

PATIENTS' PERCEPTIONS
OF RISK FACTOR MODIFICATION
FOLLOWING AN ACUTE MYOCARDIAL INFARCTION

by

SHEILA MARGARET STEWART

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Department of NURSING

The University of British Columbia
Vancouver, Canada

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Abstract

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This qualitative study was designed to explore the experience of risk factor modification from the perspective of patients who had sustained an acute myocardial infarction.

Research has shown that modification of coronary risk factors including stopping smoking, reducing hypercholesterolemia and obesity, reducing hypertension, developing a habit of regular exercise, and developing methods to modify the coronary-prone behavior pattern reduces morbidity and mortality due to coronary heart disease. The literature reviewed indicated that cardiac rehabilitation programs are generally structured to provide the patient with information on coronary artery disease. However, it has been shown that information alone may not be enough to ensure that changes in behavior occur. Since there was a scarcity of information on measures to assist patients to modify their coronary risk factors, and as the literature indicated that the experience of risk factor modification had not been explored from patients' perspectives, a phenomenological design was therefore selected as the methodology for this study.

Data were collected through twelve in-depth interviews with six participants. A guide of semi-structured questions was used for the initial interview and additional questions were generated from the data themselves. The constant comparative method of data analysis enabled the researcher to construct an analytic framework which represented patients' perceptions of their experiences in risk factor modification.

In this framework, the central theme of patients' experiences was gaining mastery over their risk behavior(s). Gaining mastery occurred in three phases: searching for attribution, acknowledging risk, and attaining control. In attaining control, various cognitive and behavioral strategies were identified which led to a delineation of measures that could be provided to assist other patients in modifying their coronary risk factors. The findings demonstrated that a unique perspective of risk factor modification has been provided by

patients based on their own experiences. It was also shown that intervention, consisting of teaching, counseling, and support, is essential to each phase of this process.

The implications of this study focus on the importance of intervention in both in-hospital and out-patient cardiac rehabilitation programs. Intervention to assist patients to develop and use those skills that will enable them to gain a sense of mastery over their risk behaviors is essential if an initial or recurrent myocardial infarction is to be prevented. Implications for nursing practice, education, and research are outlined in light of the research findings.

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Chapter 1

INTRODUCTION

Background of the Study

Coronary artery disease (CAD) is the leading cause of death of adults of all ages in Canada and the United States today (Statistics Canada, 1985; American Heart Association, 1984). The development of coronary artery disease, as well as the prognosis after an acute myocardial infarction (M.I.), has been shown to be related to the presence of one or more coronary risk factors (Kannel, 1981a; Schlant, Forman, Stamler, & Canner, 1982). These risk factors include: a habit of cigarette smoking; poor dietary habits resulting in an elevated blood cholesterol level and obesity; hypertension; and psychosocial and behavioral factors, in particular the coronary-prone behavior pattern (Kannel, 1983). Modification of coronary risk factors has been shown to not only lower the mortality rate from CAD, but to also lower the rate of non-fatal reinfarctions (Kannel, Doyle, & Ostfeld, 1980; Schlant et al., 1982).

The literature reviewed for this study indicates that cardiac rehabilitation programs are generally structured to provide the patient (and family) with information on the development and management of coronary artery disease (Pollock, Willmore, & Fox, 1984; Raleigh & Odtohan, 1987; Steele & Ruzicki, 1987). Research has shown, however, that information alone may not be enough to ensure that changes in behavior occur (Hogue, 1979; Sackett et al., 1978; Sivarajan et al., 1983). It is believed that the patient must be assisted to take the information and change his or her behavior in the desired direction (Jenny, 1978).

The literature reviewed also indicates that in some studies, counseling has been combined with patient education in an attempt to assist patients to modify their coronary risk factors (Sivarajan et al., 1983). Various counseling strategies have been reported, such as follow-up contact after hospital discharge (Pozen et al., 1977) and assigned instruction and verbal encouragement (Meyer & Henderson, 1974). Yet, in the studies reviewed, counseling as an intervention has not been made explicit nor has its effectiveness in risk factor

modification been conclusively demonstrated. Hence, the impetus for this study arose from the need to identify specific measures that would assist patients with coronary artery disease to modify their coronary risk factors, thereby reducing their risk of an initial or recurrent myocardial infarction.

In order to identify these measures, it was felt necessary to view the experience of risk factor modification from the perspective of patients who were themselves in the process of modifying their coronary risk factors following an acute myocardial infarction. Any type of prescribed changes must be viewed from the patient's perspective before intervention can be judged to be effective (Hogue, 1979) and it was not evident from the literature reviewed that risk factor modification had been examined from the perspective of the individual with coronary artery disease. A phenomenological study was therefore appropriate, as this type of research attempts to describe human experience from the perspective of those who are living it (Oiler, 1982).

Significance of the Study

Kellerman (1983), in a report of the Second World Congress on Cardiac Rehabilitation, stated that "rehabilitation must be considered as an integral part of comprehensive coronary care and not as an isolated form of therapy". He further stated that "cardiac rehabilitation programs must include measures for risk factor modification, in addition to providing clinical measures and physical training " (p. 335).

In another classic article, Matheson, Selvester, and Rice (1975) pointed out that "it is not enough to return the disabled person to the lifestyle that was led before becoming disabled", rehabilitation must also "assist the individual in preventive lifestyle change that includes modification of coronary risk factors if an initial or recurrent myocardial infarction is to be prevented" (p. 366). Risk factor modification involves assisting individuals who have evidence of coronary artery disease to stop smoking, reduce serum cholesterol levels, attain and maintain a normal body weight, maintain a normal blood pressure, develop a habit of

regular exercise, and develop methods to modify their coronary-prone behavior pattern (Kannel, 1983).

It may be assumed by health professionals that certain measures, such as teaching or various types of counseling strategies, may be required to assist individuals in lifestyle change. However, if these measures are not found to be of assistance to those who are attempting to make such changes, or if certain measures are required and are not provided, successful changes in behavior may not occur. The literature reviewed did not indicate that the experience of risk factor modification had been explored from the patient's perspective, nor if patients had been asked their perceptions of what is needed to assist them to modify their coronary risk factors. It is the author's view that only when the experience is understood from the perspective of those who are attempting to make such lifestyle changes can health professionals provide intervention that may be effective. Clearly, knowledge of patients' perceptions of the experience of risk factor modification could be useful in designing cardiac rehabilitation programs that are more effective in assisting those with coronary artery disease to reduce their risk of an initial or recurrent myocardial infarction, as well as increasing the quality of life for those recovering from an acute M.I. (Strauss et al., 1984).

Statement of the Problem

Risk factor modification is an integral part of cardiac rehabilitation, yet the measures that might be effective in assisting patients to modify their coronary risk factors have not been identified from the patient's perspective. Therefore, a need exists to identify patients' perceptions of specific measures or intervention strategies that would assist individuals with coronary artery disease to stop smoking, consume a low-fat diet, maintain a normal body weight, maintain a normal blood pressure, develop a habit of regular exercise, and modify their coronary-prone behavior pattern.

Purpose of the Study

Within the context of this problem statement, the purposes of this study were to:

1. Explore the experience of risk factor modification from the perspective of individuals who were attempting to modify their coronary risk factors following an acute myocardial infarction;
2. Identify patients' perceptions of measures that would assist them to modify their coronary risk factors during the acute period of hospitalization and the immediate post-discharge period;
3. Develop theory that explains the concept of risk factor modification from the perspective of individuals who were in the process of recovering from an acute myocardial infarction; and
4. Identify specific intervention strategies that may enable cardiac rehabilitation programs to be more effective in assisting patients in risk factor modification following an acute myocardial infarction.

Definition of Terms

The following are definitions of terms that have particular relevance for this study:

Coronary artery disease (CAD): Luminal obstruction or narrowing of the coronary arteries that results in an inadequate blood supply to the heart muscle (Toth, 1984).

Coronary heart disease (CHD): A collective term for the specific ischemic diseases of the myocardium which ensue with the development of coronary artery disease. It is through the incidence of coronary heart disease that coronary artery disease is expressed and measured (Toth, 1984).

Coronary risk factors: Habits, traits, and abnormalities that have been shown to be associated with a sizeable (for example, 100 per cent or more) increase in susceptibility to coronary heart disease. In particular, they are associated with a greater proneness to premature onset of the disease, that is before age 65 (Stamler, 1973). Coronary risk factors

include:

- a) a habit of cigarette smoking: a consumption of more than ten (10) cigarettes on a daily basis (Gordon, Kannel, & McGee, 1974);
- b) hypertension: a diastolic blood pressure of 90 millimeters of mercury (mm. Hg) or above (Kaplan, 1983);
- c) hypercholesterolemia: an elevated serum cholesterol level above 250 milligrams per decilitre (mg/dl) (Stamler, 1973);
- d) obesity: a body mass index (BMI) greater than 25 as determined by kilograms of weight divided by meter of height squared (kg/m^2) (Bray, 1987);
- e) coronary-prone behavior pattern: "an action-emotion complex that is characterized by excesses of aggression, hurry, and competitiveness by individuals who are engaged in a relatively chronic struggle to obtain an unlimited number of poorly- defined things from their environment in the shortest time period" (Thoresen, Friedman, Powell, Gill, & Ulmer, 1985; Rosenman et al., 1964).

Myocardial infarction (MI): Death of the myocardial muscle as a result of prolonged ischemia or deprivation of oxygen demonstrated by changes in the electrocardiogram (ECG) and above normal cardiac enzyme values, specifically the creatinine phosphokinase (CPK) and the CPK isoenzymes (Burke, 1981).

Risk factor modification: Changes in those bodily characteristics or personal habits that have been shown to increase the chance of developing coronary artery disease (Levy & Feinleib, 1982). Modification of coronary risk factors includes:

- a) eliminating the habit of cigarette smoking;
- b) maintaining a diastolic blood pressure below 90 millimeters of mercury (mm. Hg) (Kaplan, 1983);
- c) adhering to a low-fat diet to maintain a blood cholesterol level below 250 milligrams per decilitre (mg/dl) (Stamler, 1973);

d) maintaining a body mass index (BMI) below 25 as determined by kilograms of weight divided by meter of height squared (kg/m^2) (Bray, 1987);

e) developing a habit of regular exercise as demonstrated by participating in one or more forms of physical activity, such as walking at a fast pace, jogging, swimming, or bicycling for 15-60 minutes for a minimum of three times per week (Underhill, 1982);

f) developing methods to modify the coronary-prone behavior pattern as demonstrated by self-reports of improved work patterns, life satisfaction, and reduced feelings of time urgency (Rath, Ward, & Hayes, 1979), as well as decreased muscle tension and reductions in cigarette smoking, cholesterol levels, systolic blood pressure and an increase in recreational physical activity (Roskies, Spevack, Surkis, Cohen, & Gilman (1978). Although current health literature holds that these are desirable outcomes for modifying the coronary-prone behavior pattern, it was not expected that participants in this study would necessarily achieve one or all of these outcomes. It was only anticipated that they would be able to recognize when a behavior pattern was coronary-prone and that change would be desirable in reducing their risk of a recurrent myocardial infarction.

