to cardiac rehabilitation: (a) exercise-only, (b) exercise with group education and (c) exercise, group education and individual counseling. Several factors are examined as indicators of efficacy. Predominantly, the published studies tended to address risk factor status only or risk factor status in combination with some lifestyle modifications. Unfortunately, few studies have addressed lifestyle modification completely.

Most of the studies examining the efficacy of exercise-only programs measured factors other than lifestyle change. Three studies (Rechnitzer, et al., 1983; Roman, et al., 1983; Shaw, 1981), measured mortality and morbidity as indicators of successful lifestyle modification or risk factor status. There were definite differences indicating a tendency for the exercise group to be subject to less morbidity and mortality, but the findings were not statistically significant. Dennis, et al. (1988), Marra, Polillo, Spadiccini and Angelino (1985), and Ronnevik (1988) used return to work as an indicator of efficacy. Statistical analysis did not reveal significant findings.

Two studies examined only one risk factor and lifestyle change, namely exercise. A statistically significant one tail test, conducted in the Hertanu, Davis,

Focseneau and Lahman (1986) study, indicated improved exercise tolerance in 80% of 40 participants who were still exercising at home two years post-program. These results would be more encouraging with a larger sample. Pearson product-moment correlations in the Prosser, Carson and Phillips (1985) study indicated that favorable factors were positively correlated with each other and negatively correlated with the unfavorable factors. However, there was no significant difference between the exercise and control group regarding individuals who continued to exercise post-program.

Three studies examined both risk factor status and lifestyle change (Carson, et al., 1982; Oberman, Cleary, Larose, Hellerstein & Naughton, 1982; Wilhelmsen, et al., 1975) but lifestyle modification was not addressed completely. Only Oberman et al. (1982) reported significant findings; these related to smoking and alcohol consumption. Unfortunately, not all lifestyle modifications were addressed in any of these studies.

Studies of programs consisting of exercise and group education sessions have generally addressed both lifestyle change and risk factor status. Again, however, both aspects have not been addressed completely. Most of these studies fail to examine lifestyle change in any detail. Although various studies have produced significant findings in relation to risk factors (Angster, Glonner & Halhuber, 1982; Hedback & Perk, 1987; Kallio, Hamalainen, Hakkila and Luurila, 1979; Vermeulen, Lie & Durrer, 1983), few have addressed lifestyle change to any degree. McMahon, Miller, Wikoff, Garrett and Ringel (1986) measured

adherence to lifestyle changes related to the risk factors. Only an overall score in adherence in various lifestyle situations and demographic and medical data were reported.

Lifestyle change and risk factor status have not consistently been addressed in studies of programs consisting of exercise, group education and individual counseling. Roviaro, Holmes & Holmsten (1981) measured adherence and attitude in relation to recurrent MI. In the process, they identified significant decreases in risk factors. However, lifestyle modification was not addressed. Other studies have focused on risk factor status while paying only passing attention to lifestyle modification (Bengtsson, 1983) with nonsignificant results. Sivarajan, et al. (1983) measured risk factors through the use of a questionnaire following eight group teaching/counseling sessions related to risk factors. The Student's t test did not indicate a statistically significant difference regarding decreases in smoking. However, decreases in caffeine intake and diet changes to include less cholesterol, saturated fats and salt were significant.

Studies investigating the use of individual counseling as a separate entity, that is, not offered in conjunction with exercise and group education, have shown mixed results regarding lifestyle modification. Pozen et al. (1977) found that the special counseling group had both a better return to work rate and more favorable cigarette smoking status. Ott, Sivarajan and Newton (1983) found modest but statistically significant differences related to risk factors in their experimental group. Lifestyle modification was not directly addressed.

Dracup, Meleis, Clark, Clyburn, Shields and Staley (1984) examined the effects on compliance of a group counseling program for cardiac patients and spouses. Analysis of variance with repeated measures of tricep fatfold showed a significant difference in mean body fat among the treatment groups. Patients in both experimental groups demonstrated lowered blood pressure. Changes in weekly exercise level were not significantly different among groups. Results support the efficacy of counseling based on an interactionist role theory framework to increase compliance. Adsett and Bruhn (1968) provided group therapy sessions to six patients and their wives. Findings were indicative of improved psychosocial adaptation for the wives and MI patients. Rahe, Ward and Hayes (1979) reported that patients who received group therapy had significantly less morbidity and mortality during follow-up and more of them returned to work.

It would appear that cardiac rehabilitation programs consisting of (a) exercise-only, (b) exercise and group education, and (c) exercise, group education and individual counseling, have all been investigated in relation to risk factor status. Each approach has contributed to the knowledge of risk factors; however, contradictory findings have been noted. This may be due to measurement of risk factor status, morbidity and mortality rather than lifestyle modification. In not measuring lifestyle modification, it is impossible to attribute risk factor status to a change in lifestyle, an approach advocated throughout the literature since the findings of the Framingham study. Generally, all cardiac

rehabilitation programs advocate lifestyle modification. Does a cardiac rehabilitation program result in lifestyle modification? According to findings in the literature, this question has yet to be fully answered.

Lifestyle Modification

Lifestyle modification is dependent in part on the individual's compliance with the regimen suggested by the health care practitioner. Several factors have been identified as influencing compliance in CHD individuals. These include satisfaction with the proposed regimen, satisfaction with the relationship with the health care provider, social support, attitudes or beliefs, knowledge of the regimen and a therapeutic effect of the regimen (Frenn, Borgeson, Lee & Simandl, 1989). This study used a grounded theory approach to identify factors clients view as enabling or disabling their lifestyle changes during a phase III cardiac rehabilitation program. The results were compiled from semistructured interviews with 10 clients. The study did not address whether clients were adhering to the regimen post-program, however.

Content analysis of a major study examining the effect of a nursing intervention on medical regimen adherence and psychosocial adjustment of post-myocardial infarction patients revealed five categories related to life adjustments: (a) facilitating factors, (b) life adjustment factors, (c) stressors, (d) stress management and (e) support persons (Miller, McMahon, Garrett & Ringel, 1989). Facilitating factors included memory aids, feeling better, desire for former life, fear, perceived available time, social support, personal traits, and

professional influence. Life adjustment factors included physical status (ie. weakness, dependence on medications, disturbances in sleep or sexual patterns), psychological status (ie. anxiety, acceptance of MI, disruptive family quarrels) and environmental status (ie. change in work role, participation in group cardiac exercises, insufficient information). Examples of stressors included change, loss, conflict and fear related to health status of self and family, socialization and future goals, among others. Stress management identified controlling feelings, using critical thinking and engaging in activities. Personal support included family, friends, health care workers and support groups. Actual adherence or lifestyle changes were not addressed.

Radtke (1989) investigated the relationship between self-motivation and compliance with prescribed home exercise. Patients complied with home exercise programs in the early post-discharge phase but tended to be less compliant with the passage of time. A Pearson product-moment correlation at 6 weeks post-discharge, with 28 individuals, revealed that compliance and self-motivation were significantly related ($r=0.41$); at 6 months, with seventeen (17) individuals, these were less related ($r=0.338$).

Results of a study with patients in a cardiac work classification unit showed that acceptance or compliance with medical recommendations was a function of the area in which a recommendation was made (Johannsen, Hellmuth & Sorauf, 1966). The physician's advice was accepted when medical

recommendations were made, but vocational and psychosocial recommendations were less likely to be followed.

Intention to adhere to the medical regimen was found to be a significant predictor of some but not all lifestyle changes required by the regimen in another study of CHD patients (Miller, Johnson, Garrett, Wikoff & McMahon, 1982). Data were collected while the patients were participants in a rehabilitation program, but it is unclear which phase was involved. McMahon, et al. (1986), in examining the relationship between life situations, intentions to adhere during phase I and actual adherence 6 to 9 months post-hospitalization, present findings which indicate that there is no significant relationship between intention and adherence.

In a study examining the relationships between attitudes, perceived beliefs of others, intentions toward the regimen and actual adherence, both prior to hospital discharge and 6 to 9 months post-hospitalization, intentions were not a significant predictor of adherence. However, in hospital, intentions were related to attitudes and perceived beliefs of others. Significant predictors of regimen adherence post-hospitalization included attitudes toward adherence post-hospitalization and perceived beliefs of others (Miller, Wikoff, McMahon, Garrett & Ringel, 1985). The influence of a phase III cardiac rehabilitation program was not addressed; subjects in this study participated in a phase I program.

Miller, et al. (1988) examined the effects of a nursing intervention, a teaching counseling session 30 days post-discharge, on medical regimen adherence and societal adjustment. Subjects had participated in a phase I program. Attitudes, intentions and perceived beliefs of others were assessed during hospitalization and post-intervention. Again, attitudes and perceived beliefs of others were found to be predictive of adherence to the regimen. No differences were found between experimental and control groups for either medical regimen adherence or societal adjustment. In their investigation of personal adjustments and regimen compliance one year after myocardial infarction, Miller, et al. (1989) examined the relationship of attitudes and perceived beliefs of others to regimen compliance and personal psychological and social adjustments with MI one year after the infarction. They found that attitudes were predictive of compliance for all regimen prescriptions. Perceived beliefs of others were predictive of diet, activity and medication prescriptions.

Other factors relating to compliance of CHD clients have been identified. Miller (1981) assessed factors affecting compliance to participation in a cardiac rehabilitation program. Only marital status was reported as a significant predictor. Van Galen (1981) examined characteristics of cardiac rehabilitation program dropouts and participants. Spousal support was a significant factor. Hilbert's (1985) findings suggest that spousal support is not a predictor of compliance with the medical regimen. The findings did suggest that individuals engaged in a cardiac rehabilitation program had significantly higher compliance

than those who had stopped attending. In examining health beliefs and rehabilitative exercise compliance in cardiac individuals, Park (1985) found a negative correlation between perceived susceptibility and compliance, and a positive correlation between perceived benefit and compliance. Post-program compliance was not addressed. Fielding (1987) found that cardiac patients rated causal factors related to their illness episode differently than their physicians did. Psychosocial causes, with the exception of smoking, were emphasized by patients while biological causes were emphasized by physicians. According to this study, MI patients attribute high pathogenicity to psychosocial factors which are perceived as poorly controllable. Biological factors, with the exception of smoking, were perceived as less pathogenic but more controllable. Tirrell and Hart (1980) found that knowledge of the regimen was significant to compliance with it. Horlick, Cameron, Firor, Bhalerao and Baltzan (1984) found that an education and group discussion program administered to a randomly selected group of post-MI subjects failed to produce any differences in a large number of behavioral and psychological measures. These included smoking, recreation, anxiety, depression and health locus of control.

Factors which have been identified as influencing compliance in non-CHD individuals include satisfaction regarding (a) the proposed regimen (Becker & Maiman, 1980; Haynes, 1979; Young, 1986), (b) the relationship with the health care provider, both the physician (Becker & Maiman, 1980; Bruhn, 1986; Feinberg, 1988; Feldman, 1982; Kinnaird, Yoham & Kieval, 1982; Rost, 1989;

Squier, 1990; Stimson, 1974; Waggoner, Jackson & Kern, 1981) and the nurse (Ballard, 1986; Kinnaird, et al., 1982; Marston, 1970; Moughton, 1982), and (c) the health care delivery system (Feldman, 1982; Matthews & Hingsen, 1977; McCord, 1986; Young, 1986). One study found a negative correlation between the provider relationship and compliance with the regimen (Wartman, Morlock, Malitz & Palm, 1983); understanding of the importance of the regimen (drug taking) was found to override the relationship.

Other influencing factors include knowledge of the regimen and its rationale (Ballard, 1986; Becker & Maiman, 1980; McCord, 1986; Padrick, 1986; Stanton, 1986; Steckel, 1982; Wartman, Morlock, Malitz & Palm, 1983; Young, 1986), a therapeutic effect of the regimen (Kinnaird, et al., 1982; McCord, 1986; Young, 1986), social support (Ballard, 1986; Kinnaird, et al., 1982; Lilja, 1984; Padrick, 1986; Stanton, 1986), and the patient's attitudes (Dracup & Meleis, 1982).

Satisfaction

Studies investigating patient satisfaction have addressed many types of clients across different settings. Hinshaw and Atwood (1982) developed their patient satisfaction instrument regarding hospitalization experiences using acute care clients. Davis and Hobbs (1989) developed a questionnaire measuring outpatient satisfaction with rehabilitation services. Weisman and Nathanson (1985) examined the relationship between professional satisfaction, client satisfaction and client outcomes in a family planning clinic. Risser (1975)

assessed patient satisfaction with nurses and nursing care in a primary care setting. La Monica, Oberst, Madea and Wolf (1986) measured hospitalized patients' satisfaction with care. Lemke (1987) identified a relationship between client satisfaction with ancillary services and overall opinion of an institution. Bagwell (1987) investigated client satisfaction in relation to nursing center services. Burgoon, Pfau, Parrott, Birk, Coker and Burgood (1987) studied relational communication, satisfaction, compliance-gaining strategies and compliance in communication between physicians and patients. Brody, Miller, Lerman, Smith, Lazaro and Blum (1989) studied the relationship between patients' satisfaction with their physicians and perceptions about interventions they desired and received. In all of these studies, client satisfaction had a significant impact on client outcomes or behavior. This would seem to indicate that client satisfaction with a cardiac rehabilitation program may have some relationship to client outcomes regarding lifestyle modification post-program. No studies were found examining client satisfaction with a cardiac rehabilitation program and risk factor related lifestyle changes.