Theoretical Framework

Symbolic interactionism, a theory about human behavior that was conceptualized by Mead (1934) and was further elaborated upon by Blumer (1969), was selected as the theoretical framework for this study. Symbolic interactionism has its roots in the philosophy of pragmatism, the commonplace meaning of which is practical (Lewis, 1976). Living things are viewed as attempting to make practical adjustments to their surroundings (Hewitt, 1984, p.8).

Mead is best known for his theory of the mind and selfhood. As reflected in Mind, Self, and Society (1934), he attempted to account for the origin and development of the human mind or intelligence. Mead believed that the mind or behavior are inescapably linked together; that the mind should not be considered as a separate entity of the body but as an

integral part of the behavior of a species (Hewitt, 1984, p. 9). Mead contended that the meaning of any subjective thought experience is grounded in the relation of the individual to the generalized other. "The whole process of thinking is the inner conversation between this generalized other and the individual" (Mead, 1938, p. 152, quoted in Lewis, 1976, p. 348).

Mead's philosophical viewpoints led him to recognize that society is a precondition for the possibility of "self" (Lewis, 1976, p. 348) and that the origins of the human mind lie in human society. He saw that humans exist in association with each other on the basis of "significant symbols" in the form of both gestures and language (Hewitt, 1984, p. 9). Furthermore, it is these symbols that give humans control over their own conduct and give them a form of consciousness; a consciousness of self. As well, humans have the capacity to be conscious of themselves and their own behavior, and to be conscious of the behavior of others.

According to Blumer (1969), symbolic interactionism rests on three basic premises:

- a) human beings act towards things on the basis of the meanings that these things have for them;
- b) the meaning of such things is derived from or arises out of, the process of social interaction that one has with one's fellows; and
- c) these meanings are handled in, and modified through, an interpretative process used by the person in dealing with the things he or she encounters (Blumer, 1969, p. 55).

Symbolic interactionism is grounded on several basic ideas or concepts that delineate how the world is viewed from the symbolic interactionist perspective. Blumer (1969) describes these concepts as: a) human society or human group life; b) social interaction; c) objects; d) human being as an acting organism; e) human action; and f) interlinkage of action. An appreciation of these concepts aids in understanding the experience of risk factor modification from the perspective of the individual who has sustained a myocardial infarction.

Human society or human group life. Human society is seen as consisting of people in

association, acting toward one another and engaging in social interaction (Blumer, 1969, p. 10). Although it is the individual who behaves, human behavior is socially coordinated (Hewitt, 1984, p. 11). An individual's actions are performed always with regard to the situations in which he or she has to act. Thus, it can be seen that the health professional's view of the readiness of an individual to modify his or her coronary risk factors must take into account the totality of forces that impinge upon the individual, such as family, work, economics, and values.

Social interaction. Social interaction is a process that forms human conduct. Human beings in interaction with one another take into account what each other is doing and about to do; they are forced to direct their own conduct and handle their own situations in terms of what they take into account from those with whom they are in association. Mead identified two levels of social interaction: non-symbolic interaction where another's gestures or actions are responded to without interpretation, for example, reflex responses; and symbolic interaction which involves interpreting or ascertaining the meaning of an action and acting on the basis of that interpretation (Blumer, 1969, p. 9). Individuals who are attempting to modify their coronary risk factors direct their line of conduct after taking into account their interpretations of the actions of those with whom they are in interaction.

Objects. Worlds that exist for human beings (and their groups) are composed of objects and these objects are the product of symbolic interaction (Blumer, 1969, p. 11). An object is anything that can be indicated or referred to. It may be physical, such as a cigarette, food, or the body; social, such as a wife or doctor; or abstract, such as health or consciousness. The meaning of an object for a person is determined by the defining process that takes place through social interaction with other persons. This meaning sets the way in which the person sees the object, the way in which he or she is prepared to act toward it, and the way in which he or she talks about it (Blumer, 1969, p. 11). Therefore, the meaning of a coronary risk factor, as well as the giving up of that risk factor, is determined by the social interaction that

takes place with those with whom he or she is in association.

Human being as an acting organism. The human being is seen as an acting organism that, rather than merely responding to the environment, confronts a world that he or she must interpret in order to act. The human being does this by virtue of possessing a "self" and because of this self, the human being is able to interact with itself; a form of self-communication. Self-interaction exists fundamentally as a process of making indications to oneself: to be conscious or aware of any object is equivalent to the individual indicating the object to oneself and considering its relevance or importance to his or her line of action (Blumer, 1969, p. 13).

Human action. Human action is formed through a process of self-interaction (Blumer, 1969, p. 64). Action consists of taking into account the various things that are noted (for example, wishes, goals, available means for achievement, anticipated actions of others) and forging a line of conduct on the basis of what has been interpreted (Blumer, 1969, p. 16). The individual has to cope with the situations in which he or she is called upon to act, ascertain the meaning of the actions of others and map out his or her line of action in light of such interpretations. To understand the actions of an individual, one must get inside the "defining process" of the actor (Blumer, 1969, p. 16).

Interlinkage of action. Human beings are seen as existing in human group life and this group life consists of, and exists in, the fitting of the lines of action by the members of the group to each other. Joint action is made up of the different acts of the diverse participants of society, and is different from any one of them and from their aggregation (Blumer, 1969, p. 17). Blumer (1969) notes that "in most situations people act toward one another on the basis of preestablished meanings of what is expected, their understanding of how to act, and of how other people will act" (p. 17). Accordingly, each participant is able to guide his or her own behavior by such meanings. These preestablished meanings result in an established order of living; an order resolvable into adherence to sets of rules, norms, values, and

sanctions that specify how they are to act in their different situations (Blumer, 1969, p. 18).

It can therefore be seen that symbolic interactionism provides an explanation of the nature of the human mind that takes into account the inner experience of intelligence, as well as the social nature of human life (Hewitt, 1984, p. 11). Symbolic interactionism aids in determining how the world is viewed from the perspective of the behaving person, how behavior is organized and controlled by that person, and how a person coordinates his or her behavior with that of others (Hewitt, 1984, p. 60). As such, it provided an appropriate framework for the current study which sought to gain an understanding of the experience of risk factor modification.

Methodological Perspective

The literature reviewed indicated that there was a scarcity of information on the phenomenon of risk factor modification and of measures to assist patients in modifying their coronary risk factors following an acute myocardial infarction. In such a situation, when the research question pertains to understanding or describing a particular phenomenon about which little is known, qualitative research is an appropriate approach. The focus of qualitative research is on identifying the qualitative features or characteristics that make a phenomenon what it is (Field and Morse, 1985). When the research question pertains to "describing a phenomenon from the emic perspective", that is, the perspective of the individual who is experiencing a given reality, phenomenology is the method of choice (Field & Morse, 1985).

Phenomenological method. Phenomenology involves an identification of a phenomenon and an investigation of it in a meaningful way; a way that descriptively identifies what the phenomenon is. The minimum condition for the study of anything is that it be present to someone's consciousness. Reality is subjective and is dependent upon the perspective of the individual who is experiencing it (Oiler, 1982), therefore human experience as it is lived is accessible only through perception (Merleau-Ponty, 1962). The task of phenomenology is to

recognize lived experience as it is presented in perception (Merleau-Ponty, 1956).

Perception is defined as "the process, function, or capability whereby the surrounding world emerges as meaningful" (McConville, 1978). It is on the foundation of perception that one's first awareness of being in the world arises and from which social acts are constructed (Merleau-Ponty, 1964). Perception implies or assumes a highly defined, well-articulated conscious experience of its object. As such, phenomenological research is always contingent upon the perspective provided by experience and presented in perception (Merleau-Ponty, 1964).

The phenomenologist begins with a naive description of a situation, attempts to sketch out more of a clear picture of perception as it is presented in consciousness (McConville, 1978), and then analyzes what has been described (Giorgi, 1975). The researcher begins by contacting the phenomenon as people experience it, first gathering from subjects descriptions of what their experience is like. These descriptive data are collected by posing an appropriate set of questions to the subjects which would elicit these descriptive data. Phenomenology depends almost exclusively upon the power of language for communication and therefore description is its main technique (Giorgi, 1975). Description or language is access to the world of the describer. The task of the researcher is to let the world of the describer, or the situation as it exists for the subject, reveal itself through descriptions in an unbiased way. The success of phenomenological research depends on the extent to which the research questions tap the subjects' experiences of the phenomenon (Giorgi, 1975). Thus, it is the meaning of the experience as it exists for an individual these descriptions yield. In describing a phenomenon, concrete descriptions in the form of verbatim statements, thoughts, and action patterns are studied critically to discover patterns and themes within particular life settings (Giorgi, 1975).

The value of phenomenology is the direct access it provides to meaning by interrogating the qualitative aspects of a phenomenon (Giorgi, 1975). Phenomenology enables the nurse

researcher to describe phenomena, and the concepts that nursing is concerned with, by going to people in the circumstances where they are involved in their world (Oiler, 1982). The value of the phenomenological approach is that it enables nursing to explore on a conceptual level the richness of human experience that is so much a part of nursing practice (Wilson, 1985).

Assumptions

Individuals who have evidence of coronary artery disease are encouraged by health professionals to make certain lifestyle changes in order to reduce the risk of an initial or recurrent myocardial infarction. These changes may involve stopping smoking, consuming a diet low in saturated fats, attaining and maintaining a normal body weight, maintaining a normal blood pressure, developing a habit of regular exercise, and developing methods to modify their coronary-prone behavior pattern. In this research study it was assumed that patients who have sustained a myocardial infarction have their own perceptions of the experience of risk factor modification or what it is like to modify their coronary risk factors. It was also assumed that they had perceptions of the kinds of measures that would be of assistance to them as they attempted to make these lifestyle changes. Finally, it was assumed that they would be willing to share these perceptions with the nurse researcher.

Limitations

The emphasis of this study was on qualitative data: to identify the features or characteristics of the phenomenon of risk factor modification from the perspective of individuals who had incurred an acute myocardial infarction. This included documenting and interpreting as fully as possible the total experience from the patients' points of view or frames of reference. Data collected, and therefore the results of this study, are limited to the perceptions of the sample selected. In turn, the sample selected was limited by those individuals who were recovering from an acute myocardial infarction in a large metropolitan hospital in Western Canada at the time of data collection and the time constraints of this

study.

Summary

Risk factor modification is an integral part of cardiac rehabilitation. The literature reviewed indicated that various types of teaching and counseling approaches have been provided to assist patients with coronary artery disease to modify their coronary risk factors. Yet the effectiveness of these types of interventions have not been conclusively demonstrated. In addition, there was no indication in the literature reviewed that the experience of risk factor modification had been explored from the patients' perspective, nor if patients had been asked their perceptions of what is needed to assist them to stop smoking, adhere to a low-fat diet, attain and maintain a normal body weight, maintain a normal blood pressure, develop a habit of regular exercise, or modify their coronary-prone behavior pattern. A phenomenological study was therefore designed as this type of research attempts to describe human experience from the perspective of those who are living it (Oiler, 1982).

Organization of the Report

This report communicates the findings of a qualitative nursing research study which was designed to examine the experience of risk factor modification from the perspective of individuals who had sustained an acute myocardial infarction. This first chapter has been an introduction to this study. In the following chapters, Chapter 2 provides a review of selected literature on coronary risk factors, current intervention in cardiac rehabilitation, and studies that have been examined perceptions of patients with coronary heart disease. The third chapter describes the methodology of the research and Chapter 4 reports the findings, in particular the analytic framework that was developed as a result of patients' descriptive accounts. Chapter 5 discusses the findings in relation to the literature reviewed and other research findings. Finally, Chapter 6 summarizes the study results and concludes with implications for nursing practice, education, and future research.

Chapter 2

REVIEW OF THE LITERATURE

The literature reviewed for this study revealed an abundance of information on coronary risk factors and cardiac rehabilitation, but a scarcity of information on the experience of risk factor modification following an acute myocardial infarction (MI) and measures to assist patients to modify their coronary risk factors. The purpose of this chapter is to provide a background to the importance of risk factor modification in a cardiac rehabilitation program, outline interventions that are currently employed in in-hospital cardiac rehabilitation programs, and demonstrate that patients need more than information if they are to be able to modify their coronary risk factors. In addition, studies in which authors report on perceptions of patients with coronary heart disease (CHD) will be reviewed in order to demonstrate beginning evidence that patients' perceptions are significant factors in designing therapeutic regimens that assist patients in attaining an optimal level of health.

Significance of Risk Factor Modification

Coronary artery disease (CAD), manifested as an acute myocardial infarction, has been recognized as the leading cause of death and disability of adults of all ages in Canada and the United States today (Statistics Canada, 1985; American Heart Association, 1984). Of those who survive an initial myocardial infarction, the risk of sudden cardiac death or a recurrent myocardial infarction is high, particularly in the first six months to one year (Kannel, Sorlie, & McNamara, 1979). In addition, those who survive face personal and psychologic hardships as changes in lifestyle, self-concept, and work and family roles occur (Toth, 1984). In order to assist these individuals (and their families) to adjust to this sudden change in health status and to regain an optimal level of functioning, cardiac rehabilitation programs have been developed. Cardiac rehabilitation may be defined as a process of assisting the individual with identified coronary artery disease to attain and maintain an optimal level of physical and psychosocial functioning (Hoepfel, 1982).

It has been pointed out that "rehabilitation is more than restoring a disabled person to the life that was led before becoming disabled" (Matheson, Rice, & Selvester, 1975, p. 366). An optimal level of functioning can only be attained when those factors that are known to contribute to the progression of coronary artery disease are reduced or eliminated. If an initial or recurrent myocardial infarction is to be prevented, rehabilitaton must assist the individual in preventive lifestyle change that includes modification of coronary risk factors. Risk factor modification includes assisting patients to: stop cigarette smoking; consume a low-fat diet; maintain a normal body weight and blood pressure; develop a habit of physical activity; and modify the coronary-prone behavior pattern (Canadian Heart Foundation, 1983).

The Second World Congress on Cardiac Rehabilitation, held in Jerusalem in 1983, further declared that "rehabilitation must be considered as an integral part of comprehensive coronary care" and that "rehabilitation requires, in addition to physical training, psychological guidance, and clinical and therapeutic measures, measures that will assist the cardiac patient in risk factor modification" (Kellerman, 1983, p. 335).

Risk factor modification may be regarded as a reduction of morbidity and mortality of coronary heart disease through the elimination or control of those factors that have been linked to the development of coronary heart disease (Intersociety Commission for Heart Disease Resources, 1970). The most effective approach in controlling the incidence of coronary heart disease is through primary prevention, reducing first clinical episodes by preventing severe atherosclerosis and its complications (Stamler, 1973). However, many risk factors are also amenable to secondary prevention through techniques to prevent or postpone the appearance or recurrence of manifestations of a disease that has already developed (Kaplan & Stamler, 1983). For cardiac rehabilitation to achieve its goal of assisting individuals to attain an optimal level of functioning that includes reducing the risk of an initial or recurrent myocardial infarction, measures must be provided that will assist the

patient in risk factor modification.

Coronary Risk Factors

Coronary risk factors have been defined as "those traits, habits, and abnormalities that are associated with a sizeable increase in susceptibility to coronary artery disease. In particular, they are associated with a greater proneness to premature onset of coronary heart disease before age 65" (Stamler, 1973, p. 9). Coronary risk factors have been identified through interpretation of data from epidemiologic studies, such as the Framingham Study (Dawber, Meadors, & Moore, 1951) and the National Cooperative Pooling Project (Intersociety Commission for Heart Disease Resources, 1970). Observations of relationships between certain characteristics and the development of coronary artery disease have been identified through these studies.

The Framingham Study began in 1948, followed 5210 men and women for twenty years, and identified seven characteristics that contributed to the development of coronary artery disease. These were: age, gender, cigarette smoking, hypercholesterolemia (an elevated blood cholesterol level above 250 milligrams per decilitre [mg/dl]), hypertension (an elevated diastolic blood pressure above 90 millimeters of mercury [mm/Hg.]), left ventricular hypertrophy on electrocardiogram, and glucose intolerance (Dawber, Meadors, & Moore, 1951). Cigarette smoking, hypercholesterolemia, and hypertension were termed major risk factors as they were found to have a statistically significant relationship with the development of coronary artery disease. It has also been found that when two or more risk factors are present in combination there is an exponential risk, or a more than additive risk, of coronary heart disease (Kannel, 1983).

Results of the Framingham Study were combined with data from seven other longitudinal studies to form the National Cooperative Pooling Project. The Pooling Project confirmed the findings of the Framingham Study and, in addition, found that there were other secondary risk factors that further contributed to the risk of coronary artery disease. These secondary

risk factors included: obesity, diabetes mellitus, a sedentary lifestyle, and personality-behavior patterns, in particular the coronary-prone behavior pattern (Intersociety Commission for Heart Disease Resources, 1970).

A review panel, established to investigate the relationship between the coronary-prone behavior pattern and premature atherosclerotic disease, concluded that the risk associated with it is of the same order of magnitude as the relative risk associated with the three major coronary risk factors (Review Panel on Coronary-Prone Behavior and Coronary Heart Disease, 1981). Furthermore, this risk is independent of, and additive to, the presence of other coronary risk factors.

It may be concluded then that there are four major risk factors associated with the development of premature coronary heart disease: cigarette smoking, hypercholesterolemia, hypertension, and the coronary-prone behavior pattern. Risk is increased by a more than additive effect in the presence of secondary risk factors including: obesity, diabetes mellitus, and a sedentary lifestyle. These risk factors may be avoided, reduced, or eliminated by changes in lifestyle, plus where necessary, long-term pharmacologic treatment for hypertension and diabetes mellitus. (Canadian Heart Foundation, 1984)

Secondary Prevention of Coronary Heart Disease

Almost half of all male coronary deaths arise from those with prior overt coronary heart disease (Gordon & Kannel, 1971). Furthermore, following a first myocardial infarction the risk of an early death or reinfarction is high, especially in women and those with evidence of extensive myocardial damage (Kannel, Sorlie, & McNamara, 1979). Since high risk groups can be identified by the presence and number of major coronary risk factors (Kannel, 1983; Kannel, Doyle, & Ostfeld, 1980; Schlant, Forman, Stamler, & Canner, 1982), in addition to the state of the coronary vasculature, secondary prevention of coronary heart disease is an urgent necessity.

Many research studies have evaluated the effects of modifying coronary risk factors on

the incidence of coronary heart disease mortality and reinfarction. The following is a review of selected studies that have examined the long-term effects of eliminating cigarette smoking, modifying dietary habits, controlling hypertension, maintaining a normal body weight, developing a habit of physical activity, and modifying the coronary-prone behavior pattern in patients with manifest coronary heart disease:

Cigarette Smoking. In a review of the role of cigarette smoking on coronary heart disease, Kannel (1981b) reports that among coronary patients under age 65 years, those who stopped smoking had a substantially lower risk of CHD mortality than those who continued to smoke. Others (Wilhelmsson, Elmfeldt, Vedin, Tibblin, & Wilhelmsen, 1975) have reported that patients who stopped smoking after their myocardial infarction had only half the rate of non-fatal recurrences and half the cardiovascular mortality rate of those who continued to smoke. It has also been found that patients with angina who stopped smoking experienced fewer angina episodes and could perform more exercise before developing angina than those who continued to smoke (Aronow, 1980).

Hypercholesterolemia. Hypercholesterolemia is defined as a serum cholesterol level above 250 milligrams per decilitre (mg/dl) (Stamler, 1973). A central component to primary and secondary prevention of coronary heart disease is nutritional guidance to prevent or correct hypercholesterolemia by consuming a diet low in saturated fat and cholesterol (Gotto & Wittels, 1983). Few randomized trials have been conducted in secondary prevention where the intervention was by dietary means alone and most of these have been of very small sample size (Gotto & Wittels, 1983). In one trial, the Oslo Diet Heart Study (Leren, 1970), 412 individuals were randomized to either an intervention group prescribed a cholesterol-lowering diet or to a control group that made no dietary changes. A mean reduction in serum cholesterol levels of 17.6 per cent in the diet group was shown at the end of five years as compared to 3.7 per cent in the control group. As well, the combined incidence of both fatal and nonfatal reinfarctions was significantly reduced in the diet group.

Another randomized, controlled trial, the Los Angeles Veterans Administration Study (Dayton et al., 1968), involved 846 men with a median age of 65.5 years, of which a sizeable portion had evidence of clinical atherosclerotic disease. In this study the experimental group consumed a diet that was sizably reduced in saturated fat and cholesterol and after 8.5 years of follow-up, the overall incidence of nonfatal and fatal atherosclerotic events was significantly lower, by 31.3 per cent in the experimental group as compared with the control group who made no dietary changes.

It should be noted that most clinical trials in secondary prevention of CHD related to hypercholesterolemia have been undertaken to determine the long-term effects of lipid-lowering agents on CHD morbidity and mortality. In a review of these trials by May and colleagues (1982), the overall impression was that lipid-lowering drugs do not prolong life in the post-infarction population and may even increase the risk of non-fatal myocardial infarctions and other modes of death, such as venous thromboembolism and cancer (May, Eberlein, Furberg, Passamani, & DeMets, 1982, p.339).