Conceptual Model

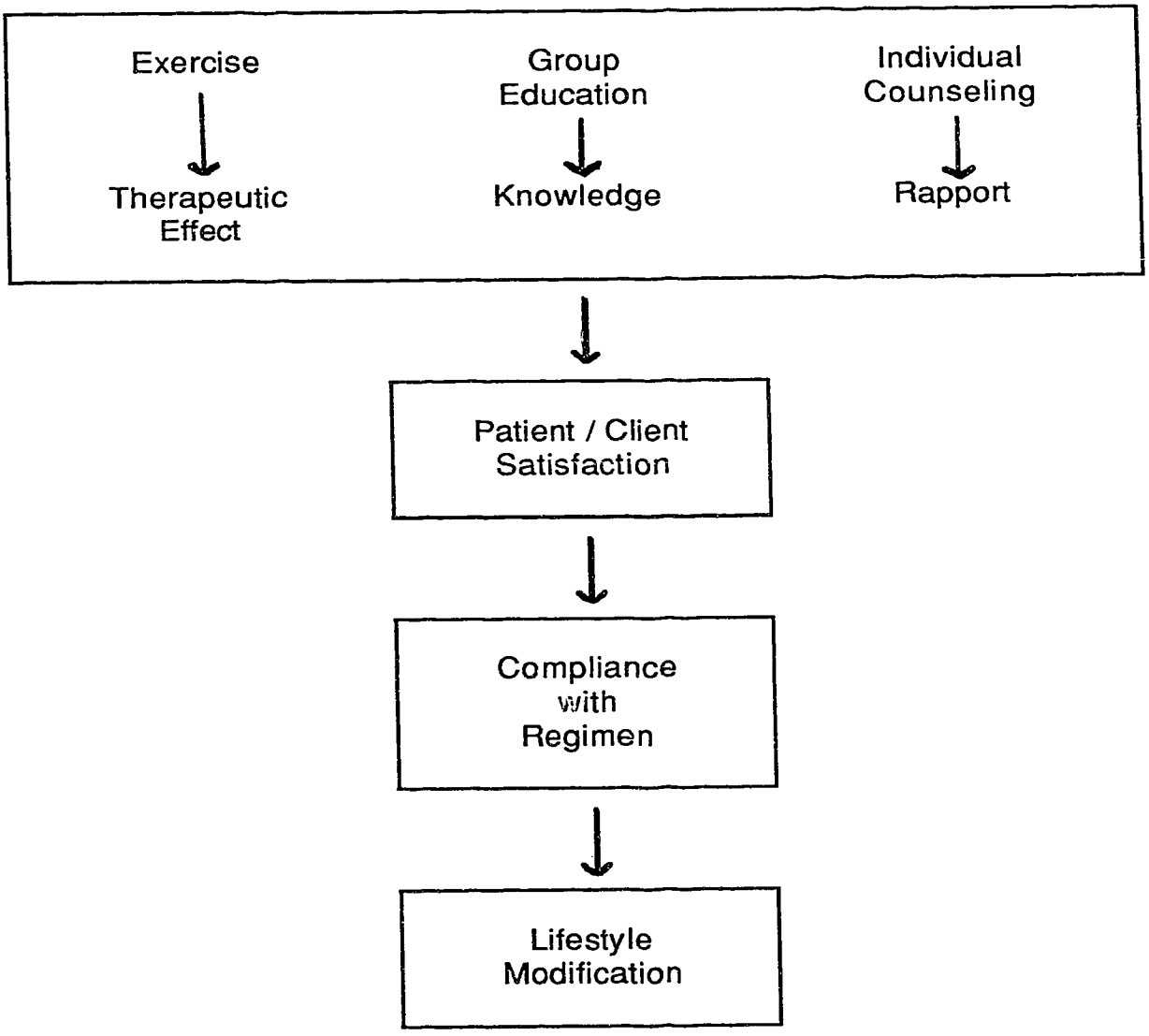
In view of these factors, a program consisting of exercise, group education and individual counseling should promote compliance with the health care regimen presented as part of the program and thus with lifestyle modification. In particular, individual counseling should facilitate the development of the rapport that is necessary to the development of a satisfactory relationship with

the health care provider. Individual counseling should also facilitate the development of an individualized regimen. The group education classes will provide the knowledge of and rationale for the prescribed regimen. The exercise component of the program will provide the therapeutic effect of the program through the increased energy and stamina which result from exercising. A diagrammatic representation is presented in Figure 1.

This study addresses the relationship between satisfaction with a phase III cardiac rehabilitation program and risk factor related lifestyle modifications adopted postprogram. In this way, the role of satisfaction with the cardiac rehabilitation program, an intervention aimed at alleviation or amelioration of the effects of CHD through the elimination of risk factors associated with cardiovascular disease, and lifestyle modification will become evident.

Figure 1

Conceptual Model



Chapter III

Methods and Procedures

An evaluation of the lifestyle modification of individuals who were participants in an existing phase III cardiac rehabilitation program, consisting of exercise, group education and individual counseling, and their level of satisfaction with the program, was undertaken. A descriptive, correlational approach was utilized. A retrospective approach was used to identify subjects. Participants, once they were one year post-program, were evaluated using the Cardiac Lifestyle Questionnaire and the Program Satisfaction Questionnaire. The results were analyzed for a relationship between program satisfaction and lifestyle modifications.

Research Design

A descriptive design approach was utilized to measure attitudes related to satisfaction with the cardiac rehabilitation program and to examine risk factor related lifestyle modifications in effect one year post-program. These variables, "program satisfaction" and "risk factor lifestyle modification", respectively, were measured using separate tools. A correlational design approach was utilized to investigate the relationship between level of satisfaction with the cardiac rehabilitation program and success or nonsuccess with lifestyle modifications.

The Setting

The cardiac rehabilitation unit where the study was undertaken was affiliated with a large urban hospital. It was staffed with a multi-disciplinary team

consisting of registered nurses, a dietician, a social worker, an occupational therapist, an exercise physiologist and various physicians. The unit offered a twelve week outpatient program consisting of three components: (a) exercise, (b) group education and (c) individual counseling. It also offered a variety of shorter programs in special situations.

The exercise component consisted of supervised aerobic activity sessions which occurred three times per week; these included warm-up and cool-down activities. The participants exercised on treadmills or exercise bicycles to sustain a prescribed target heart rate, determined by an exercise tolerance test, that is 70 to 85% of their maximum heart rate. The group education classes consisted of large group lecture presentations, supplemented by audiovisual aids, related to each of the CHD risk factors. These were presented by the multi-disciplinary team members. Individual counseling by the various team members provided an individualized and negotiated plan to modify the participant's lifestyle in order to alleviate CHD risk factors.

Sample Selection

The population addressed in this study consisted of individuals who participated in the selected phase III cardiac rehabilitation program. The sample was a nonprobability convenience sample. Participants were selected as subjects for this research study if they met the following criteria: They (a) had participated in the twelve week program, (b) had completed the program one year ago, (c) were age 40 to 75, (d) were angina, post-MI or coronary

artery bypass graft (CABG) surgery clients, (d) this was their first exposure to an outpatient cardiac rehabilitation program, and (e) they read and wrote in English. Subjects were selected using a retrospective approach, that is, they had participated in the program before this study actually began. On the basis of a compiled one year anniversary list, potential subjects were identified. Participants were not aware of the potential evaluation until one year after completion of the program. In this way, the Hawthorne effect was minimized. Staggered mailouts corresponding with the participants' one year anniversary dates were utilized to contact potential subjects. An invitational letter from the director of the rehabilitation program was advanced to potential subjects. The letter stipulated that the researcher would not have access to the participants without their consent and the staff would not have access to the completed questionnaires. Ninety participants who were one year post-program were eligible to become subjects in this study. Since two individuals were deceased, 88 post-participants were approached. Eighty-four individuals consented to receiving a questionnaire. Seventy-two individuals returned completed questionnaires, becoming the sample group. The return rate achieved here was 85.7 percent.

Research Instruments

The variable "risk factor lifestyle modification" was measured using the Cardiac Lifestyle Questionnaire (CLQ). This tool was adapted expressly for this study from Pynn's (1986) cardiac rehabilitation questionnaire, a subjective

questionnaire where risk factors were addressed with only one question. The CLQ consisted of several questions in each of the following areas: diet patterns, stress management, tobacco use, exercise characteristics, alcohol use, hypertension management and diabetes management. Multiple choice and open ended 'fill in the blanks' style answers were elicited. A copy of the CLQ is included in Appendix A. Through answers to some of the CLQ items, lifestyle related to risk factors one year post-program was identified.

The variable "program satisfaction" was measured using the Program Satisfaction Questionnaire (PSQ). This tool was developed expressly for this study. A copy is included in Appendix B. A five-point Likert-type scale was used to measure the level of agreement regarding several positive and negative statements made about the cardiac rehabilitation program and each of its features: exercise sessions, group education classes, individual counseling sessions related to medications, diet and individualization of the program, and relationships with the various staff members. Answers to the PSQ provided the client's opinion or level of satisfaction with the cardiac rehabilitation program. Satisfaction with various components of the program and with the program overall were determined.

Sociodemographic information related to the participants, such as age, gender, marital status, level of education, work status, income, presence or absence of angina, and recurrence of MI, was collected through additional

items on the questionnaire. A copy of the sociodemographic questionnaire is included in Appendix C.

Data Collection Procedure

The CLQ and PSQ tools and the sociodemographic questions were presented in a combined questionnaire format. The entire questionnaire was photo reduced to a 6 1/2 by 8 1/4 inch booklet to increase participant interest. Large type was used to facilitate reading. The questionnaire was advanced to those individuals who consented to be included in the study. Postcard follow-up was used as a reminder for individuals to return the questionnaire. In the postcard, individuals who had returned their questionnaires were thanked, those who had not done so were reminded to please complete it, and those who had misplaced the questionnaire were asked to contact the researcher.

Reliability and Validity

Data Collection. Prior to use of the tools in the study, they were pretested for content validity through the use of a judge panel. Five experts in the field of cardiac rehabilitation were used as the judge panel. Three of these individuals were senior nurses employed by the program where the study subjects had been participants; one was responsible for staff development and the other two actually delivered the program. One individual was a nursing instructor with experience in the area of cardiac rehabilitation. The fifth individual was a university professor with expertise in this area. Concurrent validity was not assessed due to the unavailability of similar tools.

Reliability of the questionnaire was determined by a test /retest procedure with a pilot group of fifteen participants completing the 12 week rehabilitation program. The questionnaire was administered to the same group of individuals, two weeks apart. This time span was chosen since behavior is likely to be maintained over this time frame. For each individual, most answers to the questionnaire remained consistent over the two week time span. Although all of the subjects changed at least one answer, some subjects changed as many as thirteen answers; most subjects changed seven answers. Those answers which were definitely different tended to be in the area of lifestyle. The most frequently changed answer related to an increase in exercise frequency. These differences may be a result of classes and counseling which occurred during the two week time span. Changes relating to satisfaction were minor; answers on the five point Likert scale differed by one. Other changed answers related to the frequency of angina attacks.

The pilot group was also used to determine the questionnaire's readability and clarity. The method and purpose of the pilot study were explained to the participants by the researcher. Individuals consenting to participate were asked to complete the questionnaire and hand it in to the researcher with their comments before leaving. Staff at the program did not have access to the completed questionnaires.

In the study, testing influences were controlled since the participants completed only one combined questionnaire. Selection influences were con-

trolled for through the use of identical inclusion criteria for all subjects. Participant attrition problems, the excessive attrition of subjects in any group (Windsor, Baranowski, Clark & Cutter, 1984), were controlled for through the sampling approach; individuals did not become a part of the sample until the questionnaire was returned. Internal validity related to the effect of instrumentation, bias produced by changes in the characteristics of the measuring instruments (Windsor, Baranowski, Clark & Cutter, 1984), was controlled for through use of identical evaluation approaches.

Data Analysis. A statistical analysis computer package called "SPSS PC plus" was utilized to analyze the study's results. To ensure the validity of the data analysis results, a computerized cleaning process which examined every tenth case was utilized to check the original data entries. This was followed by a random manual check of the frequencies of several variables with a printed copy of the original data. Following a satisfactory cleaning process, those variables related to lifestyle were combined into new measures based on theoretical definitions from current literature. Original variables measuring program satisfaction were factor analyzed and variables having higher loadings on a common factor were grouped to form subtests called 'program satisfaction components'; these were named according to the interpretation of the common factor. Each of the new lifestyle and satisfaction component variables was manually checked against the original data to ensure that correct modification had occurred. To ensure the accuracy of the results produced by discriminant

analysis, group means for each program satisfaction component were obtained and compared with the raw data.

Descriptive statistics were used to analyze the nominal data produced by the questionnaires. Sociodemographic information was summarized. Lifestyle modification related to eight CHD risk factors was identified in terms of success or nonsuccess. Program satisfaction was evaluated in terms of satisfaction with various components of the overall program. Frequencies, medians and means were determined. Cross tabulations and chi-square were utilized with the sociodemographic information and the lifestyle modification components. Factor analysis was used to identify satisfaction components related to the program. Discriminant analysis was employed to ascertain whether the program satisfaction component variables could be used to identify successful and nonsuccessful patterns of lifestyle modification.

Chapter IV

Results and Discussion

The nominal data produced by the questionnaires utilized in this study was analyzed using descriptive and correlational approaches. Descriptive analysis produced findings related to sociodemographic information, lifestyle modification and program satisfaction; these findings are presented and discussed. Results of the discriminant analysis procedure utilized to investigate the original research question regarding the existence of a relationship between lifestyle modification and program satisfaction are presented and discussed.

Sociodemographic Findings

Sociodemographic information obtained from the questionnaire included age, gender, marital status, education, present work status, household income, perceived presence of a support individual and perceived level of support from that individual, medical problem prior to admission to the program, and the occurrence of angina and myocardial infarction since completion of the program. Table 1 provides a synopsis of these findings.

Age and Gender. The individuals who returned their questionnaires ranged in age from 42 to 75 with a mean age of 63. Fifty-three point five percent (53.5%) of the subjects were 65 years of age or older. The breakdown of the subjects into age groups revealed that the number of individuals in each age group increased as the age groups increased, with the exception of the

Table 1

Information About the Participants

Category	Number	Percentage
Age Groups		
40-50	6	8.3
51-60	16	22.2
61-70	30	41.7
71 & over	19	26.4
Missing	1	1.4
Total	72	100.0
Gender		
Male	49	68.0
Female	22	30.6
Missing	1	1.4
Total	72	100.0
Marital Status		
Married and with spouse	52	72.2
Living with someone	1	1.4
Single	2	2.8
Separated/Divorced	6	8.3
Widowed	10	13.9
Missing	1	1.4
Total	72	100.0
Presence of a Support Individual		
No One Present	14	19.4
Someone Present	54	73.6
Missing	4	6.9
Total	72	100.0

(continued)

Category	Number	Percentage
Satisfaction with Level of Support		
Very unsatisfied	5	9.3
Not sure	4	7.4
Satisfied	19	35.2
Very satisfied	26	48.1
Total	54	100.0
Education		
No Schooling	1	1.4
Elementary	1	1.4
Junior High	9	12.5
High School	23	31.9
Trade	14	19.4
College	6	8.3
University	15	20.8
Missing	3	4.2
Total	72	100.0
Present Work Status		
Full-time	19	26.4
Part-time	8	11.1
Casual	1	1.4
Retired	40	55.6
Not Working	2	2.8
Other	1	1.4
Missing	1	1.4
Total	72	100.0
Household Income		
Under $20,000	15	20.8
$20,001-$40,000	20	27.8
$40,001-$60,000	19	26.4
$60,001-$80,000	4	5.6
$80,001 & above	4	5.6
Missing	10	13.9
Total	72	100.0

(continued)

Category	Number	Percentage
Medical Problem		
MI	44	61.1
CABG	12	16.7
Angina	5	6.9
Risk Factors	1	1.4
MI & CABG	3	4.2
CABG & Angina	6	8.3
Don't Know	1	1.4
Missing	0	0.0
Total	72	100.0
Angina Since Completion		
No	34	47.2
Yes	35	48.6
Missing	3	4.2
Total	72	100.0
Angina Frequency		
Less than once a week	10	28.6
Once per week	10	28.6
2 or 3 times per week	14	40.0
4 or more times per week	1	2.8
Missing	0	0.0
Total	35	100.0
MI Since Completion		
No	71	98.6
Yes	1	1.4
Missing	0	0.0
Total	72	100.0

oldest age group. These findings were in keeping with the identification of increasing age as a contributing risk factor for the occurrence of CHD in the general population (Blumenthal & Emery, 1988; Clarke, 1990; Guzzetta & Dossey, 1984).