Hypertension. Hypertension may be defined as a diastolic blood pressure above 90 millimeters of mercury (mm. Hg) (Kaplan, 1983). One of the largest controlled trials of hypertension was the Hypertension Detection and Follow-up Program (1982) where over 7800 patients with a diastolic blood pressure above 90 millimeters of mercury (mm Hg.) were enrolled. At the end of five years, in the group that received a stepped-care drug regimen to bring the diastolic blood pressure to below the goal level of 90 mm. Hg., there were 20 per cent fewer deaths and 13 per cent less mortality from noncardiovascular causes as compared to those who were referred to usual sources of medical care. This large difference in overall mortality was highly significant and caused the Joint National Committee (1980) to recommend that the goal of antihypertensive therapy is to achieve and maintain a diastolic blood pressure at less than 90 mm Hg.

Although clinical trials have documented the benefits of reducing diastolic blood pressure

Kaplan (1983) points out that the best way to achieve this goal remains uncertain. Most therapies depend on antihypertensive drugs but all have serious side effects (Kaplan, 1983). Some increase other cardiovascular risks by raising total cholesterol levels (Grimm et al., 1981) or by lowering the protective HDL cholesterol level (Leren, 1970). A variety of nondrug therapies have been shown to reduce hypertension and may provide even more protection (Kaplan, 1983, p. 68).

Nondrug therapies, such as loss of excess weight (Tuck, Sowers, Dornfeld, Kledzik, & Maxwell, 1981), reduction of dietary sodium intake (MacGregor et al., 1982), and a variety of behavioral techniques (Sadler, 1984) have been shown to reduce hypertension. In another study, Stamler and others (1980) showed that obese hypertensive men who followed a program of diet plus exercise for five years had a reduction in diastolic blood pressure to below 90 mm. Hg. (Stamler et al., 1980). Other techniques that have been used include progressive relaxation (Wadden & de la Torre, 1980); meditation (Benson, 1977); biofeedback, hypnosis, and yoga (Schwartz et al., 1979). It has been suggested that in treating hypertension these nondrug therapies might be tried for a six to twelve month period before initiating antihypertensive drugs (Kaplan, 1983, p. 70).

Obesity. Obesity is defined as a body mass index (BMI) greater than 25 as determined by dividing body weight (kilograms) by the meter of height squared (Bray, 1987). The desirable range for body weight is between 20 and 25. Weight reduction has been shown to favorably modify cholesterol levels, systolic and diastolic blood pressure, glucose tolerance, and other metabolic factors that are associated with atherosclerotic disease (Kannel, 1981a). It has also been shown that CHD morbidity and mortality is reduced following reductions in body weight (Gotto, Scott, & Foreyt, 1984).

Physical Inactivity. Coronary heart disease mortality has been shown to be inversely related to level of physical activity (Kannel, 1983, p. 26). In a number of trials different mortality rates have been demonstrated among survivors of myocardial infarction who were

randomized to an exercise program or to a control group (Kallio, Hamalainen, Hakkila, & Luurila, 1979; Palatsi, 1976; Rechnitzer et al., 1975; Shaw, 1981). None of the trials were able to show a substantially significant difference in total mortality between the exercise and control groups; however, all of the trials showed a positive trend favoring the exercise group. In addition, the study by Palatsi (1976) showed a nonsignificant reduction in the incidence of reinfarction in the exercise group. The number of patients enrolled in these studies varied between 298 and 751 with the mean age of 50 years, and the average length of follow-up was from one to four years. These studies were based on supervised training programs that consisted of walking, jogging, and stationary cycling, two to four sessions per week and lasting twenty to sixty minutes each and, in addition, participants were expected to exercise on their own twice weekly. In the control groups, patients received regular medical care with no special emphasis on exercise. A major shortcoming of these studies was the small sample populations due to poor adherence to the exercise program, however these studies demonstrate the substantial benefit from supervised exercise for survivors of myocardial infarction and that there is no additional hazard from supervised exercise for post-infarction patients (May, Eberlein, Furberg, Passamani, & DeMets, 1982).

Multiple studies have also demonstrated that properly designed physical training programs lessen the metabolic and circulatory demands for most coronary patients, even those with impaired left ventricular function (Clausen, 1976; Conn, Williams, & Wallace, 1982). Low-level exercise also appears sufficient to allay anxiety and prevent the onset and progression of depression, two major disorders encountered in patients with CHD (Hackett & Cassem, 1978). Furthermore, exercise has been shown to be of value in retarding the development of atherosclerosis by aiding in the reduction of other coronary risk factors. These indirect benefits of exercise include:

- a) reduction of body weight (Hartung, Squires, & Gotto, 1981):
- b) reduction of serum triglyceride levels and increasing high-density lipoproteins (LDL)

which has been shown to exert a protective influence on the development of coronary heart disease (Ballantyne, Clark, Simpson, & Ballantyne, 1982; Erkelens, Albers, Hazzard, Frederick, & Bierman, 1979; Hartung, Squires, & Gotto, 1981);

c) improving glucose tolerance (Pedersen, Beck-Nielsen, & Heding, 1980);

d) lowering resting diastolic blood pressure (Haskell, 1979);

e) modifying coronary-prone behavior pattern (Blumenthal, Williams, Williams, & Wallace, 1980);

f) decreasing platelet adhesiveness (Williams, Logue, & Lewis, 1980);

g) lessening adrenergic response to stress (Haskell, 1979).

In addition, any or all of these metabolic changes may counter the adverse effects of cigarette smoking (Oberman, Cleary, LaRosa, Hallerstein, & Naughton, 1983).

Coronary-prone behavior pattern. Finally, Thoreson, Telch, and Eagleston (1981) and Friedman and others (1986) have shown that rates of reinfarction and death were lower in post-MI patients who were able to modify their coronary-prone behavior pattern when compared to a control group who did not receive intervention to modify this behavior pattern. In these studies intervention consisted of behavioral counseling that included instruction in progressive muscle relaxation, behavior alteration techniques, changes in certain belief systems, and restructuring of various environmental situations (Friedman et al., 1986). Modification of the coronary-prone behavior pattern has also been shown to be accompanied by reductions in other risk factors, such as serum cholesterol and diastolic and systolic blood pressure (Roskies, Spevack, & Surkis, 1978; Suinn & Bloom 1978). It has been found that the coronary-prone behavior pattern is difficult to change but that people who experience angina or have survived a myocardial infarction are often better motivated than healthy individuals to modify this risk factor. Hence, efforts to modify this behavior pattern may be more effective in secondary rather than in primary prevention (Jenkins, 1983).

It can therefore be concluded that risk factor modification is an integral part of any

comprehensive cardiac rehabilitation program where the goal is to assist individuals with coronary artery disease to reduce their risk of an initial or recurrent myocardial infarction. Risk factor modification consists of measures to assist patients to: stop smoking; control hypercholesterolemia; maintain a diastolic blood pressure below 90 mm. Hg.; maintain a body mass index below 25 (kilograms divided by height squared); develop a habit of regular physical activity; and modify the coronary-prone behavior pattern. It remains uncertain, however, as to the best ways to achieve these goals.

Current Approaches to Cardiac Rehabilitation Programs

The literature reviewed has revealed that cardiac rehabilitation programs are generally structured to provide patients with information on coronary heart disease and its management (Mills, Barnes, Rodell, & Terry, 1985; Raleigh & Odtohan, 1987; Steele & Ruzicki, 1987; Wenger, 1979). Education is essential as patients need information about their condition, treatment, and recuperation for them to be able to participate in their own care (Wilson-Barnett & Osborne, 1983). However, the effectiveness of teaching programs in increasing patient's knowledge of coronary heart disease has not been conclusively demonstrated.

Effect of Patient Education on Knowledge

Several studies have reported an increase in patients' knowledge of coronary heart disease with such approaches as: self-instructional learning packages (Gregor, 1981); individual instruction supplemented with printed material (Bille, 1977; Pozen et al., 1977); lecture format and video-tapes (Bracken, Bracken, & Laundry, 1977). Similar approaches to patient education were provided in other studies (Rahe, Scalzi, & Shine, 1975; Scalzi, Burke, & Greenland, 1980; White, Lemon, & Albanese, 1980) but an increase in knowledge of coronary heart disease as a result of an in-hospital teaching program was not demonstrated.

Scalzi and colleagues (1980) were unable to show significant differences in teaching

evaluation scores between an experimental group who participated in an organized in-hospital educational program, and a control group who did not participate in this program but were referred to members of the health care team (for example, nurse, physician, dietitian) for any questions they may have had. The educational program consisted of printed educational materials supplemented by cassette audiotapes, as well as individual instruction by the nurse investigator. The authors concluded that "retention of information during the acute phase of illness is very limited" (p. 851).

In another study (White, Lemon, and Albanese, 1980), a team approach to education for patients hospitalized with serious cardiovascular disease did not result in substantial increases in patients' knowledge of cardiovascular disease. It was questioned whether "anxiety associated with hospitalization for cardiac surgery or other acute life-threatening events may render ineffective educational efforts undertaken at times of physical and psychological stress" (p. 192).

Finally, patients in a study by Rahe, Scalzi, and Shine (1975) demonstrated significant learning only in regard to expectations about their return home, and not in the areas concerning the nature of the disease, diet, smoking, and resumption of physical activity. More learning appeared to occur immediately prior to hospital discharge and at this time discussions were centered on the patient's upcoming return home. It was shown that teaching provided during the initial period of hospitalization, usually the fourth to seventh day, was not effective in promoting learning as "at this time patients are too preoccupied with issues of survival and/or family and work crises related to the illness to concentrate on teaching" (p. 761).

It is evident that many approaches to teaching may be used to provide knowledge of coronary heart disease but that retention of information during hospitalization may be limited due to the effects of physical and psychological stress associated with an acute life-threatening event. Without adequate knowledge, it is this author's belief that patients

cannot be expected to make the kinds of lifestyle changes that may enable them to reduce their risk of a recurrent myocardial infarction and possible death. It is important to point out, however, that an inability to demonstrate a positive correlation between teaching and knowledge does not negate the worth of patient education. As Scalzi and colleagues (1980) suggest, "an inpatient educational program creates an atmosphere that encourages patients and their families to ask questions, and provides specific information which appears to reduce anxiety" (p. 852).

It must also be noted that the goal of patient teaching in cardiac rehabilitation is not merely to provide information; rather it is "to bring about an attitudinal or behavioral change which will benefit the person's health status" (Bell & Whiting, 1981). The goal is to assist patients in risk factor modification; to change those behaviors that place them at risk for an initial or recurrent myocardial infarction. Few studies have examined the effect of patient teaching on the behavior of patients with coronary heart disease.

Effect of Patient Education on Behavior

The literature reviewed indicated that not only have few studies been designed to evaluate the effectiveness of an in-hospital patient education program on the risk behavior of patients with coronary heart disease, some of these studies have not had reliable measures of behavior. For example, one study by Mills and colleagues (1985) was designed to assess patients' behavior in five specific areas: medications, appropriate responses to specific symptoms, exercise, dietary habits, and management of stress by means of a post-discharge questionnaire. Unfortunately a later analysis of the questionnaire indicated that these five items lacked variance and thus were poor predictors of overall behavior and had to be eliminated from study results. In other studies, measures of behavior changes in the areas of coronary risk factors were based on the researcher's estimation of the patient's willingness to adhere to the medical regimen (Woodward & Gauthier, 1972) or on patients' perceptions of how they had carried out the doctors' orders (Bille, 1977). In neither study was an attempt

made to validate these estimates or self-reports with patients' physicians.

In other studies where researchers have systematically observed, counted, and evaluated patients' behavior, researchers have generally found that patient education has little effect on behavior (Leventhal & Cleary, 1978). In one such study, Steele and Ruzicki (1987) found that during hospitalization patients learned priority information that was necessary for safe and adequate functioning after discharge but there was limited knowledge gain in areas that required long-term behavioral changes, such as stress modification and diet. It was also found in an evaluation questionnaire of behavioral changes after hospital discharge that subjects did not respond to questions regarding smoking and hypertension. It was believed that this may have been possibly due to a desire to conceal nonadherence. Steele and Ruzicki (1987) suggest that " hospital educational experiences are not sufficient to induce long-term behavioral changes and that education for changes in coronary risk factors, beyond simple introduction, should not be undertaken by in-patient programs but might be more successful if followed up and reinforced in outpatient settings that are more conducive to patient learning and more relevant to patient experience" (p. 310).

In another study, Sackett and others (1978) found that men with hypertension who received mastery learning about their disease were no more likely to take their medications and keep their blood pressure under control than those who did not receive this education. It was concluded that "health knowledge by itself is insufficient to alter behavior" (p.1207).

These studies clearly illustrate that providing information alone is not enough to ensure that changes in behavior in the areas of coronary risk factors will occur. Jenny (1978) points out that "telling is not teaching; telling simply enlarges one's informational base. Effective teaching bridges the gap between health information and health practices and results in altering the patient's behavior in the desired direction" (p. 341). Leventhal and Cleary (1979) also indicate that "something else in addition to information seems important for behavior change to occur" (p. 299). In an attempt to find this "something else", that might

assist patients in risk factor modification following an acute myocardial infarction, a wide variety of counseling techniques have been combined with patient education .

Effect of Teaching and Counseling on Behavior

In programs of risk factor modification, Dunbar (1977) stated that whether the intervention is directed toward exercise, hypertension, stress management, or adherence, the intervention process is fairly similar: "A certain amount of diagnostic testing is conducted, followed by prescribing specific regimens, teaching and counseling, and follow-up evaluation" (p. 27). She further stated, "patient adherence is promoted through continued teaching of specific skills and guidance in solving problems, redefining goals, and practicing new health regimens" and that "adherence to new health habits is more successful if the health regimen is adapted to the patients' manner of living with as few changes as possible being made, and information is completely and clearly given" (p. 32).

Some studies (Johnson, Cantwell, & Fletcher, 1976; Meyer & Henderson, 1976; Pozen et al., 1977; Sackett et al., 1978) have shown that various types of counseling strategies have been combined with patient teaching to determine their effect on the risk behavior of patients with coronary heart disease. Pozen and others (1977) found that patients who received individualized counseling on psychosocial problems by a nurse rehabilitator had significant differences in rates of return to work and in decreasing smoking but not in weight reduction. In this study the nurse rehabilitator met with patients in the study group individually or in groups on a daily basis to provide education and psychosocial support to reduce anxiety. The positive results were attributed to the psychosocial counseling provided by the nurse rehabilitator, however these positive results may also be attributed to the follow-up contact patients received after discharge by telephone and/or in person. This follow-up enabled the nurse to reinforce previously presented material, to respond to any new problems, and to serve as a liason between the patient and physician.

In another study by Scalzi and colleagues (1980) an experimental group that was

provided with individualized teaching initiated during hospitalization and continued throughout a two year clinic follow-up period demonstrated more changes in behavior in all areas (dietary restriction of sodium and cholesterol, medications, progression of physical activity, weight reduction) except smoking cessation when compared with a control group that did not receive this follow-up. Although it was not identified, follow-up support that was provided to the experimental group may have been a very important factor that contributed to the positive outcomes in this study.

In another study by Sivarajan and colleagues (1983), post-myocardial infarction patients received teaching during hospitalization and upon discharge were randomly assigned to one of three groups: control, exercise, and exercise plus teaching-counseling. The teaching-counseling intervention consisted of eight weekly group sessions and individual appointments with a nurse that emphasized: smoking as a risk factor and encouragement to quit smoking; methods of weight reduction with a suggested goal of two pounds or one kilogram of weight loss per week; and practical suggestions for dietary restrictions of low salt and low-fat. Over a six month period there were no significant differences among the groups in the proportion of patients who quit smoking, changed their dietary habits, or lost weight. It was concluded that "the approach had major limitations since interventions that are started while the patient is in hospital have a higher rate of success than when counseling is delayed until after he or she has gone home and in this study intervention was not applied at this critical time" (Sivarajan et al., p. 72). It was also stated that "acquisition of correct knowledge is only one of the many factors that influence behavior change and in this study the approach was educational in that accurate and practical information was provided and less attention to individualized risk factor strategies" (p. 72). Unfortunately, the authors did not delineate what these individualized risk factor strategies might include.

Johnson, Cantwell, and Fletcher (1976) provided post-MI patients with home visits within the first week after discharge; the purpose of which was to assess the home situation,

to discuss problems that may have arisen since discharge, and to review the patient's medications, and activity and dietary regimen. Patients were also encouraged to continue the recommended exercise regimen at home, instructions were provided on a fat-controlled diet, and those who were overweight were given a suggested goal to attain in losing the desired amount of weight. Follow-up data at a mean time of 13.5 months after hospitalization showed that 66% were adhering to dietary restrictions, 77% were exercising; 49% of those who were overweight had attained a goal for losing weight; 91% had their blood pressure controlled; and of the smokers, 66% no longer smoked.

Sackett and colleagues (1978) found in a series of clinical trials of men with hypertension who received mastery learning about their disease that medication taking and blood pressure results were improved with the use of behavioral strategies that consisted of: teaching patients to measure and record their own blood pressure, recording all antihypertensive medications taken and missed each day, tailoring the medication regimen to the patient's daily habits, and providing follow-up every two weeks. It was concluded that behaviorally oriented strategies increase adherence to a prescribed regimen and aid in controlling hypertension.

Finally, Meyer and Henderson (1974), randomly assigned subjects at high risk for coronary heart disease to one of three experimental groups: single-time physician consultation, individual counseling, and behavior modification techniques to determine their effect on obesity, smoking, lack of physical activity, and dietary habits. The twenty-minute physician consultation treatment served as a control since this was received by all subjects. During this consultation each subject was informed of his or her risk of cardiovascular disease, and prescribed either weight loss, cessation of smoking, increase in physical activity, and/or dietary modification as applicable. The counseling intervention was provided by a health educator over an eleven week period. During these sessions risk factor reduction information already outlined by the physician was repeated and expanded. In addition, each session consisted of a weigh-in, assigned instruction, a discussion of progress already made,

and verbal encouragement. The counselor's main objectives were to ensure that the information was properly understood and to encourage the subjects in whatever progress was being made. The behavior modification treatment also continued over an eleven week period and included: a) modeling devices, such as group dinners, live instruction, small group workshops; and b) reinforcing devices such as a refundable attendance deposit, encouragement, group approval, weekly weigh-in, progress charts, and a token reward system. Results of the study demonstrated that "in the risk areas of smoking, weight loss, diet, and physical activity, individual counseling and behavior modification techniques were both significantly more successful in achieving and maintaining behavior change than the physician consultation" (p. 235).

Thus the foregoing studies have shown that interventions that provide counseling, in addition to teaching, may be more effective in assisting patients to modify their coronary risk factors than providing information alone. Positive outcomes have been attributed to such counseling strategies as: psychosocial counseling (Pozen et al., 1977); follow-up home visits (Johnson, Cantwell, & Fletcher, 1976), follow-up telephone contact (Pozen et al., 1977; Scalzi et al., 1980), providing encouragement, weigh-in, assigned instruction, discussing progress made (Meyer & Henderson, 1974); and behavior modification techniques, such as small group workshops, refundable attendance deposits, group approval, progress charts, and a reward system (Meyer & Henderson, 1974). In the studies reviewed however, neither counseling as an intervention, nor the various counseling strategies have not been made explicit, and the effectiveness of counseling in risk factor modification has not been conclusively demonstrated.

In a review of studies where the role of the nurse was in helping people participate effectively in plans to promote health, Hogue (1977) suggests that for intervention to be effective it must be based on more than knowledge per se but knowledge of how the situation is viewed from the patient's perspective. She stated, "transmitting information alone is not

enough to overcome non-compliance. The regimen must be considered from the patient's point of view and tailored to his or her needs for an intervention to be effective" (p. 253). The importance of the patients' point of view or patients' perceptions is well established. In fact, the "perceptual or phenomenological" frame of reference is the basis of the traditional patient-centered approach to nursing (Jenny, 1978). A number of studies have examined the influence of patients' perceptions in adherence to a treatment program.

Studies Examining Perceptions of Patients with Coronary Heart Disease

The importance of the patient's point of view or patients' perceptions has been demonstrated in a number of conceptual frameworks (Kleinman, 1978; Becker, 1974) and various research studies (Muench, 1987; Tirrell & Hart, 1980; Clancy, Wey, & Guinn, 1984; Newton, Sivarajan, & Clark, 1985; Miller, Wikoff, McMahon, Garrett, & Ringel, 1984).

Kleinman, Eisenberg, and Good (1978) maintained that an illness experience is culturally constructed and that individuals develop "an explanatory model" of what is wrong and what should be done. Indeed, the patient's experience of an illness is distinct from the medical definition of disease and an understanding of the patient's explanatory model is a necessary prerequisite in the negotiation of mutually satisfying and efficacious care. Discrepancies between the views of health professionals and the patient of clinical reality strongly affect clinical management and leads to inadequate or poor care (p. 252). Moreover, the treatments prescribed to patients may fail when patients do not follow through on a particular regimen because they do not understand or agree with it.

The Health Belief Model, as outlined by Becker (1974), also points to the importance of patients' perceptions and emphasizes that beliefs held by an individual form the basis for that person's decisions regarding health care. This model has been used as the framework for several studies that have examined beliefs and perceptions of patients with coronary heart disease (Clancy, Wey, & Guinn, 1984; Muench, 1987; Tirrell & Hart, 1980).