Forty-nine subjects or 68.1% were male and 22 or 30.6% were female. These findings were in keeping with the recognized prevalence of CHD in males as opposed to females (Clarke, 1990; Guzzetta & Dossey, 1984). Crosstabulation analysis of age with gender further supported general findings related to risk factors in the general population. Although both genders were represented in each category, males dominated each age group except the 71 and over group. This is compatible with the literature which has identified the risk of CHD as increasing for females after menopause and as evening out between elderly males and females (Guzzetta & Dossey, 1984; Murdaugh, 1990).

Marital Status and Support. The marital status of the subjects was established. The majority of individuals (52) were married and living with their spouse; one individual was living with someone but not married. The remainder of subjects were either single, separated or divorced, or widowed. The majority of individuals in these last categories were female. These findings reflect these characteristics in the general population.

Fifty-three persons perceived that there was an individual in their life who provided them with emotional support. Crosstabulations of the latter with marital status produced the not surprising results that the majority of these

individuals belonged to the married and living with spouse category. However, five individuals who were married and living with their spouse did not perceive themselves to have a support person. This is unfortunate but not unexpected when one considers that the majority of the individuals involved in the study belong to the later age groups where divorce or separation are not perceived as a viable alternative to an unhappy marital relationship. Half of those individuals who were widowed, divorced or separated perceived a support individual in their life. Both single persons did not perceive themselves to have a support person. The level of satisfaction with the perceived support person ranged from very unsatisfied for five persons and very satisfied for 26 persons; four individuals were not sure and 19 felt satisfied with the emotional support provided. Crosstabulations revealed that the level of satisfaction was not significantly related to marital status or gender.

Education. There was a broad range in the level of education of the subjects in this study. At one end of the education spectrum, one individual received no schooling at all, one individual completed elementary school and nine people or 12.5% of subjects completed junior high. The majority of subjects in the study, 23 (or 31.9%), had completed high school as their highest level of education. On the upper end of the levels of education, 14 or 19.4% of the subjects completed a trade and six or 8.3% completed a college program. An unusually high number of individuals, 15 or 20.8%, completed university. These findings support the wide reaching effects of CHD.

Work Status and Income. The majority of subjects in the study were retired. The next largest group of individuals were employed on a full-time basis; that is, they were working greater than or equal to 38 hours per week. Individuals employed part-time were working greater than 16 but less than 38 hours per week. Two individuals identified the 'not working' category. These findings are fairly realistic considering the number of subjects in the 61 years and up age groups.

The subjects in this study represented a broad range of household income groups. Sixty-two persons reported their household income. Fifteen (24.2%) reported earning under $20,000.00, a figure that is compatible with current national 'old age' income figures. Household income for the majority of individuals ranged between $20,000.00 and $60,000.00. Few individuals reported an income over $60,000.00. This is not unexpected considering the majority of individuals were retired.

Medical Considerations. The majority of subjects in the study were participants in the cardiac rehabilitation program as a result of a myocardial infarction (MI). The next most frequently cited category indicated enrolment in the program following coronary artery bypass grafting (CABG) surgery. Three different individuals reported both MI and CABG. Angina alone was reported equally as often as angina in combination with CABG as a reason for attending the program. One participant reported the presence of risk factors as the medical problem previous to entering the rehabilitation program. It is evident

from these characteristics that the participants had experienced either a life threatening situation or a precursor to it.

Thirty-five individuals reported experiencing angina since the completion of the cardiac rehabilitation program. The frequency of angina attacks experienced by these individuals ranged greatly. Reports of experiencing angina two or three times per week were as frequent as reports of experiencing it once per week or less than once per week. Most of the latter category individuals indicated that angina occurred once per month. One individual had experienced angina once in the past year. Only one individual reported experiencing angina four or five times per week. No one experienced angina more frequently than that. Unfortunately, the questionnaire did not elicit information related to the presence of precipitating factors of angina. Therefore, it was not possible to determine if the experience of angina was directly related to factors commonly held responsible for it such as exercise or stress. Only one person reported having suffered an MI since the completion of the cardiac rehabilitation program.

Lifestyle Modification

The Cardiac Lifestyle Questionnaire (CLQ) consisted of thirty-four questions or items in eight different areas of lifestyle related to CHD risk factors: diet, stress, exercise, alcohol use, tobacco use, weight, diabetes and hypertension. A copy of the CLQ is located in Appendix A. "Success" and "nonsuccess" results related to each item on the CLQ were identified based on current

literature regarding cardiac rehabilitation and on information presented and discussed with the program's participants during their group education classes and the individual counseling sessions. Participants were divided into two groups based on their complete success or nonsuccess with each lifestyle modification item. See Figure 2 for a brief overview of the definition of success with lifestyle modification. Items on the CLQ were grouped together according to the aforementioned eight CHD factors forming eight lifestyle areas or components. These components were evaluated based on the previous definition of success with lifestyle modification. A synopsis of the success and nonsuccess results related to these eight lifestyle components is listed in Table 2. Further, each component was examined in relation to the sociodemographic data in this study. A summary of the chi-square results is included in Table 3.

Diet Lifestyle. Six questions on the CLQ, relating to the number of eggs consumed per week, the number of meals per week that red meat is eaten, the use of salt at the table and during cooking, the number of meals per week that processed meats are eaten and the type of milk used, were combined to form a diet lifestyle component. Success with diet lifestyle was defined as the individual's success with each of the six items related to diet. For each of the six questions about diet, a large majority of respondents were successful with modifications; individuals were successful with those which related to the consumption of eggs, red meat, processed meat and the use of table salt, in particular. Forty-five point eight per cent (45.8%) of individuals were not

Figure 2

Success with Lifestyle Modifications

Diet:

Eggs: less than or equal to four per week.
Red Meat: less than or equal to four meals per week.
Bacon, ham, luncheon meat: less than or equal to two meals per week.
Milk: skim or 1%.
Salt: salt added rarely at table or in cooking.

Stress & Anxiety:

Talk it over with someone, relaxation technique, and exercise.

Exercise:

Frequency: greater than or equal to three times per week.
Intensity: Fairly light to somewhat hard.
Type: must be aerobic.
Duration: 20 minutes minimum.

Substance Use:

Alcohol: Less than or equal to 2 drinks per day.
Tobacco: No tobacco use of any kind.

Other:

Weight: lean or acceptable range on body mass index chart.
Blood pressure: monitored once each month or more frequently if hypertensive.
Diabetes: blood sugar level monitored at least once per week, use of glucometer, chemstrip &/or physician office, calories identified and method of management identified.

(Guzzetta & Dossey, 1984; Nieman, Butterworth & Nieman, 1990; Pynn, 1986.)

Table 2

Lifestyle Modification Results

Lifestyle Component	Frequency (Percent)			
	Success	Nonsuccess	Missing	Total
Diet	20 (27.8)	49 (68.1)	3 (4.2)	72 (100)
Stress	28 (42.4)	36 (54.5)	2 (3.0)	66 (100)
Exercise	48 (75.0)	13 (20.3)	3 (4.7)	64 (100)
Substance Use				
Tobacco				
Nonsmokers	69 (95.8)	3 (4.2)	0	72 (100)
Past smokers	41 (93.2)	3 (6.8)	0	44 (100)
Alcohol				
Daily	10 (100)	0	0	10 (100)
Occasional	33 (82.5)	7 (17.5)	0	40 (100)
Hypertension	7 (30.4)	16 (69.6)	0	23 (100)
Diabetes	4 (44.4)	3 (33.3)	2 (22.2)	9 (100)
Weight	43 (59.7)	26 (36.1)	3 (4.2)	72 (100)

Table 3

Lifestyles and Sociodemographics: Chi-Square Results

Variable	Chi-Square Value	Degrees of Freedom	Significance Level
Diet Lifestyle			
age group	4.77	3	0.19
gender	0.46	1	0.50
support	1.33	3	0.72
education	3.86	6	0.70
work status	4.12	5	0.53
income	5.09	4	0.28
angina	0.07	1	0.79
Stress Lifestyle			
age group	5.19	3	0.16
gender	0.003	1	0.95
support	3.25	3	0.35
education	10.71	5	0.06
work status	5.32	5	0.38
income	1.24	4	0.87
angina	0.38	1	0.54
Exercise Lifestyle			
age group	0.84	3	0.84
gender	0.005	1	0.95
support	0.73	3	0.87
education	11.79	6	0.07
work status	2.37	5	0.80
income	5.82	4	0.21
angina	0.11	1	0.74

(continued)

Variable	Chi-Square Value	Degrees of Freedom	Significance Level
Alcohol Lifestyle			
age group	6.18	3	0.10
support	0.99	3	0.80
education	1.45	4	0.84
work status	6.09	3	0.11
income	11.83	4	0.02*
angina	1.58	1	0.21
Tobacco Lifestyle			
age group	3.75	3	0.29
support	4.73	3	0.19
education	1.56	5	0.91
work status	1.41	4	0.84
income	19.06	4	0.001*
Weight Lifestyle			
age group	2.45	3	0.48
gender	0.04	1	0.85
support	3.86	3	0.28
education	2.75	6	0.84
work status	5.80	4	0.21
income	1.81	4	0.77
angina	0.78	1	0.38

(continued)

Variable	Chi-Square Value	Degrees of Freedom	Significance Level
Hypertension Lifestyle			
age group	6.78	3	0.08
gender	0.91	1	0.34
support	1.48	2	0.48
education	5.23	4	0.26
work status	3.66	4	0.45
income	2.00	3	0.57
angina	2.76	1	0.10
Diabetes Lifestyle			
age group	3.00	2	0.22
gender	1.20	1	0.27
support	2.22	1	0.14
education	2.22	2	0.33
work status	2.00	3	0.57
income	2.92	3	0.40
angina	0.19	1	0.66

* = statistical significance

successful with modifications related to the addition of salt during cooking and 36% experienced nonsuccess with the use of low fat milk. Difficulty in these two areas may be a result of the dramatic change in taste afforded by the alleviation or rare use of salt during cooking, particularly in relation to meat products, or the reduction in fat content of milk products. As well, cultural habits related to foods may be influential in this area.

Crosstabulation results were utilized to investigate the statistical relationship between success and nonsuccess with diet lifestyle and such variables as age group, gender, satisfaction with level of support, education, household income, work status and medical considerations such as having angina since program completion. Diet lifestyle was found to have no statistically significant relationship to any of these variables; chi-square results had significance levels ranging between 0.19 and 0.79. However, certain features were evident for some of the variables. For example, although statistically nonsignificant, the greatest number of individuals in the diet lifestyle success group belonged to the 61 to 70 age group. Results related to gender showed that only 24% of females as opposed to 32% of males were successful with diet lifestyle. Perhaps this is related to the traditional role of the female, especially in the over 65 population, of meeting the family's dietary needs and desires before her own. A greater percentage of individuals in the lower education levels belonged to the nonsuccess group; no pattern was evident for post secondary education levels. It was surprising to note that the majority of individuals reporting that

they were retired fell into the nonsuccess group. Apparently, the time afforded by retirement does not assure adherence to diet guidelines. Individuals in the highest income levels fell into the nonsuccess group. Perhaps this is related to the ease of dining out at this income level and its resultant exposure to inappropriate foods. Where medical considerations were concerned, in both the success and nonsuccess groups, there were an equal number of individuals who were experiencing angina as there were who were not experiencing it.

Stress Lifestyle. Three questions on the CLQ were concerned with the presence, level and handling of stress. Success with stress lifestyle was defined as the proper management of stress and not its absence or perceived level. As presented in Figure 2, success with stress management included talking with someone when feeling stress or anxiety, doing a relaxation technique or exercising; nonsuccess included options such as getting angry and showing anger by hollering or raising one's voice, as well as keeping feelings inside. Surprisingly, five individuals denied experiencing any stress or anxiety. This may have resulted from a misunderstanding of the time frame implied by the question or perhaps these words had different connotations for these individuals. Another possible explanation is that these individuals were in a state of denial regarding stress.

Approaches to stress management varied across all levels of stress. Crosstabulation analysis revealed chi-square results with a significance level of 0.24, indicating that stress management was unrelated to the level of stress

experienced. Whereas one individual with moderate stress might holler and shout to manage the stress, another individual might keep it inside. The presence of mild levels of stress was not associated with a tendency to deal with it more effectively. The majority of those individuals experiencing stress were not successful in its management. The most commonly occurring approach to stress management identified by the subjects in this study, that of 'keeping things inside', is considered a dangerous alternative because of its resulting increased blood pressure and workload on the heart and circulation (Guzzetta & Dossey, 1984). Unfortunately, the source of stress was not investigated in this study. Therefore, a relationship between source of stress and its management could not be ascertained. Perhaps the answer to success with stress lifestyle lies with the source of the stress.

Crosstabulation results were utilized to investigate the statistical significance between success and nonsuccess with stress lifestyle and such variables as age group, gender, satisfaction with level of support, education, household income, work status and medical considerations such as having angina since program completion. Stress lifestyle was found to have no statistically significant relationship to any of these variables; chi-square results showed significance levels ranging between 0.06 to 0.95. However, certain features were evident for some of the variables. For example, nonsuccess with stress lifestyle occurred relatively equally across all age groups and between males and females, findings which may indicate that a solution related to stress

lifestyle does not exist here. Individuals who were highly satisfied with the level of support fell into both the success and nonsuccess groups; the same was true of those not satisfied. Evidently, perception regarding the level of support provided by a significant other did not contribute to stress lifestyle. Findings related to work status showed that individuals in the retired group were as likely to be successful as nonsuccessful with stress lifestyle. Two work status categories, working casual hours and "other" (not identified by subjects), were void of individuals in the nonsuccess group. Other categories had representation in both stress lifestyle groups. This suggests that sources of stress are present regardless of work status. Success and nonsuccess occurred across all categories of household income and education, suggesting that the individual's financial situation and amount of scholarly knowledge were not determinants in this area. Surprisingly, success with stress lifestyle was not related to the presence or absence of angina since completion of the program. In the nonsuccess group, nineteen individuals experienced angina and sixteen did not; in the success group, thirteen experienced angina and fifteen did not. Apparently, individuals did not manage their stress lifestyle based on their experiences with angina.

Exercise Lifestyle. Five questions on the CLQ were used to define exercise lifestyle: these related to whether or not the individuals exercised, the number of times per week of exercise, the type of exercise, the length of the exercise period and the perceived difficulty of the exercise. Success with

exercise lifestyle was defined as success with each of the items related to exercise. Individuals had to perform aerobic exercise at least three times per week for a minimum of twenty minutes at a level perceived to be fairly light or somewhat hard. Sixty-four individuals reported that they exercised on a regular basis. Of these, 48 individuals met all of the other requirements to have a successful exercise lifestyle. Overall success with exercise lifestyle was compromised by items related to the frequency, duration and perceived level of difficulty of the exercise. All of the individuals who were exercising were successful with their choice of the type of exercise, aerobic. This may have implications for the approaches used by nursing personnel and other staff in the program, especially in assisting participants with frequency, duration and perceived level of difficulty of the exercise.

Considering the items which compromised success with exercise lifestyle, crosstabulation results were utilized to investigate the statistical significance between success and nonsuccess with exercise lifestyle and such variables as age group, gender, satisfaction with level of support, education, household income, work status and medical considerations such as having angina since program completion. None of these variables produced a statistically significant relationship with exercise lifestyle; chi-square results were associated with significance levels which ranged between 0.07 and 0.95. However, analysis of certain variables resulted in interesting findings. For example, essentially equal numbers of individuals experiencing angina episodes were successful as were

unsuccessful with exercise lifestyle. As well, the frequency of angina was not related to whether individuals exercised. This is a favorable finding indicating that angina did not prevent individuals from exercising. Success and nonsuccess with exercise lifestyle was relatively equal across the age groups with approximately 80% of the individuals in each age group belonging to the success group and 20% to the nonsuccess group; the 71 and over group, with 69% belonging to the success group and 31% to the nonsuccess group, was the exception. Males were as likely to be in the success group as females, with a percentage rate of 79% to 78%, respectively. This suggests that present approaches utilized by staff at the rehabilitation program are equally effective with either gender. In the success with exercise lifestyle group, essentially equal percentages of individuals, between 77% and 83%, fell into in the various levels of satisfaction with support; 100% of those individuals in the 'not sure' group fell into the success with exercise lifestyle group. These findings are contrary to most reports related to support and exercise but are in keeping with those of Hilbert (1985). Generally, all levels of education were represented in the success and nonsuccess groups. Individuals working full-time were as likely to belong to the success group as were those who were retired. Individuals with a household income less than $20,000.00 were as likely to belong to the success group as were those in the $60,000.00 to $80,000.00 bracket.

Alcohol Lifestyle. On the CLQ, two questions dealt with daily alcohol use and two with occasional alcohol use. Success with alcohol lifestyle was defined

as consumption of less than or equal to two drinks per day, regardless of whether it was consumed daily or only occasionally. On the questionnaire, one drink was identified as equal to one beer or one glass of wine or one ounce of hard liquor. Ten individuals reported that they were daily alcohol users. All ten were successful regarding the amount of alcohol consumed on a daily basis. Forty individuals reported that they were occasional alcohol consumers; 33 were successful in limiting their ingestion of alcohol to two drinks per day. These positive results, a success rate of 82.5%, may be partially attributable to the influence of the cardiac rehabilitation program and its health care team's efforts in this area. As well, a new attitude regarding moderation of the consumption of alcohol has met with increased acceptance and approval in today's society; this may have played a positive role in the limiting of alcohol consumption.

The use of occasional alcohol was unrelated to the presence or absence of angina. Contrary to expectations, the presence of angina did not serve as a stimulus to deter or decrease alcohol consumption among the occasional alcohol users; crosstabulation results produced a chi-square of 1.58 with a significance level of 0.21. The study's results were examined for a relationship between success and nonsuccess with occasional alcohol lifestyle and such variables as age group, gender, satisfaction with level of support, education, household income and work status. Results indicated that a statistically significant relationship with the use of occasional alcohol did not exist for the

majority of these variables; significance levels associated with the chi-square values ranged between 0.10 and 0.83. However, crosstabulation analysis of occasional alcohol use with household income produced a chi-square value of 11.83 with 4 degrees of freedom and a significance level of 0.02. Individuals in the higher income brackets were less successful with occasional alcohol use than were those in the lower income brackets. Increased consumption of alcohol may be related to an increased amount of discretionary income available for use at any one time.

Tobacco Lifestyle. Six questions on the CLQ were concerned with the use of tobacco. The items requested information regarding its use and amount, both past and present. Success with tobacco was defined as no tobacco use of any kind in any amount one year post-program. Sixty-nine individuals (95.8%) reported that they were presently nonsmokers. Forty-four individuals reported that they had used tobacco prior to their heart problem. Of these past tobacco users, 41 individuals (93.2%) were presently successful in that they no longer used tobacco. These findings were very positive in comparison with previous studies examining this phenomenon.

The data were examined further to ascertain if there was a possible relationship between the type of heart event experienced prior to participation in the cardiac rehabilitation program and long term success with discontinuing tobacco use. Past experience has shown that a catastrophic life event such as myocardial infarction or coronary artery bypass grafting surgery did not assure

that a smoker would become and remain a nonsmoker. In this study, examination of the data for a relationship between the medical problem prior to entry into the cardiac rehabilitation program produced crosstabulation results with a chi-square having a significance level of 0.08. However, there were insufficient numbers of individuals in categories other than MI to produce valid results. Of those 35 individuals experiencing angina, 23 had used tobacco in the past and one continued to use it at the time of the study. Statistical results were nonsignificant. The successful results in this study may be indicative of the positive influence of participation in this cardiac rehabilitation program. The study's results were also examined for a relationship between success and nonsuccess with tobacco lifestyle and such variables as age group, gender, satisfaction with level of support, education, household income and work status. Results indicated that a statistically significant relationship with tobacco lifestyle did not exist for all but one of these variables; significance levels associated with the chi-square values ranged between 0.001 and 0.91. Crosstabulation analysis of tobacco lifestyle, in particular with regards to having quit the use of tobacco, with household income produced a chi-square value of 19.06 with 4 degrees of freedom and a significance level of 0.001. There were a greater number of individuals in the lower income brackets who were unsuccessful with quitting the use of tobacco. This may be related to an inability to substitute an alternative method to serve the same purpose in life as that of tobacco use because of financial reasons.

Weight Lifestyle. Based on items in the CLQ regarding present height and weight, body mass index (BMI) (body weight in kilograms divided by height in meters squared) was computed. Individuals were divided into four groups based on the BMI values listed in Figure 3. Success with weight was defined as falling into the lean or acceptable BMI groups. Forty-three individuals fell into the success groups and twenty-six into the nonsuccess groups. Three individuals did not report height and/or weight. These findings are not in keeping with the large number of individuals who were not successful with diet lifestyle. However, they are compatible with the exercise lifestyle findings where the majority of individuals in the study fell into the success category.

Figure 3

Body Mass Index Groups

Category	Women	Men
Lean	less than 22.4	less than 22.7
Acceptable	22.4 through 26.9	22.7 through 27.2
Overweight	27.0 through 31.4	27.3 through 31.8
Obese	31.5 and up	31.9 and up

Crosstabulation results were utilized to investigate the statistical significance between success and nonsuccess with weight lifestyle and such variables as age group, gender, satisfaction with level of support, education,

household income, work status and medical considerations such as having angina since program completion. None of these variables produced a statistically significant relationship with weight lifestyle; significance levels of the chi-square values ranged between 0.21 and 0.84. However, of the individuals experiencing angina, 42.9% were in the nonsuccess group and 57.1% were in the success group. A similar pattern existed for individuals not experiencing angina; 32.3% were in the nonsuccess group and 67.7% were in the success group. This may have resulted because individuals fail to connect weight control and angina. As such, the presence of angina did not serve as a stimulus to encourage optimal weight. The findings related to success and nonsuccess with weight lifestyle were relatively equally distributed across individuals of all age groups. However, a larger number of individuals in the 71 and over age group were successful with weight as opposed to those not successful with it. This may be the result of changes in appetite which are a normal part of the aging process. Essentially equal percentages of males and females fell into each of the success and nonsuccess groups. This supported findings that weight control is not a gender related problem. Although the findings showed that success and nonsuccess with weight lifestyle were not related to education levels, the individuals at the lower end of the education categories were more frequently in the success group. Individuals in all categories of level of support, work status and household income fell into both

the success and nonsuccess groups of weight lifestyle. These findings indicate the wide ranging problem of weight control.

Hypertension Lifestyle. Two questions on the CLQ assessed for success or nonsuccess related to hypertension lifestyle. Success with hypertension lifestyle was defined as the appropriate monitoring of blood pressure, once each month or more frequently. Twenty-three individuals reported having hypertension. Of these, only seven (30%) were successful in monitoring their blood pressure. Most individuals did not monitor their blood pressure frequently enough. This may have been a result of the unavailability of monitoring equipment. As well, individuals with hypertension may have felt a false sense of security if they were taking prescribed medications for the control of their hypertension.

Crosstabulation results were utilized to investigate the statistical significance between success and nonsuccess with hypertension lifestyle and such variables as age group, gender, satisfaction with level of support, education, household income, work status and medical considerations such as having angina since program completion. None of these variables produced a statistically significant relationship with hypertension lifestyle; chi-square results had significance levels ranging from 0.08 to 0.57. However, analysis of certain variables resulted in interesting findings. For example, of the individuals with hypertension who experienced angina, only one individual fell into the success category of hypertension lifestyle whereas nine were not successful with its

management. The presence or absence of angina did not significantly alter behavior related to hypertension. Individuals likely perceived these as separate and unrelated entities. The individuals in the success group of hypertension were all over 61 years of age but the nonsuccess group consisted of individuals from all age groups. A lower percentage of women with hypertension were successful with its management than were men.

Diabetes Lifestyle. There were five questions on the CLQ to assess the diabetes lifestyle of those individuals diagnosed with diabetes. Diabetic individuals were classified as being successful with diabetes lifestyle if they identified the method of management of their diabetes, identified the number of calories of their diabetic diet, used a glucometer, a chemstrip and/or the physician's office to monitor their blood glucose levels and monitored their blood glucose levels at least once per week. Nine individuals reported that they were diabetics. Only four of these persons were successful with diabetes lifestyle. Two did not answer any items beyond identifying themselves as diabetics. The three individuals classified as nonsuccessful were testing their blood glucose levels once a month or less frequently.

Crosstabulation results were utilized to investigate the statistical significance between success and nonsuccess with diabetes lifestyle and such variables as age group, gender, satisfaction with level of support, education, household income, work status and medical considerations such as having angina since program completion. None of these variables produced a statisti-

cally significant relationship; significance levels for the chi-square values ranged from 0.14 to 0.57. However, analysis of certain variables resulted in interesting findings. For example, the success category consisted of essentially equal numbers of individuals experiencing angina as not experiencing it; the same was true in the nonsuccess category. Only one diabetic was female and she was not successful with diabetes lifestyle. All of the individuals with diabetes had completed high school or post-secondary education. The diabetic individuals fell across most work status and household income categories.

Summary. Eight lifestyle areas or components were examined in relation to success and nonsuccess with lifestyle modification. Those components which tended to fall into the success category included exercise, tobacco use, alcohol use and weight control. Lifestyle modifications in relation to diet, stress and hypertension tended to fall into the nonsuccess category. Diabetes lifestyle, with an essentially equal number of success and nonsuccess cases, could not be classified as either success or nonsuccess. As well, each component was examined in relation to the sociodemographic data in this study. Two lifestyle components, tobacco lifestyle and occasional alcohol lifestyle, showed statistically significant findings in relation to one sociodemographic variable, household income levels. Assuming the independence of the observations, the results related to alcohol lifestyle and household income may be statistical chance events. Further research in these areas is indicated.

Program Satisfaction

The Program Satisfaction Questionnaire (PSQ) consisted of 21 questions or items related to various facets of the cardiac rehabilitation program. A copy of the PSQ is located in Appendix B. Participants expressed their opinions and perceptions of the cardiac rehabilitation program through their answers to two open ended questions and 19 five-point Likert scale questions. Findings from the two open ended questions were compiled; factor analysis, using principal components analysis and varimax rotation, was utilized with the Likert scale items. Various components of the program satisfaction variable were identified based on the factor analysis results. A satisfaction scale was formed for each of the components. Program satisfaction was determined based on the satisfaction scores for each component.

Liked Most and Liked Least. Two open ended questions on the questionnaire asked the participants to state what they 'liked most' and 'liked least' about the program. Not all of the subjects responded to these items. A synopsis of these results is presented in Table 4. Of those elements identified in the 'liked most' category, the most frequently cited one was the caring and interest expressed by the staff toward the participants. Somewhat related to this, respondents cited the support system provided by peers in the program. A few individuals identified the individualized attention provided. The exercise component of the program was also frequently cited. Also related to this, several individuals identified the development of an exercise habit secondary to

Table 4

Responses from the Open Ended Questions

'Liked Most' Responses	Frequency
caring and interest by the staff	22
exercise component	13
variety of lectures	10
support system provided by peers	9
exercise habit	6
felt good about themselves	5
nutrition counseling	4
individualized attention provided	3
atmosphere	3
health status had improved	2
range of available equipment	2

'Liked Least' Responses	Frequency
program ended too soon	10
lack of individualized attention	6
distance in getting to program	6
no professional follow-up	5
overall exercise period too short	2
exercise program too strenuous	2
having to use the exercise bike	2
having to admit to having a problem	2
too many classes	2
lack of parking	2
not flexible to individual's needs	1

participation in the exercise program as beneficial. Two individuals stated that their health status had improved and five stated that they felt good about themselves. The atmosphere and the range of available equipment were also mentioned. Although the information provided by the variety of lectures was frequently cited, nutrition counseling was specifically mentioned.

In the 'liked least' category, the most frequently cited element was that the program ended too soon. Also related to this, two individuals indicated that the overall exercise period was too short. Several individuals indicated that they disliked being on their own with no professional follow-up after the program ended. Several individuals cited the lack of individualized attention. Possibly related to this, one respondent wrote that "the program was not flexible to the individual's needs, especially the classes". As well, two individuals wrote that the exercise program had been too strenuous for them and two others disliked having to use the exercise bike. A few individuals indicated that there were too many classes. Two respondents indicated that having to admit to having a problem with the heart had been the most difficult part of the program. Attributes 'liked least' but not specific to the program included lack of parking and the distance in getting to the program.

Interestingly, many of the items cited in the 'liked most' and 'liked least' categories tended to support each other; presence of one element fell into the former category whereas its absence fell into the latter. As well, those elements identified by the respondents related to general concepts such as therapeutic

effect, knowledge, rapport and facilities. All but the last of these are in keeping with the factors cited in the conceptual model of this study. The responses from the open ended questions indicate that the program's three major components of exercise, educational classes and individual counseling, contribute to the elements which are the basis of satisfaction with the program, namely, therapeutic effect, knowledge and rapport.