Muench (1987) examined health beliefs and perceived self-efficacy of patients who were enrolled in a cardiac exercise program. Self-efficacy was defined as "an individual's expectation or belief regarding his or her capacity to successfully carry out the behavior required to produce the desired outcome (p. 130). Study results showed no relationship between perceived susceptibility to another heart attack or other complications and motivation to attend the exercise program. It was also found that those who perceived benefits of the exercise program had higher levels of general health motivation and self-efficacy and fewer barriers to attendance. This study supports the usefulness of identifying patients' perceptions and indicates that patients' perceptions of the barriers and benefits of a treatment plan are strong indicators of adherence to that plan.

Tirrell and Hart (1980) also found patients' perceptions of barriers to an exercise program and perceptions of self-efficacy to have a stronger relationship to program adherence than knowledge about the exercise regimen. These findings suggest that a program utilizing patients' perceptions of barriers self-efficacy, in addition to knowledge, might enhance long-term adherence to an exercise program and other plans for risk factor reduction.

Finally, Clancy, Wey, and Guinn (1984) found a significant relationship between rates of return to work following coronary artery by-pass graft surgery (CABG) and patients' perceptions of physician instruction regarding return to work, physical ability to return to work, ability to tolerate physical activity, improvement in overall physical condition, and health status at the time of the study. A significant relationship was not found between return to work after CABG and patients' perception that work had contributed to the occurrence of heart disease.

It can be seen that patients' perceptions are important factors that influence subsequent behavior. In addition to knowledge, patients' perceptions of the number of barriers to a treatment plan and beliefs regarding that plan, such as self-efficacy, physical ability, overall health status, and physician's instructions affect adherence to that treatment regimen (Clancy,

Wey, & Guinn, 1984; Muench, 1987; Tirrell & Hart, 1980).

Others have examined patients' perceptions to determine their influence on changes in coronary risk factors (Newton, Sivarajan, & Clark, 1985), adherence to a prescribed medical regimen (McMahon, Miller, Wikoff, Garrett, & Ringel, 1986; Miller, Wikoff, McMahon, Garrett, & Ringel, 1984), and performance on various types of physical activities (Ewart, Barr Taylor, Reese, & DeBusk, 1983).

Newton and others (1985) found that patients' perceptions of the cause of their myocardial infarction was significantly related to subsequent behavior change in the areas of smoking and weight loss but not regarding dietary changes or exercise. In this study patients accurately identified their coronary risk factors at a very early time following their MI. These results indicate that patients' attitudes during hospitalization may have predictive value in terms of subsequent behavior change. It also demonstrates that knowledge of how patients perceive their risk factors and their recovery is useful for the identification of misconceptions and lack of information, and for identifying individuals who have a high chance of success, for whom the efforts of health professionals could be directed in supporting change, as well as identifying high-risk individuals who may be denying their risk and may need assistance in realizing their risk in order to modify their coronary risk factors.

In another study, Miller and others (1984) found that post-myocardial infarction patients' intentions during hospitalization to follow a recommended treatment plan were significantly related to diet and activities but not to smoking, medications, or stress post-hospitalization. For all aspects of the medical regimen (diet, smoking, activities, medications, stress), perceived beliefs of significant others were stronger indicators of adherence than subjects' own beliefs, both for intentions and for actual adherence behaviors. These findings suggest a readiness in the patient to receive information and a need for inclusion of the significant other for maximal effectiveness of interventions at the time of hospitalization and post hospitalization. It was concluded that attitudes and intentions during

hospitalization did not relate to adherence to the medical regimen posthospitalization possibly because the rehabilitation program focused on content that was to be practiced when the patient returned home. Furthermore, it was felt that the point of providing information and discussing necessary situational adjustments to promote adherence appears to be posthospitalization since necessary post-infarction adjustments are unknown until the actual posthospitalization situation is experienced (p. 272).

These studies have shown that patients' perceptions of an illness experience and the treatment program are important factors that influence decisions to follow any type of treatment plan. Perceptions of self-efficacy to carry out a recommended program have been found to be important determinants of adherence (Clancy, Wey, & Guinn, 1984; Muench, 1987; Tirrell & Hart, 1980). It has also been found that in some areas (smoking, weight loss), patients' perceptions of the cause of a heart attack are significantly related to subsequent behavior change (Newton et al., 1985). Patients' perceptions of the beliefs of others in terms of the recommended regimen have also been found to be stronger indicators of adherence than subjects' own beliefs (Miller et al., 1984).

It would appear that patients' perceptions of measures to assist in risk factor modification might provide important information for cardiac rehabilitation programs to be effective in assisting patients to modify their coronary risk factors. Perceptions represent a variable over which the patient has some control and since perceptions are changeable it is important to identify potential misperceptions in order that they may be corrected through patient education (Clancy, Wey, & Guinn, 1984). From the studies reviewed, it can be seen that neglect to acknowledge the role of patients' perceptions may negate the value of any intervention plan; for no matter how important the treatment plan may be from the health professional's point of view unless it is perceived to be important to the patient, successful changes in behavior will not occur. Thus, it can be seen that a study designed to explore the perceptions of patients of the experience of risk factor modification, and of measures that could be provided by health

professionals to assist them in this process, could have significant merit in aiding cardiac rehabilitation programs to more effectively assist those with coronary artery disease to prevent an initial or recurrent myocardial infarction.

Summary

The literature reviewed has shown that risk factor modification is integral to any cardiac rehabilitation program where the goal is to assist patients to reduce the risk of an initial or recurrent myocardial infarction. The goals of risk factor modification include: stopping smoking; controlling hypercholesterolemia and excess body weight through exercise and adherence to a diet low in saturated fat, cholesterol, and calories; controlling hypertension through exercise, reduction of dietary intake of sodium and calories; and modifying the coronary-prone behavior pattern through exercise and various behavioral techniques.

It was further illustrated that cardiac rehabilitation programs are generally structured to provide information on the progression and management of coronary artery disease but research has shown that information alone is not enough to ensure that changes in behavior will occur. In other studies, various counseling strategies combined with patient education have been shown to be effective in assisting patients in risk factor modification. However, counseling as an intervention has not been made explicit, nor has the effectiveness of this type of intervention been conclusively demonstrated.

In other studies it has been shown that patients' perceptions are reliable indicators that influence adherence to a treatment plan. It was not apparent from the literature reviewed that research has explored patients' perceptions of measures that they would find effective in assisting them to modify their coronary risk factors. A study designed to examine patients' perceptions might provide useful information to enable cardiac rehabilitation programs to effectively assist patients to modifying their coronary risk factors and reduce their risk of an initial or recurrent myocardial infarction. Thus, a phenomenological study was designed to explore the phenomenon of risk factor modification.

Chapter 3

METHODOLOGY

The literature reviewed in Chapter 2 has illustrated that there is a scarcity of information on the experience of risk factor modification and of measures to assist patients in modifying their coronary risk factors following an acute myocardial infarction. The methodological perspective of phenomenology, as described in Chapter 1, provided the structure for this research study. As explained, phenomenology is a qualitative approach that enables a researcher to enter the subject's field of reality, and thus see life, as well as a given phenomena from his or her perspective (Oiler, 1982). This chapter explains in greater detail how this perspective was used to explore the phenomenon of risk factor modification. Specifically, it will describe the selection of participants, data collection, data analysis, and ethical considerations.

Sample Selection

A purposive sample of six participants was selected for this study. Purposive sampling is defined as the selection of informants based on specific characteristics or knowledge which these subjects possess which will enhance the researcher's understanding of the problem under study (Field & Morse, 1985). The sample was drawn from the population of patients admitted to the coronary care unit of a large metropolitan hospital in Western Canada during the period of September, 1987 to May, 1988. Subjects were selected using the following criteria:

- a) diagnosis of acute myocardial infarction occurring immediately prior to hospitalization (within 24 - 48 hours);
- b) age of 65 years or under;
- c) presence of at least one coronary risk factor as defined in Chapter 1 and determined by a nursing assessment;
- d) absence of any other life-threatening illness, such as cancer which might make risk factor modification a lesser priority;

- e) absence of drug or alcohol dependency;
- f) ability to communicate coherently in English;
- g) residence in the city of the agency;
- h) consent of patient to participate; and
- i) approval of patient's cardiologist.

Characteristics of Participants

The sample consisted of six participants, one woman and five men. Demographic data of the sample specific to age, gender, marital status, and history of coronary heart disease (CHD) are presented in Table 1.

Table 1. Selected Characteristics of Sample

<u>Subject</u>	<u>Age</u>	<u>Gender</u>	<u>Marital Status</u>		<u>History of CHD</u>	
			Widowed	Married	No	Yes
1	63	F	x		x	
2	48	M		x	x	
3	62	M		x	x	
4	46	M		x	x	
5	62	M		x		x
6	63	M		x	x	

The ages ranged from 46 to 63 years with a mean age of 57.3 years. Of the six participants, one was widowed and five were married and living with their spouse. This was the first myocardial infarction for all of the participants and four indicated that they had had no symptoms of coronary artery disease prior to the infarction. Of the other two participants, one had had an episode of acute chest pain thirty years previously but did not know whether a myocardial infarction had been sustained or not and the other had had coronary by-pass

surgery nine years previously for an impending infarction.

Coronary Risk Factors of Sample

All of the participants interviewed were attempting to modify one or more coronary risk factors. Data specific to coronary risk factors of the sample is presented in Table 2.

Table 2. Coronary Risk Factors of Sample

<u>Coronary Risk Factors</u>					
<u>Subject</u>	<u>Smoking</u>	<u>High Fat Diet</u>	<u>Hypertension</u>	<u>Obesity</u>	<u>Coronary-prone Behavior Pattern</u>
1	x		x		
2		x	x		x
3		x			x
4	x	x			x
5					x
6	x				
Total	3	3	2	0	4

Of the six participants, three were cigarette smokers, three had an elevated blood cholesterol level and reported having consumed a high fat diet prior to the infarction, two reported having a history of hypertension, no one was obese, and four demonstrated behaviors that have been associated with the coronary-prone behavior pattern as described by Rosenman and colleagues (1964). These behaviors included "working eighteen hours a day", "supervising fourteen different operations at one time", and "living a high pressure job for twenty-four hours a day".

Research Setting

In the aforementioned agency, patients suspected of having a myocardial infarction are admitted to the intensive coronary care unit (CCU) from the emergency department. Diagnosis is confirmed usually within the first 48 to 72 hours by changes observed in the electrocardiogram (ECG) and/or above normal cardiac enzyme values, specifically the creatinine phosphokinase (CPK) and the CPK isoenzymes. If their recovery is uncomplicated, patients are transferred to an intermediate coronary unit, usually within three to five days after admission. Patients convalesce on this intermediate unit until approximately day twelve to day fourteen post-infarction when they are discharged to continue convalescence at home. During their stay on this unit, patients (and families) are encouraged to attend patient education classes conducted each weekday in disciplines such as nursing, nutrition services, social work, and physiotherapy. In addition, audiovisual programs and individualized teaching are available to supplement the patient education classes.