Identification of Satisfaction Components. Factor analysis using principal components and varimax factor rotation were utilized to establish the program satisfaction construct and its subconstructs. Initial statistics following principal components analysis revealed five factors with an eigenvalue greater than one; these ranged between 6.17 and 1.27. Sixty-six per cent (66%) of the total variance was explained by these five factors; the amount of individual variance ranged between 32.5%, accounted for by factor 1, and 6.7%, accounted for by factor 5. Using 0.50 as an arbitrary coefficient cut off point, factor loadings following factor rotation analysis revealed clear differentiation between all but one item which loaded on both factors 2 and 3 with acceptable coefficients. However, factors four and five were identified by only two and three items, respectively. Using 0.45 as the cut off point, factor loadings following factor rotation revealed clear differentiation for factor 5 only. Factor loadings for several items loaded on more than one factor with acceptable coefficients. Examination of the variables or items involved in secondary loading for these

factors resulted in the extraction of different numbers of factors in an attempt to achieve a cleaner definition of the clustering as factors.

Factor analysis requesting four factors was performed to attempt to differentiate between factors more clearly. Principal components analysis for four factors revealed eigenvalues ranging from 1.35 to 6.17. Fifty-nine point eight per cent (59.8%) of the variance was explained. The amount of individual variance ranged between 32.5%, accounted for by factor 1, and 7.1%, accounted for by factor 4. With a coefficient cut off point of 0.50, two items with coefficients of 0.47 and 0.45 did not assign to any of the factors. Using 0.45 as an arbitrary cut off point, factor loadings following factor rotation analysis revealed differentiation between each of the factors relatively clearly. Factor two, however, contained two items with a secondary loading in factors one and three; coefficients for the secondary loadings were 0.52 and 0.48, respectively.

Because the cardiac rehabilitation program which the respondents participated in consisted of three major facets, factor analysis requesting three factors was performed. Principal components analysis revealed eigenvalues of 6.13, 2.22 and 1.62. These factors explained 52.7% of the variance. It was necessary to use 0.40 as an arbitrary factor loading cut off point to ensure that all items could be aligned with one of the three factors. As well, three items had secondary loadings; none of the factors was clean. Factor 1 consisted of four items whereas factors 2 and 3 consisted of seven and eight items, respectively. This approach was dismissed. Since the sixth factor identified in the

initial factor analysis statistics revealed an eigenvalue approaching one, 0.90, and explained 4.7% of the total variance, principal components analysis and varimax rotation with six factors was done. This approach was abandoned when three of the six factors consisted of only two items or variables each. Since loadings were most appropriate with four factors, four program satisfaction components were formed. A synopsis of the questionnaire items and their factor loadings for each component is listed in Table 5.

Activity Component. Factor 1 consisted of four items from the questionnaire with factor loadings ranging from 0.70 to 0.90. Three of the items related to exercise while the fourth item related to counseling information regarding the taking of medication. The pattern which emerged from these clustered variables was related to activity. Most of the participants in the cardiac rehabilitation program were taking prescribed medications which would have had implications for their levels of activity. Since all of the individuals who participated in the program would have been informed about their medications in relation to how each would affect their activity levels, it was understandable that this item would have loaded with those questions asking about exercise, a specific type of activity. Hence, Factor 1 was identified as the activity component of the program satisfaction variable.

Education Component. Six variables clustered as part of Factor 2. Their loadings ranged from 0.55 to 0.81. Most of the variables were concerned with questions about knowledge, answers and information provided as part of the

Table 5

Program Satisfaction Components

Factor Loading	Question
Activity Component	
0.76	I benefitted from the exercise component of this program.
0.90	The exercise component of the program was appropriate for me.
0.88	Overall, I was satisfied with the exercise component of this program.
0.70	I received individualized counseling information regarding the taking of my prescribed medications.
Education Component	
0.55	I gained sufficient knowledge from the group education classes that were part of this program.
0.60	At the end of this program, I lacked information I felt I needed about my health.
0.75	The classes provided satisfactory answers to my questions about my health.
0.61	The diet counseling I received was realistic.
0.81	I was satisfied with the amount of time the nurse spent with me individually.
0.57	I was satisfied with the range of services (exercise, classes, individual counseling) offered.

(continued)

Factor Loading	Question
	Relationship Component
0.57	In planning my rehabilitation goals, the nurse was more interested in telling me what to do than in listening to what I had to say.
0.51	The staff were interested in me as an individual.
0.65	The other staff were not approachable.
0.47	I was satisfied with the plan of care that was developed with me.
0.45	I would recommend the program to others.
0.56	Overall, how do you feel about the program in which you participated?
	Authority Component
0.76	The cardiac rehabilitation physician was readily approachable regarding my concerns and questions about my health.
0.50	I developed a positive relationship with my nurse.
0.66	The cardiac rehabilitation physician spent too little time with me.

program. One variable was concerned with the amount of time spent with the nurse. In all likelihood this variable clustered with the variables having a knowledge and information nature because the role of the nurse in the cardiac rehabilitation program focused on the provision of knowledge and information to the participants. The variable concerned with the range of services offered also clustered under factor 2. It suggested that three services, namely exercise, classes and individual counseling, were provided. All three services, directly or indirectly, provided knowledge in the form of information, experience or answers to questions. As such, a pattern related to education of the participants became evident. Factor 2 was therefore identified as the education component of the program satisfaction variable.

Relationship Component. Factor 3 consisted of six items from the questionnaire with factor loadings ranging from 0.45 to 0.65. When the clustered items were examined, a pattern related to relationships with the health team personnel of the cardiac rehabilitation program emerged. Three items specifically indicated an element of concern for the individuality of the participant of the program by the nurse and the other staff of the program. Two items related to recommending the program to others and to the participants' level of satisfaction with the overall program clustered as part of this factor. The connection between the relationship element and these two items became evident in examining the results of the two open ended question items where caring and interest by the staff was the most frequently cited comment in the

'liked most' category and lack of individualized attention was the second most common comment made in the 'liked least' category. The sixth item which clustered as part of this factor related to the plan of care. It is likely that this item loaded here since the plan of care is determined on a one to one basis between the cardiac rehabilitation participant and the various health care professionals in the program; it is individualized to that participant's needs and preferences. The relationship that is developed with the program participant would be influential in the process of developing the plan and inevitably in the participants' level of satisfaction with the plan. Since all of the items which clustered as part of Factor 3 related to relationships aimed at individualizing care, this factor was identified as the relationship component of the program satisfaction variable.

Authority Component. Three items loaded as part of Factor 4. Their factor loadings ranged from 0.50 to 0.76. Examination of these items revealed that a special type of relationship, one with the individuals overseeing or having authority over the participant's progress through the cardiac rehabilitation program, was the common element. Two of the items were questions about the participant's interaction with the physician. These were concerned with the approachability and the time spent with the physician. Although the physician may not have been as visible to the participants as the other health team members were, most participants in the program were aware of the physician's overall supervision and approval of the rehabilitation activities. The third item

was concerned with the relationship with the participant's nurse. Program participants made their first contact in the program with their assigned nurse who then referred them to other health care personnel such as the counsellor, the dietician and the occupational therapist, as necessary. As well, the nurse did periodic reassessment with the participants where previous referrals were discussed and new ones made. As a result of the nurse's initial contact, referral and periodic follow-up roles, an overseeing or authority element was perceived by the participants. Since the three items which clustered as part of Factor 4 were concerned with a special overseeing or authority relationship, this factor was identified as the authority component of the program satisfaction variable.

Satisfaction Scales. A satisfaction scale was formed for each of the four components of the program satisfaction variable. Scores for the individual items in each of the components were added to form a scale where a Likert scale score of 1 was indicative of low satisfaction and a score of 5 indicated a high level of satisfaction. Final scores were dependent on the number of items in each component. A synopsis of the satisfaction scale results for each program satisfaction component is listed in Table 6.

The satisfaction scale for the activity component was designed with a minimum score of four and a maximum score of twenty; this was based on four items with a five point Likert scale. Reliability analysis of these items produced a Cronbach's alpha of 0.85. Satisfaction scores for the activity component

Table 6

Scores for the Satisfaction Components

Scores Scale - Percent		Frequency Number - Percent	
Activity Component			
4	- 20%	1	- 1.4%
8	- 40%	1	- 1.4%
9	- 45%	1	- 1.4%
13	- 65%	1	- 1.4%
14	- 70%	3	- 4.2%
15	- 75%	3	- 4.2%
16	- 80%	9	- 12.5%
17	- 85%	14	- 19.4%
18	- 90%	8	- 11.1%
19	- 95%	12	- 16.7%
20	100%	19	- 26.4%
Total		72	- 100.0%
Possible Scale 4 - 20 Mean Score = 87.0%		Cronbach's Alpha = 0.85	
Education Component			
17	- 56.6%	1	1.4%
19	- 63.3%	1	1.4%
20	- 66.7%	3	4.2%
21	- 70.0%	7	9.7%
22	- 73.3%	12	16.7%
23	- 76.7%	13	18.1%
24	- 80.0%	9	12.5%
25	- 83.3%	10	13.9%
26	- 86.7%	15	20.8%
30	- 100.0%	1	1.4%
Total		72	- 100.0%
Possible Scale 6 - 30 Mean Score = 78.3%		Cronbach's Alpha = 0.17	

(continued)

Scores Scale - Percent	Frequency Number - Percent
Relationship Component	
19 - 63.3%	1 1.4%
21 - 70.0%	2 2.8%
22 - 73.3%	7 9.7%
23 - 76.7%	5 6.9%
24 - 80.0%	4 5.6%
25 - 83.3%	9 12.5%
26 - 86.7%	9 12.5%
27 - 90.0%	10 13.9%
28 - 93.3%	12 16.7%
29 - 96.7%	1 1.4%
30 - 100.0%	12 16.7%
Total	72 - 100.0%
Possible Scale 6 - 30 Mean Score = 86.7%	Cronbach's Alpha = 0.68
Authority Component	
6 - 40.0%	2 2.8%
7 - 46.7%	2 2.8%
8 - 53.3%	3 4.2%
9 - 60.0%	7 9.7%
10 - 66.7%	11 15.3%
11 - 73.3%	8 11.1%
12 - 80.0%	18 25.0%
13 - 86.7%	7 9.7%
14 - 93.3%	7 9.7%
15 - 100.0%	7 9.7%
Total	72 - 100.0%
Possible Scale 3 - 15 Mean Score = 76.0%	Cronbach's Alpha = 0.69

ranged between the lowest possible score of 4 or 20% and the highest possible score of 20 or 100%, with the majority of individuals rating this component on the high end of the scale. The mean score was 17.4 or 87% and the median was 18 or 90%. The most frequently occurring score was 20 or 100%. These results are an indication that most individuals were satisfied with this component of the cardiac rehabilitation program. However, the occurrence of the lower scores warrants further investigation by program personnel. This is further supported by those negative comments related to exercising presented in response to the 'liked least' open ended question. The results may have tended to cover a wider range of scores because items in this component reflected tangible items rather than relationships or opinions about personnel delivering the program. The passing of judge-ments over inanimate objects remains a less difficult process than that evaluating the worth of a human being.

The satisfaction scale for the education component was designed with a minimum score of six and a maximum score of thirty; this was based on six items with a five point Likert scale. Reliability analysis of these items produced a Cronbach's alpha of 0.17. Satisfaction scores for the education component ranged between 17 (56.6%) and 30 (100%), with the majority of individuals rating this component on the high end of the scale. The mean score was 23.5 or 78.3% and the median was 23 or 77%. The most frequently occurring score was 26 or 86.6%. Again, distribution results were consistent with those of previous satisfaction studies. It would appear from the distribution of the scores

of this component, particularly the absence of any very low scores, that it may have been perceived by the program's participants as a request for their evaluation of those individuals presenting the information. Hence, this would explain the predominance of high scores. However, considering the strict measures to ensure confidentiality utilized in this study, these high satisfaction scores may have indicated an accurate perception of a valuable rehabilitation program.

The satisfaction scale for the relationship component was designed with a minimum score of six and a maximum score of thirty; again, this was based on six items with a five point Likert scale. Reliability analysis of these items produced a Cronbach's alpha of 0.68. Satisfaction scores for the relationship component ranged between 19 (63.3%) and 30 (100%), with the majority of individuals rating this component on the high end of the scale. The mean score was 26.1 or 86.7% and the median was 26 or 86.6%. The most frequently occurring scores were 28 (93.3%) and 30 (100%). As in previous studies examining perceptions of satisfaction, the absence of very low scores in this component was likely related to the fact that it was requesting perceptions and ratings related to personal relationships rather than tangible services. Considering the circumstances surrounding this study, the positive results likely resulted from the favorable nature of the cardiac rehabilitation program itself.

The satisfaction scale for the authority component was designed with a minimum score of three and a maximum score of fifteen; this was based on

three items with a Likert scale of 1 through 5. Reliability analysis of these items produced a Cronbach's alpha of 0.69. Satisfaction scores for this component ranged between 6 (40%) and 15 (100%). The mean score was 11.4 or 76% and the median was 12 or (80%). The most frequently occurring score was 12 or 80%. The tendency of higher score results was in keeping with findings from previous studies. However, since the authority component examined a type of personal relationship, the presence of scores on the low end of the scale was puzzling. This may have been a result of a continuing move in today's society from the role of patient to that of health care consumer; participants as consumers expect that their needs will be met and as such are more critical. Other factors which may have played a role include the nature of the questions and their interpretation by the respondents and the lack of items which clustered to form this component. These have implications for future research and development of the instrument utilized to collect data in this study.

Summary. All of the satisfaction scores indicated a high level of satisfaction with the cardiac rehabilitation program, with mean satisfaction scores for the components ranging from 76% to 87%. Of the four satisfaction components, the activity component was rated most highly with an average score of 87%. The relationship component, with an average score of 86.7%, followed very closely in second place. These were followed by the education component with a score of 78.3% and lastly by the authority component with a score of 76%. Overall, the program averaged a score of 82%, an indication that the

program and its staff are generally meeting the needs and expectations of the participants in this study.

Overall, the findings were in keeping with the results of previous satisfaction studies, where ratings have also tended to be on the upper end of the scale. Ratings in previous studies have tended to be less critical of individuals or relationships with them as opposed to those involving tangible objects or elements. This may have been a result of methods utilized to ensure confidentiality of the results. As well, previous studies have examined the level of satisfaction of individuals with organizations or individuals where a connection may have still existed at the time of that study or where a form of the previous relationship or connection would exist again. In this study, the subjects were no longer affiliated with the rehabilitation program. As well, strict measures were employed to ensure confidentiality of the results. Because of these factors, it is probable that the high level of satisfaction regarding the cardiac rehabilitation program was a direct result of the quality of the program itself.

Answering the Research Question

To investigate the possibility of the existence of a relationship between the level of satisfaction with the cardiac rehabilitation program and success or nonsuccess with lifestyle modifications one year post-program, discriminant analysis was employed. All variables passing the minimum tolerance test of 0.001 were entered into analysis to identify those program satisfaction component variables that most effectively discriminated between the success and

nonsuccess groups of the various lifestyle modification components. Of the eight lifestyle components, only five components contained sufficient between-groups variance to be included in the analysis; these included diet, stress, exercise, diabetes and weight lifestyles. A summary of these results is presented in Table 7.

Diet Lifestyle and Program Satisfaction. Discriminant analysis was performed using the success and nonsuccess groups defined by diet lifestyle. Sixty-nine cases were used in the analysis. Pooled-within-groups correlations between the discriminating variables and the canonical discriminant function indicated that the discriminant function is a composite variable having its highest correlation with the authority component of program satisfaction and only negligible correlations with the education, relationship and activity components. The variable contributing most to the definition of the discriminant function as a new composite variable was the authority component of program satisfaction. This may have implications for predicting diet lifestyle success based on the satisfaction of participants related to the physician and the nurse in the cardiac rehabilitation program. Further research would be required to examine the roles of these individuals related to program satisfaction. However, since the results of the discriminant function analysis were not significant, no adequate separation could be made between success and nonsuccess diet lifestyle subjects based on the discriminant function; the chi-square result had a significance level

Table 7

Discriminant Analysis Results

Satisfaction Component	Discriminant Function Correlations	Discriminant Function Weights	Canonical Correlation	Chi-Square and (Significance)*
Diet Lifestyle			0.20 (0.62)	2.66
Authority	0.85	1.14		
Education	-0.17	-0.31		
Relationship	0.13	-0.25		
Activity	-0.04	-0.22		
Stress Lifestyle			0.16 (0.83)	1.49
Relationship	0.84	0.59		
Authority	0.73	0.30		
Activity	0.72	0.45		
Education	0.33	-0.11		
Exercise Lifestyle			0.17 (0.78)	1.77
Relationship	0.87	0.84		
Activity	0.55	0.50		
Authority	0.55	0.15		
Education	0.20	-0.46		
Diabetes Lifestyle			0.91** (0.26)	5.32
Activity	0.34	0.81		
Relationship	0.25	0.39		
Education	0.23	0.32		
Authority	-0.10	-0.29		
Weight Lifestyle			0.19 (0.65)	2.49
Activity	0.46	0.80		
Education	-0.45	0.50		
Relationship	-0.30	-0.69		
Authority	0.28	-0.60		

* degrees of freedom = 4 for all tests
** there were only 7 subjects in this group.

of 0.62. The canonical correlation result of 0.20 indicated that there was no significant relationship between the program satisfaction components and success with diet lifestyle. Had the results been statistically significant, further research would have been indicated to examine the relationship between these satisfaction components and diet lifestyle. These nonsignificant results may have resulted from the nature of the data collection instruments or the size of the sample.

Stress Lifestyle and Program Satisfaction. The success and nonsuccess groups defined by stress lifestyle were entered into discriminant analysis with the four program satisfaction components. Sixty-four cases were used in the analysis. Pooled-within-groups correlations between the discriminating variables and the canonical discriminant function indicated that the discriminant function was a composite variable having its highest correlation with the relationship component of program satisfaction; it correlated to a lesser degree with the authority and activity components and had a negligible correlation with the education component. The variable contributing most to the definition of the discriminant function was the relationship component. This may have implications for predicting stress lifestyle success based on the satisfaction of participants related to the cardiac rehabilitation team members. Further research would be required to examine the roles of these individuals related to program satisfaction. However, since the results of the discriminant function analysis were not significant, no adequate separation could be made between

success and nonsuccess stress lifestyle subjects based on the discriminant function; the chi-square result had a significance level of 0.83. The canonical correlation result of 0.16 indicated that there was no significant relationship between the program satisfaction components and success with stress lifestyle. Had the results been statistically significant, further research would have been indicated to examine the relationship between these satisfaction components and stress lifestyle. These nonsignificant results may have resulted from the nature of the data collection instruments or the size of the sample.

Exercise Lifestyle and Program Satisfaction. Discriminant analysis was performed using the success and nonsuccess groups defined by exercise lifestyle. Sixty-one cases were used in the analysis. Pooled-within-groups correlations between the discriminating variables and the canonical discriminant function indicated that the discriminant function was a composite variable having its highest correlation with the relationship component of program satisfaction; it correlated to a lesser degree with the activity and authority components and had a negligible correlation with the education component. The variable contributing most to the definition of the discriminant function was the relationship component. This may have implications for predicting exercise lifestyle success based on the satisfaction of participants related to the cardiac rehabilitation team members. Further research would be required to examine the roles of these individuals related to program satisfaction. However, since the results of the discriminant function analysis were not significant, no ade-

quate separation could be made between success and nonsuccess exercise lifestyle individuals based on the discriminant function; the chi-square result had a significance level of 0.78. The canonical correlation result of 0.17 indicated that there was no significant relationship between the program satisfaction components and success with exercise lifestyle. Had the results been statistically significant, further research would have been indicated to examine the nature of the relationship between these satisfaction components and exercise lifestyle. These nonsignificant results may have resulted from the nature of the data collection instruments or the size of the sample.

Diabetes Lifestyle and Program Satisfaction. Diabetes lifestyle was also entered into discriminant analysis. Seven cases were used in the analysis. Pooled-within-groups correlations between the discriminating variables and the canonical discriminant function indicated that the discriminant function was a composite variable having its highest correlation with the activity component of program satisfaction; it correlated to a similar degree with the relationship, education and authority components. The variable contributing most to the definition of the discriminant function was the activity component. However, since the results of the discriminant function analysis were not significant, no adequate separation could be made between success and nonsuccess diabetes lifestyle individuals based on the discriminant function; the chi-square result had a significance level of 0.26. The canonical correlation result of 0.91 indicated that there was a relationship between the program satisfaction

components and success with diabetes lifestyle but these results were not significant since they were based on only seven subjects. Had the results been significant, further research would be indicated to examine the characteristics of the exercise program related to program satisfaction.

Weight Lifestyle and Program Satisfaction. The success and nonsuccess groups defined by weight lifestyle were entered into discriminant analysis with the four program satisfaction components. Sixty-nine cases were used in the analysis. Pooled-within-groups correlations between the discriminating variables and the canonical discriminant function indicated that the discriminant function was a composite variable having its highest correlation with the activity component of program satisfaction and correlated to a similar degree with the education component; it had a lesser degree of correlation with the relationship and authority components. The variable contributing most to the definition of the discriminant function was the activity component. This may have implications for predicting weight lifestyle success based on the satisfaction of participants related to the exercise and activity characteristics of the cardiac rehabilitation program. Further research would be required to examine these characteristics and their influence on program satisfaction. However, since the results of the discriminant function analysis were not significant, no adequate separation could be made between success and nonsuccess weight lifestyle individuals based on the discriminant function; the chi-square result had a significance level of 0.65. The canonical correlation result of 0.19 indicated that

there was no significant relationship between the program satisfaction components and success with weight lifestyle. Had the results been statistically significant, further research would have been indicated to examine the type of relationship between these satisfaction components and weight lifestyle. These nonsignificant results may have resulted from the nature of the data collection instruments or the size of the sample.

Summary. The results of the discriminant analysis examining the nature of the relationship between lifestyle modification and program satisfaction were statistically not significant for each of the lifestyle component areas examined. However, the results provided an indication of which program satisfaction components would be most responsible for influencing the success and nonsuccess nature of the lifestyle areas. The relationship component of program satisfaction was the primary influencing factor regarding stress and exercise lifestyles. Diet lifestyle was most influenced by the authority component. Areas weight and diabetes lifestyles were most influenced by the activity component. These findings may provide guidance to nurses and other staff of the cardiac rehabilitation program in their provision of care to the participants. The findings suggest that interventions related to specific program satisfaction components may be most influential in the promotion of success with different lifestyle areas.

Chapter V

Conclusions and Recommendations

The nature of coronary heart disease (CHD) continues to create a great need for interventions aimed at the alleviation or amelioration of its effects. Among other interventions, cardiac rehabilitation programs, through their provision of health care regimens, continue to serve as the major intervention aimed at the alleviation of risk factors. Compliance with these prescribed health care regimens should serve as a golden key in dealing with CHD. However, this golden key remains elusive. According to the literature, satisfaction was noted as an important determinant in the compliance behaviors of noncardiac individuals. The literature related to cardiac rehabilitation and lifestyle modification did not provide any answers regarding the role of satisfaction in CHD. The purpose of this study was to contribute toward the search for the golden key of compliance. Therefore, this study evaluated the lifestyle modification of individuals who were participants in an existing phase III cardiac rehabilitation program, examined their level of satisfaction with the program and determined whether a significant relationship existed between lifestyle modification and program satisfaction.

Summary and Findings

A descriptive, correlational approach was utilized to answer the research question. A retrospective approach was used to identify subjects. Seventy-two (72) participants, once they were one year post-program, were evaluated using

the Cardiac Lifestyle Questionnaire, a tool adapted from an existing tool, and the Program Satisfaction Questionnaire, a tool designed expressly for this study. Descriptive statistics were used to analyze the nominal data produced by the questionnaires. Sociodemographic findings from this study supported previous findings in relation to risk factors. Respondents were generally elderly and male; they represented a broad range of levels of education, work status, household income and heart related events. Lifestyle modification related to eight CHD risk factors was identified in terms of success and nonsuccess; these definitions were based on current literature. Those components in which the majority of individuals were successful included exercise, tobacco use, alcohol use and weight control. Lifestyle modifications in relation to diet, stress and hypertension fell into the nonsuccess category. Diabetes lifestyle, with an essentially equal number of success and nonsuccess cases, could not be classified as either success or nonsuccess. Each component was examined in relation to the sociodemographic data in this study. Two lifestyle components, tobacco lifestyle and occasional alcohol lifestyle, showed statistically significant findings in relation to one sociodemographic variable, household income levels. With factor analysis, four components of program satisfaction were identified; these included activity, education, relationships and authority. Satisfaction scales for each of these components tended to be positive; average scores ranged between 76% and 87%. Two open ended questions about satisfaction with the program revealed that caring and interest by the health care personnel

and an individualized approach were most favored by the participants. These findings tend to suggest that rapport is an important element of satisfaction. Discriminant analysis results indicated that a statistically separation of successful and nonsuccessful groups in terms of lifestyle modification, could not be made on the basis of satisfaction information.

Implications for Nursing

This study presented descriptive findings related to lifestyle modification which may be used to alert nurses working in the cardiac rehabilitation program that further investigation of components such as diet, stress, hypertension, exercise, diabetes and substance use is indicated in order to promote quality nursing care. The data have indicated a tendency for nonsuccess with lifestyles related to diet, stress and hypertension. Specific items related to each of these lifestyle components have been identified as problematic areas for program participants. Although further investigation is warranted, this tendency may serve as a guide regarding particular areas which nurses might focus in on when caring for these clients. For example, the addition of salt during cooking and the use of low fat milk were indicated as problematic areas in the study; more in depth teaching and counseling in these areas may be warranted. The results related to stress lifestyle indicate a need for specialized attention related to the management of stress. The study results related to hypertension indicate a need to focus on the importance of monitoring blood pressure when providing care to clients diagnosed as hypertensive. As well, the very positive re-

sults related to substance use, namely tobacco use and alcohol use, and weight control, are indicative that interventions related to these areas are effective and should be maintained.

Results from this study presented findings related to program satisfaction which may be used to alert nurses working in the cardiac rehabilitation program that further investigation of components such as activity, education, relationships and authority figures is indicated in order to promote quality nursing care. The high scores for the satisfaction components provide generally positive feedback for the rehabilitation program and its delivery. As well, they provide guidance related to program components which may need to be reassessed and adjusted to meet the needs of the participants. Comments presented in response to the open ended questions on the questionnaire provide further support. For example, negative comments related to type of exercise warrant evaluation.

In general, the data support the overall positive effect of participation in such a cardiac rehabilitation program. Support for the latter is not only evident in the success and nonsuccess results related to lifestyle components but also in the comments made by past participants in the program and with the generally high levels of satisfaction evident in the study's results. Responses from the open ended questions on the questionnaire, listed in Table 4, may provide direction to caring nurses regarding possible improvements to the existing program. For example, the amount and type of follow-up by nurses at

the end of the official rehabilitation program should be examined and alterations made. As a minimum, further investigation related to these comments made by the participants is warranted.

Although this study has not presented data that support the existence of a statistically significant relationship between lifestyle modification and program satisfaction, the practice of utilizing an individualized care approach and establishing good rapport with participants in this setting is supported by the study's data. Responses from the open ended questions on the questionnaire illustrate this. It is the caring and interest by the staff which the greatest number of respondents, over one third, mentioned as liking most about the program. That, in combination with comments about liking the individualized attention most and liking the lack of individualized attention least, support the need for effective rapport and utilization of an individualized care approach. These provide guidance related to specific elements that staff in such programs should strive towards in order to promote the delivery of quality care.

This study has provided the initial groundwork toward the development of two new nursing research instruments. The Cardiac Lifestyle Questionnaire (CLQ) has been adapted from Pynn's (1986) cardiac rehabilitation questionnaire. The Program Satisfaction Questionnaire (PSQ) was developed expressly for this study. Further development of each tool is now indicated. Administration of these tools to individuals in other cardiac rehabilitation programs would assist in their further development and establishment of some instrument

reliability. Both tools could be further developed through use with other populations such as MI patients in a younger age group (40 to 60), repeat participants in a cardiac rehabilitation program, female heart event patients and groups inclusive of only one heart event (groups consisting of MI only, CABG only, angina only, etc).

Recommendations for Further Study

The use of a small sample such as that used here may have compromised the results of the study. It is possible that a greater number of cases would have produced a greater number of lifestyle modification variables with sufficient variance to be used in the discriminant analysis procedure. A larger sample may have provided a more realistic presentation of the number of nonsuccessful tobacco and alcohol users in society. As well, a larger sample which incorporated other institutions and programs in cardiac rehabilitation would allow the results to be generalizable to the cardiac rehabilitation population.

The absence of a statistically significant relationship may be due in part to the use of the PSQ, a tool expressly developed for this study with no previous reliability and validity except for that established by a small pilot study. Changes were made following the pilot study but further examination of the tools did not occur until the present study. However, since it was not the intention of this study to fully design the tool in question, data were analyzed on the assumption that the flaws in this tool were insignificant. However, the findings

from the factor analysis suggest that it is possible that the questions related to program satisfaction were perhaps not as clear as they might have been. Questions which were constructed to specifically address one concept clustered with those of another planned concept. As well, some areas may require a greater number of questions in order to ensure that the concept is fully addressed.