During the first four weeks to six weeks following hospital discharge, patients may receive follow-up visits by a community home care nurse if ordered by their physician. The interviews were conducted in the homes of patients who had been discharged from the intermediate coronary care unit of this agency following admission for an acute myocardial infarction.

Procedure

Participants were selected for this study based on the preestablished criteria for selection. The initial decisions in sampling were based on theoretical sampling (Glaser, 1978). Theoretical sampling is designed to facilitate development of the emerging theory. Data collection begins based "only on a general sociological perspective about a substantive area within a population and not on a preconceived framework of concepts or hypotheses" (p. 44). Data are collected and comparatively analyzed to yield theoretical leads until categories are saturated or when new data no longer reveal new dimensions.

In this study, due to various constraints on the researcher, such as the large number of

subjects in the agency who were over age 65 years, and others who did not reside within the city of the agency, there was difficulty in selecting subjects from a large pool in keeping with the principles of theoretical sampling as outlined by Glaser and Strauss (1967). However, although the number of participants is limited, it is believed to have been large enough to delineate appropriate data to enable the researcher to describe the process of risk factor modification. Six subjects interviewed each on two occasions were enough to elicit the major, repetitive themes of the topic under study.

The procedure for obtaining the sample involved the following steps: Prior to sample selection and following approval from the Ethics committee at the University of British Columbia, access to approach patients in the hospital was obtained through a letter of request to the agency (Appendix A, p. 148) and letter of approval from the agency (Appendix B, p. 149). Approval of the participants' cardiologists was also obtained (Appendix C, p.150). A preliminary screening of patients on the intermediate coronary unit was done each week during data collection by the nurse researcher in consultation with the unit clerk. For each prospective participant, the unit clerk reviewed the patient's progress with his or her registered nurse to determine sample eligibility. Patients who met the criteria for selection received a written letter introducing them to the study (Appendix D, p.151). This letter also explained that personal contact with the nurse researcher would follow prior to their discharge from hospital. The researcher then visited each potential participant to further explain the study, to answer any questions, and to determine if he or she wished to participate. A general outline of this initial meeting is available in Appendix E (p. 153). Those who agreed to participate were asked to sign a written consent (Appendix F, p.154). At this time the participant's address was obtained, telephone numbers were exchanged, and it was arranged that the researcher would telephone the participant after he or she had been discharged from hospital to establish a time for the first interview. The second interview was arranged in a similar manner with the nurse researcher telephoning the participant several days in advance to establish a suitable meeting time. Between interviews, there was no

contact between the researcher and the participant.

Timing of Interviews

The study was designed to interview participants on approximately day seven and day thirty after hospital discharge. The timing of these interviews was to enable the researcher to collect data during the time of initial impact of the myocardial infarction, of realization of the need to change, and of relinquishing the risk behavior(s); and approximately thirty days post-hospital discharge, when it was anticipated that the participant would have either reinitiated the risk behavior or would have either modified or not modified any risk behavior(s). At the time of every second interview, all subjects had been discharged from hospital for at least four weeks. The number of days post-myocardial infarction and post-hospital discharge that the interviews took place is illustrated in Table 3.

Table 3. Number of Days Post-M.I. and Post-Discharge of Interviews

<u>Subject</u>	<u>First Interview</u>		<u>Second Interview</u>	
	No. of Days	No. of Days	No. of Days	No. of Days
	Post-Discharge	Post- MI	Post-Discharge	Post-MI
1	6	18	35	47
2	10	18	38	46
3	7	17	34	44
4	7	15	30	38
5	7	23	31	47
6	7	18	28	39

The first interviews occurred between the sixth and the tenth day post-discharge, with a mean time of 7.3 days after hospital discharge; and between 17 and 23 days post-infarction with a mean time of 18.1 days post-myocardial infarction. The second interviews occurred

between 28 and 38 days post-discharge with a mean time of 32.6 days post-hospital discharge; and between 38 and 47 days post-infarction with a mean time of 43.5 days post-infarction.

Data Collection

The methods of data collection that are commonly used to collect qualitative data are the informal, unstructured interview and participant observation with written field notes (Field & Morse, 1985). The unstructured interview is useful for obtaining information in participants' own words, for gaining a description of situations, and for eliciting detail (Swanson, 1986). For this study an interview guide (Appendix G, p.155) containing two brief, general questions was used to introduce the pertinent theme about which the informant would respond. The interview guide was used only to provide structure early in the encounter. This type of interview starts at a general level with questions such as, "What is it like having to make lifestyle changes after a heart attack?". Following introduction of this general question a process of exploration developed which was directed by the informant's responses. Minimal topic control was exerted and the process of exploration increased in depth with the use of clarifying and reflective statements as relationships within the data were identified. Later, as the interviews progressed, their focus was narrowed to collect specific data pertinent to themes identified in data analysis (Glaser, 1978). Interviews were approximately one hour in length and were audio tape-recorded.

In collecting data for qualitative research, not only must the interviews be taped and transcribed, the researcher must be present to his or her subject(s) in a special way. The full richness of the experience can be gained only when the researcher listens with his or her total being. "One can be present to the totality of a person only by being totally present to him or her" (Colaizzi, 1978, p. 64). To achieve this goal, the techniques of client-centered therapy (Rogers, 1951) were employed to create a climate conducive to the individual's self-exploration and growth.

Participant observation and written field notes supplement the collecting of qualitative

data. Participant observation involves observing non-verbal behaviors of subjects and collecting data on implicit or unconscious behaviors that the participant may not be aware of and/or that may not be included in the verbal discussion (Field & Morse, 1985). Field notes are descriptive accounts of the things the researcher hears, sees, experiences, and thinks in the course of collecting or reflecting on data in a qualitative study (Bogdan & Taylor, 1975). They are also used to identify ideas of relationships on any themes within the data. Immediately following each interview, field notes, consisting of jottings of salient points of an observation, were made in private.

Following data collection, each audio-tape was replayed as the researcher listened to capture the main thrust of the themes of the respondent. Each audio-tape was then transcribed and the field notes were integrated into the raw data.

Data Analysis

With the constant comparative method of data analysis as outlined by Glaser and Strauss (1967), analysis begins during the data collection stage. Comparisons are made continuously; that is, the first two interviews and field notes are compared to each other for similarities and differences; then subsequent interviews and field notes are similarly compared. This method of analysis involves: labelling of data with substantive codes; writing theoretical memos to capture ideas and to document recurring themes noted in the data; sorting of categories by similarities and differences; and identifying a basic social process (Glaser, 1978). In identifying a basic social process each category developed from substantive codes was compared to a family of theoretical codes. "Theoretical codes allow the researcher to organize the categories, to clarify what each category is in relation to other categories, and thus, to develop theoretical links between the categories" (Swanson, 1986, p. 125). The family of theoretical codes that was used is termed the family of "6 C's" and refers to: consequence, cause, condition, context, contingency, and covariance (Glaser 1978, p. 74.). The aim is to identify basic social processes; to generate theory that accounts for a pattern of behavior over time (Glaser, 1978).

As the meaning and experience varies for each person, each tells the researcher something new about the phenomenon (Swanson, 1986). As data collection proceeded, different questions were asked or content was reflected back to the informant in order to elicit extremes and variation of the categories and to saturate a category for completeness. Data were then reworked or grounded and categories were adjusted as their properties became clearer. Categories became saturated when it appeared that no new data was forthcoming.

Ethical Considerations

Each participant received an explanation about the purpose, nature, and implications of the study both in the form of a written letter introducing them to the study (Appendix D, p.151), and verbally during the initial meeting with the nurse researcher prior to hospital discharge (Appendix E, p. 153). Confidentiality, the right to refuse to answer any questions, and the right to refuse to participate or withdraw from the study at any time without prejudice to further treatment was explained and assured.

Participants were advised that the only anticipated risk might be that in discussing the experience of risk factor modification, any anguish or anxiety that may have been associated with the experience might be released. It was also explained that participants in other such studies have generally found it helpful to explore such feelings with a caring individual. In addition to having the opportunity to explore their feelings, it was explained that the potential benefit of the study was that the data collected might enable cardiac rehabilitation programs to be more effective in assisting patients to modify their coronary risk factors following an acute myocardial infarction. Subjects were not financially remunerated for participating in this study.

Following adequate explanation of the study and opportunity to ask any questions they might have, participants signed the consent form (Appendix F, p.154). All forms were signed in the presence of the researcher prior to discharge from hospital. Anonymity and confidentiality was assured. Participants were informed that their names would not be released on any record and would only appear in the researcher's personal file which would

be kept in a locked drawer for only as long as it was required to complete the study.

Following completion of the study, participants' names were destroyed by the researcher.

Issues of Reliability and Validity

As in any research, the ability of the researcher to demonstrate credibility of the findings is critical to the value of the research (Field & Morse 1985). In a qualitative study the criteria for determining reliability and validity are not the same as in a quantitative study since the purpose, goals, and intent of these two types of research differ (Leininger, 1985). In a qualitative study, validity is concerned with the answer that is provided in the research; is it sound and does it represent reality (Field & Morse, 1985)? Reliability is a constituent element of validity and refers to the extent to which random variation may have influenced the study results (Field & Morse, 1985, p. 116). The concern is for the reliability of the sources of the data and for the recorder; "whether the sources of data well represent the developing concepts and whether the person recording the data gets it all down" (Diers, 1979, p. 112).

In phenomenological research, anyone can serve as subjects provided they have had experience with the topic being investigated and are able to communicate intelligently (Colaizzi, 1978). In this study informants were selected on the basis of having had a myocardial infarction and were in the process of modifying one or more coronary risk factors. In this respect these informants were deemed to be credible representatives of the population of subjects who had had a myocardial infarction and to have information on the subject of risk factor modification.

The number of subjects selected depends on "various factors that must be tried out in each research project" (Colaizzi, 1978, p. 58). In this study, six subjects were used to provide twelve interviews. In qualitative research it is not the number of subjects that is important but whether or not the data obtained leads to saturation of the categories (Glaser, 1978). Sampling ceased when categories appeared saturated and no new information was forthcoming.

The reliability of data collection is influenced by the researcher's status, that is his or her

relationship with the participants; the social context; and the conditions under which data are gathered (Field & Morse, 1985). It has been questioned whether nurse researchers can get accurate information on the perceptions of patients if they are seen to be a part of the nursing fraternity (Field & Morse, 1985). In this study an attempt was made to portray the interviewer as a researcher, rather than a nurse; to be a student conducting nursing research for a university degree and not a nurse associated with the hospital setting.

The social context in which data are gathered is an important factor that influences reliability and validity as informants will reveal certain information in one context and not in another (Field & Morse, 1985). Data were gathered in the privacy of each informant's home. This was not only for convenience of the participant but also to enable the researcher to observe the people being studied in their natural surroundings, thereby ensuring a more accurate interpretation of their situation.