The lifestyle modification variable was examined with the use of the CLQ, a tool adapted from an existing cardiac rehabilitation tool which did not have published validity and reliability parameters. The statistically nonsignificant findings in this study may have been a result of flaws in the design of this tool since the only reliability and validity established for this tool were through a small pilot study. Again, changes were made following the pilot study but no further examination of it occurred until the present study. It, too, was used on the assumption that its flaws would be minor. Data analysis of the present study did not reveal any major concerns about the CLQ itself, except with regard to those individuals who denied experiencing stress. Those questions relating to stress may have been problematic. A concern arose about the definitions of success related to some of the lifestyle modification components. Perhaps the expectations of the health care professionals are unrealistic in regards to success with lifestyle modification of certain components such as diet, stress and hypertension.

Based on these concerns about the design of the CLQ and PSQ tools, it is possible that the statistically nonsignificant results produced by the discriminant analysis procedure were a direct result of inadequately defined lifestyle modification and program satisfaction variables rather than the true absence of a relationship between these variables. The search for the golden key related to compliance, satisfaction, lifestyle modification and cardiac rehabilitation warrants further examination of the research question initially posed in this study. Further modification of the tools in question is suggested. The establishment of tools with dependable validity and reliability is essential. The positive results related to tobacco lifestyle in this study warrant further examination to investigate the possibility of a relationship between the nature of a cardiac event and quitting the use of tobacco.

References

Adsett, C.A. & Bruhn, J.G. (1968). Short-term group psychotherapy for post-myocardial infarction patients and their wives. The Canadian Medical Association Journal, 99(12), 577-584.

Angster, H., Glonner, R. & Halhuber, M. (1982). Risk factor modification in the framework of rehabilitation: Results of a long-term rehabilitation program in Bavaria. Advances in Cardiology, 31, 176-179.

Bagwell, M.A. (1987). Client satisfaction with nursing center services. Journal of Community Health Nursing, 4, 29-42.

Ballard, N.R. (1986). Promoting compliance in rehabilitation of a patient with a myocardial infarction. Topics in Clinical Nursing, 7, 57-64.

Becker, M.H. & Maiman, L.A. (1980). Strategies for enhancing patient compliance. Journal of Community Health, 6, 113-135.

Bengtsson, K. (1983). Rehabilitation after myocardial infarction: A controlled study. Scandinavian Journal of Rehabilitation Medicine, 15, 1-9.

Blumenthal, J.A. & Emery, C.F. (1988). Rehabilitation of patients following myocardial infarction. Journal of Consulting and Clinical Psychology, 56(3), 374-381.

Brody, D.S., Miller, S.M., Lerman, C.E., Smith, D.G., Lazaro, C.G. & Blum, M.J. (1989). The relationship between patients' satisfaction with their physicians and perceptions about interventions they desired and received. Medical Care, 27(11), 1027-1035.

Bruhn, G. (1986). Time in therapeutic relationships: Myths and realities. Southern Medical Journal, 79(3). 344-350.

Brunner, L.S. & Suddarth, D.S. (1984). Textbook of medical-surgical nursing. Philadelphia: J. B. Lippincott.

Burch, P.R.J. (1977). Coronary heart disease: Tests of etiological hypotheses. American Heart Journal, 93, 803-807.

Burgoon, J.K., Pfau, M., Parrott, R., Birk, T., Coker, R. & Burgoon, M. (1987). Relational communication, satisfaction, compliance-gaining strategies and compliance in communication between physicians and patients. Communication Monographs, 54, 307-324.

Canadian Heart Foundation. (1988). Life after a heart attack. Missisauga, ON: The Medicine Group.

Carson, P., Phillips, R., Lloyd, M., Tucker, H., Neophytou, M., Buch, N.J., Gelson, A., Lawton, A. & Simpson, T. (1982). Exercise after myocardial infarction: A controlled trial. Journal of the Royal College of Physicians of London, 16(3), 147-151.

Clarke, J.N. (1990). Health, illness and medicine in Canada. Toronto: McClelland & Stewart.

Commission on Professional and Hospital Activities (CPHA). (1986). Length of stay by diagnosis: Canada, 1985. Ann Arbor, MI: CPHA.

Davis, D. & Hobbs, G. (1989). Measuring outpatient satisfaction with rehabilitation services. QRB, June, 192-197.

Dennis, C., Houston-Miller, N., Schwartz, R.G., Ahn, D.K., Kraemer, H.C., Gossard, D., Juncau, M., Taylor, C.B. & DeBusk, R.F. (1988). Early return to work after uncomplicated myocardial infarction: Results of a randomized trial, JAMA, 260(2), 214-220.

Dracup, K.A. & Meleis, A.I. (1982). Compliance: An interactionist approach. Nursing Research, 31, 31-36.

Dracup, K., Meleis, A.I., Clark, S., Clyburn, A., Shields, L. & Staley, M. (1984). Group counseling in cardiac rehabilitation: Effect on patient compliance. Patient Education and Counseling, 6(4), 169-177.

Feinberg, J. (1988). The effect of patient-practitioner interaction on compliance: A review of the literature and application in rheumatoid arthritis. Patient Education and Counseling, 11, 171-187.

Feldman, R.H.L. (1982). A guide for enhancing health care compliance in ambulatory care settings. Journal of Ambulatory Care Management, 5, 1-13.

Fielding, R. (1987). Patients' beliefs regarding the causes of myocardial infarction: Implications for information giving and compliance. Patient Education and Counseling, 9, 121-134.

Frenn, M.D., Borgeson, D.S., Lee, H.A. & Simandl, G. (1989). Life-style changes in a cardiac rehabilitative program: The client perspective. The Journal of Cardiovascular Nursing, 3, 43-45.

Guzzetta, C.E. & Dossey, B.M. (1984). Cardiovascular Nursing: Bodymind Tapestry. Toronto: C. V. Mosby.

Haynes, R.B. (1979). Determinants of compliance: The disease and the mechanics of treatment. In Haynes, R.B., Taylor, D.W. and Sackett, D.L. (eds.). Compliance in health care, (pp. 49-62). Baltimore, MD: Johns Hopkins University Press.

Hedback, B. & Perk, J. (1987). 5-year results of a comprehensive rehabilitation programme after myocardial infarction. European Heart Journal, 8, 234-242.

Hertanu, J.S., Davis, L., Focseneanu, M. & Lahman, L. (1986). Cardiac rehabilitation exercise program: Outcome assessment. Archives of Physical Medicine and Rehabilitation, 67(7), 131-135.

Hilbert, G.A. (1985). Spouse support and myocardial infarction patient compliance. Nursing Research, 34, 217220.

Hinshaw, A.S. & Atwood, J.R. (1982). A patient satisfaction instrument: Precision by replication. Nursing Research, 31, 170-175.

Horlick, L., Cameron, R., Firor, W., Bhalerao, U. & Baltzan, R. (1984). The effects of education and group discussion in the post myocardial infarction patient. Journal of Psychosomatic Research, 28(6), 485-492.

Johannsen, W.J., Hellmuth, G.A. & Sorauf, T. (1966). On accepting medical recommendations: Experiences with patients in a cardiac classification unit. Archives of Environmental Health, 12, 63-69.

Kallio, V., Hamalainen, H., Hakkila, J. & Luurila, O.J. (1979). Reduction in sudden deaths by a multifactorial intervention programme after acute myocardial infarction. Lancet, 2, 1091-1094.

Kinnaird, L.S., Yoham, M.A.S. & Kieval, Y.M. (1982). Patient compliance in rehabilitative programs. Nursing Clinics of North America, 17(3), 523-533.

La Monica, E.L., Oberst, M.T., Madea, A.R. & Wolf, R.M. (1986). Development of a patient satisfaction scale. Research in Nursing and Health, 9, 43-50.

Lemke, R.W. (1987). Identifying consumer satisfaction through patient surveys. Health Progress, 68, 56-58.

Lilja, P. (1984). Recognizing the effect of social support on compliance to medical regimen in the elderly chronically ill. Home Healthcare Nurse, 2, 17-22.

Luckmann, J. & Sorensen, K.C. (1987). Medical-surgical nursing: A psychophysiologic approach. Toronto: W.B. Saunders.

MacKenzie, B.R. (1990). Rehabilitation of the patient with myocardial infarction. Medicine North America, 4(6), 638-644.

Marra, S., Paolillo, V., Spadaccini, F. & Angelino, P.F. (1985). Long-term follow-up after a controlled randomized post-myocardial infarction rehabilitation programme: Effects on morbidity and mortality. European Heart Journal, 6, 656-663.

Marston, M.V. (1970). Compliance with medical regimens. Nursing Research, 19, 317-321.

Matthews, P. & Hingson, R. (1977). Improving patient compliance. Medical Clinics of North America, 61, 879-889.

McCord, M.A. (1986). Compliance: Self-care or compromise? Topics in Clinical Nursing, 7, 1-8.

McMahon, M., Miller, P., Wikoff, R., Garrett, M.J. & Ringel, K. (1986). Life situations, health beliefs, and medical regimen adherence of patients with myocardial infarction. Heart and Lung, 15(1), 82-86.

Miller, L.A. (1981). Factors affecting compliance to a ten week cardiac rehabilitation program. Unpublished master's thesis, University of Oklahoma, Norman, OK.

Miller, P., Johnson, N.L., Garrett, M.J., Wikoff, R. & McMahon, M. (1982). Health beliefs of and adherence to the medical regimen by patients with ischemic heart disease. Heart and Lung, 11(4), 332-339.

Miller, P., McMahon, M., Garrett, M.J. & Ringel, K. (1989). A content analysis of life adjustments post infarction. Western Journal of Nursing Research, 11(5). 559-567.

Miller, P., Wikoff, R., McMahon, M., Garrett, M.J. & Ringel, K. (1985). Indicators of medical regimen adherence for myocardial infarction patients. Nursing Research, 34, 268-272.

Miller, P., Wikoff, R., McMahon, M., Garrett, M.J. & Ringel, K. (1988). Influence of a nursing intervention on regimen adherence and societal adjustments post myocardial infarction. Nursing Research, 37, 297-302.

Miller, P., Wikoff, R., McMahon, M., Garrett, M.J., Ringel, K., Collura, D., Siniscalchi, K., Sommer, S. & Welsh, N. (1989). Personal adjustments and regimen compliance 1 year after myocardial infarction. Heart and Lung, 18(4), 339-345.

Moughton, M. (1982). The patient: A partner in the health care process. Nursing Clinics of North America, 17, 467-479.

Murdaugh, C. (1990). Coronary artery disease in women. Journal of Cardiovascular Nursing, 4(4), 35-50.

Nieman, D.C., Butterworth, D.E. & Nieman, C.N. (1990). Nutrition. Dubuque, IA: W.C. Brown Publishers.

Oberman, A., Cleary, P., Larose, J.C., Hellerstein, H. K. & Naughton, J. (1982). Changes in risk factors among participants in a long-term exercise rehabilitation program. Advances in Cardiology, 31, 168-175.

Ott, C.R., Sivarajan, E.S. & Newton, K.M. (1983). A controlled randomized study of early cardiac rehabilitation: The sickness impact profile as an assessment tool. Heart and Lung, 12(1), 162-170.

Padrick, K.P. (1986). Compliance: Myths and motivators. Topics in Clinical Nursing, 7, 17-22.

Park, G. S. (1985). Health beliefs and rehabilitative exercise compliance in cardiac individuals. Unpublished master's thesis, University of Michigan, Ann Arbor, MI.

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

Prosser, G., Carson, P. & Phillips, R. (1985). Exercise after myocardial infarction: Long-term rehabilitation effects. Journal of Psychosomatic Research, 29, 535-540.

Pynn, M.F. (1986). A tool to measure patient compliance. Family and Community Health, 9, 79-83.

Radtke, K.L. (1989). Exercise compliance in cardiac rehabilitation. Rehabilitation Nursing, 14(4), 182-195.

Rahe, R.H., Ward, H.W. & Hayes, V. (1979). Brief group therapy in myocardial infarction rehabilitation: Three to four year follow-up of a controlled trial. Psychosomatic Medicine, 41, 229-241.

Rechnitzer, P.A., Cunningham, D.A., Andrew, G.M., Buck, C.W., Jones, N.L., Kavanagh, T., Oldridge, N.B., Parker, J.O., Shephard, R.J., Sutton, J.R. & Donner, A.P. (1983). Relation of exercise to the recurrence rate of myocardial infarction in men: Ontario exercise-heart collaborative study. The American Journal of Cardiology, 51, 65-69.

Risser, N. (1975). Development of an instrument to measure patient satisfaction with nurses and nursing care in primary care settings. Nursing Research, 24, 45-52.

Roman, O., Gutierrez, M., Luuksic, I., Chavez, E., Camuzzi, A.L., Villalon, E., Klenner, C. & Cumsille, F. (1983). Cardiac rehabilitation after acute myocardial infarction: 9-year controlled follow-up study. Cardiology, 70, 223-231.

Ronnevik, P.K. (1988). Predicting return to work after myocardial infarction: Significance of clinical data, exercise test variables and beta blocker therapy. Cardiology,, 75, 230-236.

Rost, K. (1989). The influence of patient participation on satisfaction and compliance. The Diabetes Educator, 15(2), 139-143.

Roviaro, S., Holmes, D.S. & Holmsten, R.D. (1981). Influence of a cardiac rehabilitation program on the cardiovascular, psychological and social functioning of cardiac patients. Journal of Behavioral Medicine, 7, 61-81.

Shaw, L.W. (1981). Effects of a prescribed supervised exercise program on mortality and cardiovascular morbidity in patients after a myocardial infarction: The national exercise and heart disease project. The American Journal of Cardiology, 48, 39-46.

Sivarajan, E.S., Newton, K.M., Almes, M.J., Kempf, T.M., Mansfield, L.W. & Bruce, R.A. (1983). Limited effects of outpatient teaching and counseling after myocardial infarction: A controlled study. Heart and Lung, 12(1), 65-73.

Squier, R.W. (1990). A model of empathic understanding and adherence to treatment regimens in practitioner-patient relationships. Social Sciences and Medicine, 30(3). 325-339.

Stanton, A.L. (1987). Determinants of adherence to medical regimens by hypertensive patients. Journal of Behavioral Medicine, 10(4), 377-394.

Steckel, S.B. (1982). Predicting, measuring, implementing and following up on patient compliance. Nursing Clinics of North America, 17, 491-498.

Stimson, G.V. (1974). Obeying doctor's orders: A view from the other side. Social Science and Medicine, 8, 97-103.

Tirrell, B.E. & Hart, L.K. (1980). The relationship of health beliefs and knowledge to exercise compliance in patients after coronary artery bypass. Heart and Lung, 9(3), 487-493.

Van Galen, P.A. (1981). Compliance in cardiac rehabilitation exercise programs. Unpublished master's thesis, Springfield College, Springfield, MA.

Vermeulen, A., Lie, K.I. & Durrer, D. (1983). Effects of cardiac rehabilitation after myocardial infarction: Changes in coronary risk factors and long-term prognosis. American Heart Journal, 105(5), 798-801.

Waggoner, D.M., Jackson, E.B. & Kern, D.E. (1981). Physician influence on patient compliance: A clinical trial. Annals of Emergency Medicine, 10, 348-352.

Wartman, S.A., Morlock, L.L., Malitz, F.E. & Palm, E.A. (1983). Patient understanding and satisfaction as predictors of compliance. Medical Care, 21(9), 886-891.

Weisman, C.S. & Nathanson, C.A. (1985). Professional satisfaction and client outcomes. Medical Care, 23, 1179-1192.

Wilhelmsen, L., Sanne, H., Elmfeldt, D., Grimby, G., Tibblin, G. & Wedel, H. (1975). A controlled trial of physical training after myocardial infarction: Effects on risk factors, nonfatal reinfarction and death. Preventive Medicine, 4, 491-508.

Wilson, P.K. (1988). Cardiac rehabilitation: Then and now. The Physician and Sports Medicine, 16(9), 75-80.

Windsor, R.A., Baranowski, T., Clark, N. & Cutter, G. (1984). Evaluation of health promotion and education programs. Palo Alto, CA: Mayfield Publishing.

Young, M.S. (1986). Strategies for improving compliance. Topics in Clinical Nursing, 7, 31-38.

Appendix A

Cardiac Lifestyle Questionnaire (CLQ)

PLEASE TRY TO ANSWER ALL OF THE QUESTIONS WHICH APPLY TO YOU. MOST OF THEM CAN BE ANSWERED BY CIRCLING THE NUMBER NEXT TO THE ANSWER YOU CHOOSE OR BY WRITING IN THE BLANK SPACE PROVIDED.

Part A: The following questions are about what you eat and drink.

1. What is the average number of eggs you eat in one week?
   NONE 1
   ONE OR TWO 2
   THREE OR FOUR ...3
   FIVE OR SIX 4
   SEVEN OR MORE ...5

2. How many times do you eat red meat (meat other than poultry) in one week?
   NONE 1
   ONE OR TWO 2
   THREE OR FOUR ...3
   FIVE OR SIX 4
   SEVEN OR MORE ...5

3. What is the average number of meals with bacon, ham or luncheon meat that you eat in one week?
   NONE 1
   ONE OR TWO 2
   THREE OR FOUR ...3
   FIVE OR SIX 4
   SEVEN OR MORE ...5

4. At the table, do you add salt to your food?
   NEVER 1
   RARELY 2
   SOMETIMES 3
   FREQUENTLY ...4
   ALWAYS 5

5. Is salt usually added in the cooking of the food you eat?
   NEVER 1
   RARELY 2
   SOMETIMES 3
   FREQUENTLY ...4
   ALWAYS 5

6. What kind of milk do you use?
   DON'T USE MILK ...1
   SKIM 2
   1% 3
   2% 4
   WHOLE 5

7. Do you drink alcoholic beverages on a daily basis?
   (Beer, Wine, Hard Liquor)
   NO .....1 [IF NO, SKIP TO QUESTION #9.]
   YES 2

8. How many drinks of alcohol do you drink in one day?
   (1 DRINK = 1 beer OR 1 glass wine OR 1 ounce liquor)
   LESS THAN TWO 1
   THREE OR FOUR 2
   FIVE OR SIX 3
   SEVEN OR MORE 4

9. Do you drink alcoholic beverages on an occasional basis?
   NO .....1 [IF NO, SKIP TO PART B.]
   YES 2

10. How many drinks of alcohol do you have when you drink occasionally?
    (1 DRINK = 1 beer OR 1 glass wine OR 1 ounce liquor)
    ONE OR TWO 1
    THREE OR FOUR 2
    FIVE OR SIX 3
    SEVEN OR MORE 4

Part B: The following are questions about stress and anxiety?

11. Do you ever experience stress or anxiety?
    NO .....1 [IF NO, SKIP TO PART C.]
    YES 2

12. On an average, when you experience stress, what would you say is your level of stress?
    VERY MILD 1
    MILD 2
    MODERATE 3
    SEVERE 4
    VERY SEVERE 5

13. When you are feeling anxious or under stress, do you
    KEEP IT INSIDE 1
    BECOME ANGRY AND SHOW YOUR ANGER BY HOLLERING OR RAISING YOUR VOICE? 2
    TALK IT OVER WITH SOMEONE CLOSE TO YOU? 3
    DO SOME TYPE OF RELAXATION TECHNIQUE? 4
    EXERCISE? 5
    SOMETHING ELSE? (Please specify)
    _____ 6

Part C: The next questions are about exercise.

14. Do you exercise?
    NO .....1 [IF NO, SKIP TO PART D.]
    YES 2

15. What is the average number of times per week that you exercise?

    _____

16. What type of exercise is this? _____

17. How many minutes do you spend exercising at one time?

    _____

18. What is your highest heart rate during exercise?

    _____

19. While you exercise, how hard do you feel you are exercising?
    LIGHT 1
    FAIRLY LIGHT 2
    SOMEWHAT HARD 3
    HARD 4

Part D: Let's move on to some questions about tobacco use.

20. Do you presently use tobacco?
    NO .....1 [IF NO, SKIP TO QUESTION #23.)
    YES 2

21. In an average day, how many
    CIGARETTES DO YOU SMOKE? ____
    CIGARILLOS DO YOU SMOKE? ____
    CIGARS DO YOU SMOKE? ____
    PIPES DO YOU SMOKE? _____

22. Do you chew tobacco?
    NO 1
    YES 2

23. Prior to your MI, did you ever use tobacco?
    NO .....1 [IF NO, SKIP TO PART E.]
    YES 2

24. How long ago did you last use tobacco? _____

25. How much tobacco did you use at that time? _____

Part E: These questions are about other health matters.

26. Do you have high blood pressure or hypertension?
    NO .....1 [IF NO, SKIP TO QUESTION #28.]
    YES 2

27. In the past 6 months, how often has your blood pressure been checked?
    NOT AT ALL 1
    ONCE IN THE PAST 6 MONTHS 2
    TWICE IN THE PAST 6 MONTHS 3
    ONCE EACH MONTH OR MORE FREQUENTLY ...4

28. Are you a diabetic or do you have high blood sugar?
    NO .....1 [If NO, SKIP TO QUESTION #33.]
    YES 2

29. How is your diabetes regulated or managed?
    DIET ONLY 1
    ORAL MEDICATION 2
    INSULIN 3
    DON'T KNOW 4

30. How do you test your blood sugar level?
    NEVER TEST IT 1
    GLUCOMETER 2
    CHEMSTRIP 3
    VISIT PHYSICIAN'S OFFICE 4
    OTHER (Please specify) _____.5

31. How many calories does your diabetic diet provide?
    _____ calories.

32. How often do you test your blood sugar level?
    ONCE OR MORE EACH DAY 1
    ONE TO SIX TIMES EACH WEEK 2
    TWO TO THREE TIMES EACH MONTH ...3
    ONCE A MONTH OR LESS 4

33. What is your height? _____

34. What is your present weight? _____

Appendix B

Program Satisfaction Questionnaire (PSQ)

PLEASE TRY TO ANSWER ALL OF THE QUESTIONS WHICH APPLY TO YOU. MOST OF THEM CAN BE ANSWERED BY CIRCLING THE NUMBER NEXT TO THE ANSWER YOU CHOOSE OR BY WRITING IN THE BLANK SPACE PROVIDED.

These questions are about the program.
(Please indicate how you feel about the following statements.)

1. I benefitted from the exercise component of this program.
   STRONGLY DISAGREE 1
   DISAGREE 2
   NO OPINION 3
   AGREE 4
   STRONGLY AGREE 5

2. The exercise component of the program was appropriate for me.
   STRONGLY DISAGREE 1
   DISAGREE 2
   NOT SURE 3
   AGREE 4
   STRONGLY AGREE 5

3. Overall, I was satisfied with the exercise component of this program.
   STRONGLY DISAGREE 1
   DISAGREE 2
   NOT SURE 3
   AGREE 4
   STRONGLY AGREE 5

4. I gained sufficient knowledge from the group education classes that were part of this program.
   STRONGLY DISAGREE 1
   DISAGREE 2
   NOT SURE 3
   AGREE 4
   STRONGLY AGREE 5

5. At the end of this program, I lacked information I felt I needed about my health.
   STRONGLY DISAGREE 1
   DISAGREE 2
   NOT SURE 3
   AGREE 4
   STRONGLY AGREE 5

6. The classes provided satisfactory answers to my questions about my health.
   STRONGLY DISAGREE 1
   DISAGREE 2
   NOT SURE 3
   AGREE 4
   STRONGLY AGREE 5

7. I received individualized counseling information regarding the taking of my prescribed medications.
   STRONGLY DISAGREE 1
   DISAGREE 2
   NOT SURE 3
   AGREE 4
   STRONGLY AGREE 5

8. The diet counseling I received was realistic.
   STRONGLY DISAGREE 1
   DISAGREE 2
   NOT SURE 3
   AGREE 4
   STRONGLY AGREE 5

9. I was satisfied with the amount of time the nurse spent with me individually.
   STRONGLY DISAGREE 1
   DISAGREE 2
   NOT SURE 3
   AGREE 4
   STRONGLY AGREE 5

10. In planning my rehabilitation goals, the nurse was more interested in telling me what to do than in listening to what I had to say.
    STRONGLY DISAGREE 1
    DISAGREE 2
    NOT SURE 3
    AGREE 4
    STRONGLY AGREE 5

11. The cardiac rehabilitation physician was readily approachable regarding my concerns and questions about my health.
    STRONGLY DISAGREE 1
    DISAGREE 2
    NOT SURE 3
    AGREE 4
    STRONGLY AGREE 5

12. The staff were interested in me as an individual.
    STRONGLY DISAGREE 1
    DISAGREE 2
    NOT SURE 3
    AGREE 4
    STRONGLY AGREE 5

13. I developed a positive relationship with my nurse.
    STRONGLY DISAGREE 1
    DISAGREE 2
    NOT SURE 3
    AGREE 4
    STRONGLY AGREE 5

14. The other staff were <u>not</u> approachable.
    STRONGLY DISAGREE 1
    DISAGREE 2
    NOT SURE 3
    AGREE 4
    STRONGLY AGREE 5

15. The cardiac rehabilitation physician spent too little time with me.
    STRONGLY DISAGREE 1
    DISAGREE 2
    NOT SURE 3
    AGREE 4
    STRONGLY AGREE 5

16. I was satisfied with the plan of care that was developed with me.
    STRONGLY DISAGREE 1
    DISAGREE 2
    NOT SURE 3
    AGREE 4
    STRONGLY AGREE 5

17. I was satisfied with the range of services (exercise, classes, individual counseling) offered.
    STRONGLY DISAGREE 1
    DISAGREE 2
    NOT SURE 3
    AGREE 4
    STRONGLY AGREE 5

18. I would recommend the program to others.
    STRONGLY DISAGREE 1
    DISAGREE 2
    NOT SURE 3
    AGREE 4
    STRONGLY AGREE 5

19. Overall, how do you feel about the program in which you participated?
    VERY UNSATISFIED 1
    UNSATISFIED 2
    NOT SURE 3
    SATISFIED 4
    VERY SATISFIED 5

20. What did you like <u>least</u> about the program?

    _____
    _____
    _____
    _____
    _____

21. What did you like <u>most</u> about the program?

    _____
    _____
    _____
    _____
    _____

Appendix C

Sociodemographic Information Questionnaire

PLEASE TRY TO ANSWER ALL OF THE QUESTIONS WHICH APPLY TO YOU. MOST OF THEM CAN BE ANSWERED BY CIRCLING THE NUMBER NEXT TO THE ANSWER YOU CHOOSE OR BY WRITING IN THE BLANK SPACE PROVIDED.

These are questions about you.

1. What year were you born? 19 _____

2. Are you
   MALE? 1
   FEMALE? 2

3. What is your marital status?
   MARRIED (and living with spouse 1
   LIVING WITH SOMEONE OF THE OPPOSITE SEX
   (but not married) 2
   SINGLE 3
   SEPARATED OR DIVORCED 4
   WIDOWED 5
   OTHER (specify)_____.6

4. Is there an individual in your life who provides you with emotional support?
   NO .....1 [IF NO, SKIP TO QUESTION #6.)
   YES 2

5. How satisfied are you with the level of support provided by this individual?
   VERY UNSATISFIED 1
   UNSATISFIED 2
   NOT SURE 3
   SATISFIED 4
   VERY SATISFIED 5

6. Which of the following is the highest level of education that you have completed?
   NO SCHOOLING 1
   ELEMENTARY (Grades 1-6) 2
   JUNIOR HIGH (Grades 7-9) 3
   HIGH SCHOOL (Grades 10-12).....4
   TRADE OR TECHNICAL INSTITUTE 5
   COMMUNITY COLLEGE 6
   UNIVERSITY 7

7. What is your present work status?
   WORKING FULL-TIME (greater than or equal to 38 hours per week).....1
   WORKING PART-TIME (less than 38 but greater than 16 hours per week) 2
   CASUAL (less than or equal to 16 hours per week) 3
   RETIRED 4
   NOT WORKING 5
   OTHER _____ 6

8. Which of these numbers comes closest to the total income for your household for this past year?
   UNDER $20,000 1
   $20,001-$40,000 2
   $40,001-$60,000 3
   $60,001-$80,000 4
   $80,001 and above ..5

9. What was your medical problem prior to your physician's suggestion that you attend this cardiac rehabilitation program?
   HEART ATTACK - myocardial infarction (MI).....1
   BYPASS SURGERY - coronary artery bypass surgery...2
   ANGINA.....3
   RISK FACTORS.....4
   DON'T KNOW.....5
   OTHER (Please specify) _____ 6

10. Have you experienced any angina since completion of the rehabilitation program?
    NO .....1 [IF NO, SKIP TO QUESTION #12.]
    YES 2

11. On an average, how often do you experience angina over the period of one week?
    ONCE 1
    TWO OR THREE TIMES 2
    FOUR OR FIVE TIMES 3
    SIX OR MORE TIMES 4

12. Have you experienced an MI or heart attack since completion of the rehabilitation program?
    NO 1
    YES 2

THANK YOU very much for answering these questions.