Data collection methods of participant observation and unstructured interviews raise such questions as observer accuracy and observer bias. One difficulty in qualitative research is in assessing the effect of the observer on the interaction (Field & Morse, 1985). One way to decrease this effect is to spend a period of time in the situation before data collection starts. An attempt was made to spend sufficient time in the setting and to establish rapport with each informant before data collection commenced.

To reduce bias on the part of the researcher the researcher needs to be trained in a manner that encourages an objective view of the phenomena under study (Field and Morse, 1985). At no time does the qualitative researcher control or manipulate individuals or groups of people. Natural and familiar data are valued and sought in order to know people. Phenomenological research is a refusal to tell a phenomenon what it is, rather it is "a respectful listening to what the phenomenon speaks of itself" (Colaizzi, 1978, p. 52). To refine the interviewer's skills that would control for observer bias and ensure interviewing competency one subject was interviewed as a trial sample and critically analyzed by the researcher's Thesis Review Committee. Data from this interview were not included in the

analysis that follows.

Another factor influencing observer bias is the tendency of researchers to observe and interpret findings in light of their own values (Field & Morse, 1985). The qualitative procedures make very explicit the perceptual and thinking processes of the researcher. Different philosophical outlooks have different fundamental premises (Giorgi, 1975). A necessary condition of qualitative research is that the researcher delimit and makes explicit the intention that is guiding his or her elaboration of the data (Giorgi, 1975). For this reason, certain assumptions of the researcher have been stated (p. 15 of this report) and may have a bearing on the research findings.

An emic focus is valuable for generating accurate data. Analyzing data as they come from people's viewpoints and with detailed and full accounts is essential for qualitative research (Leininger, 1985). Findings that one encounters in one's stream of awareness have to be interpreted objectively (Giorgi, 1975). The researcher must attempt to remain objective which means that the researcher's statements or analysis of the data must reflect the phenomena as it is. In order to reduce threats to internal reliability, the use of "low-inference descriptors" was used. Low-inference descriptors are verbatim accounts of information provided by informants and are generally considered to be the most credible sources of information (Field & Morse, 1985). The use of an audio-tape for interviews enhanced the accuracy of the transcripts.

Summary

The purpose of this chapter has been to describe the methodology: the sample, setting, design, data collection, and analysis that was used in this study to explore the experience of risk factor modification from the perspective of patients who have had an acute myocardial infarction. An understanding of this methodology provides a context for the presentation of these findings that follows.

One purpose of describing a methodology is to aid other researchers in future research. However, it must be noted that as a qualitative study, even with careful description of

participants and setting, this study could not be replicated exactly. If the phenomenon of risk factor modification is explored in other research, generalization must be treated with care; comparisons must take into account the similarities and differences between the groups being compared (Field & Morse, 1985). With qualitative research the key criterion is not so much whether another position with respect to the data could be adopted, that is whether another researcher might label the process of risk factor modification differently, but "whether a reader adopting the same viewpoint as articulated by the researcher can also see what the researcher saw" (Giorgi, 1975, p. 96).

Chapter 4

FINDINGS OF THE STUDY

The aim of qualitative research is to generate theory that explains a pattern of behavior which is relevant and problematic for those involved, to identify a basic social process in the social phenomenon being studied (Glaser, 1978). In this study the basic social problem was modifying or changing one's coronary risk factors following an acute myocardial infarction. Reflecting the methodology described in Chapter 3, this chapter will present the findings of this study using participants' verbatim statements, since description through language is the main technique in phenomenological research (Giorgi, 1975). Presenting research findings in this manner illustrates how theory that is linked to data obtained from social research is valid and reliable (Glaser, 1978).

Risk Factor Modification as a Process

The findings of this study have shown that risk factor modification is a process of gaining mastery of coronary risk behavior(s). As a process, risk factor modification occurs over time, involves change, and has direction, a beginning, and a goal or end-state. Change over time is discernable by stages (or phases) which are parts of a whole. These stages may not be generally perceivable to the persons involved but may be demarcated by a researcher for theoretical reasons (Glaser, 1978). The identification of stages allows one to follow change over time.

Phases have a time dimension and sequence with one another within certain temporal limits (Glaser, 1978, p. 98). The length of time between stages may or may not be fixed. A phase may last several minutes, several days, or several weeks depending upon what brings about a transition from one stage to another. This transition is ordinarily contingent upon something happening; the occurrence or non-occurrence of a particular critical event will determine whether a new stage is entered or the previous one is maintained. Not all persons go through a process in the same manner; there is much variation. However, a theory of a basic social process can uncover what conditions or variables give rise to particular variation

and can therefore theoretically account for them (Glaser, 1978). An identification of the phases of risk factor modification, and of the variables that affect transition from one phase to another, may enable health professionals to intervene in a manner that facilitates progression through these stages, thereby assisting patients to modify their coronary risk factors following an acute myocardial infarction.

The purpose of this research study was twofold: to explore the experience of risk factor modification following an acute myocardial infarction, and to identify measures that could be provided to assist patients in this process. As such, the findings of this study will be presented in two parts: Part A will present patients' perceptions of their experiences in risk factor modification following an acute myocardial infarction, and Part B will describe measures that could be provided to assist patients in this process. In keeping with the terminology of symbolic interactionism theory, the term risk object will be used synonymously with risk behavior and will refer to such risk factors as cigarette smoking, one's diet, and one's job.

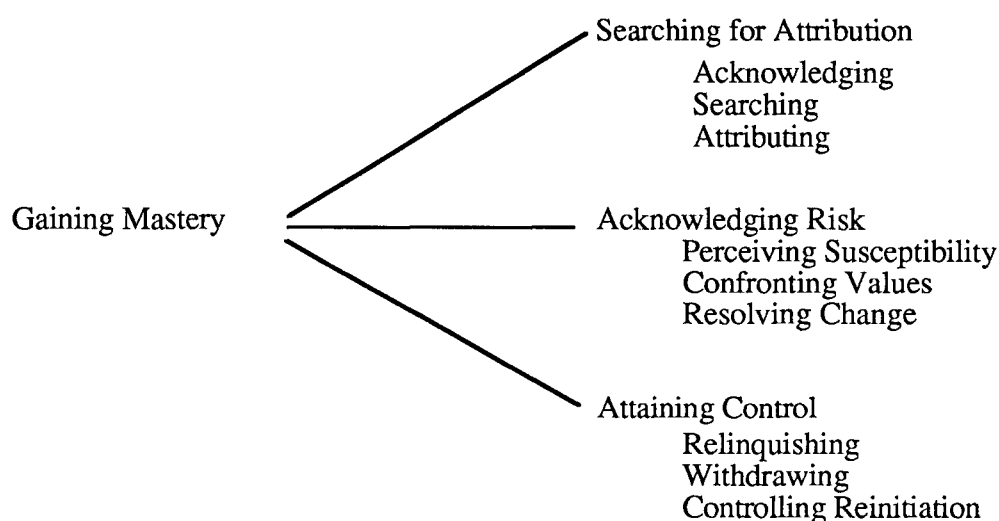
Part A: The Experience of Risk Factor Modification

Participants' descriptions of their experiences of modifying coronary risk factors following an acute myocardial infarction have shown that risk factor modification is a process of gaining mastery over the risk behavior. Mastery means "to become the master of, to become skilled or proficient in the use of, or to become the device or mechanism that controls the operation of another" (Mish, 1986). Risk factor modification is then seen as a process of gaining mastery over the coronary risk behavior through the proficient use of skills that enables one to have and maintain control of one's coronary risk behaviors.

Risk factor modification was seen to occur in three phases: searching for attribution; acknowledging risk; and attaining control. Within each phase, distinct behaviors were also observed to be an essential part of the process. Phase I, searching for attribution, was characterized by acknowledging the myocardial infarction, searching for a cause of the infarction, and attributing cause to one or more factor or factors. Phase II, acknowledging

risk, was characterized by perceiving susceptibility to further heart damage and possible death, confronting values, and resolving to change one's behavior. Phase III, attaining control, was characterized by relinquishing, withdrawing, and controlling reinitiation of the risk behavior. For some informants, control was attained only after the risk behavior had been reinitiated and further strategies had been developed in an attempt to attain control. This process of risk factor modification is illustrated in the following figure (Figure 1).

Figure 1. A Theory of the Process of Risk Factor Modification



This process of risk factor modification will be described in the following section. Verbatim statements are used to demonstrate the grounding of theory derived from informants' descriptive accounts of their experiences.

Phase I: Searching for Attribution

Searching for attribution was described as a period in which the informants acknowledged that a heart attack had occurred, searched for a cause of the heart attack, and attributed the heart attack to a factor or factors which was perceived to have caused it. As such, in the first phase of risk factor modification, three categories of behaviors were

observed to be a part of the process of searching for attribution. These behaviors were labelled: acknowledging, searching, and attributing.

Acknowledging

In every instance, participants initiated the first interview with an acknowledgement that a heart attack had occurred and/or that damage to the heart had been sustained.

Acknowledgement was revealed with comments such as, "They took an x-ray and said, 'You've had a massive heart attack and done damage to the inside of your heart'".

Informants also reflected on the myocardial infarction in terms of having had a near encounter with dying with such comments as: "Thankfully, I'm still around".

Thus, acknowledging the heart attack, the first behavior observed in the process of risk factor modification, is a recognition of the reality of having sustained an acute myocardial infarction and having had a near encounter with death.

Searching

Following acknowledgement of the infarction, participants were observed to have conducted a search for a cause of their heart attack. To search means "to look into or over carefully or thoroughly in an effort to find or discover something" (Mish, 1986). This search for cause appeared to involve a mental exploration of factors within each informant's realm of awareness and was undertaken in order to identify this (these) causal factor(s). The following comment illustrates that a search for cause was undertaken: "[There are] the things that I can identify that I think caused it". During this search another informant asked his physician the cause of the heart attack: "I asked my doctor what causes one [blockage] to go like that".

This search appeared to be contingent upon the informant's awareness of factors that may cause a heart attack. For example, smoking, diet, and weight were more readily identifiable than other factors, such as high blood pressure or a pressured, hurried lifestyle. It also appeared that this search was continued until a factor could be identified.

It was further indicated that the timing of this search for causation varied from the time of

realization that a heart attack had occurred, for example "I knew when I actually had my heart attack that that was it for cigarettes and the diet", to within a few days following the event, "I think I sort of woke up after a day or so and I said, 'No more cigarettes'".

It can be seen then that these informants believed that cigarettes and/or their diet caused their heart attack. It can also be seen that the timing of this search for causation varied from that of actual impact of the infarction to a few days later.

Attributing

Attributing means "to explain by indicating a cause" (Mish, 1986) and refers to the identification of a factor or factors that was perceived by informants to have caused their heart attack. In this study, all informants attributed cause to one or more lifestyle factors, such as smoking, diet, weight, and stress. The following statements illustrate that causal attribution of the myocardial infarction took place:

The thing I was doing before is I was overeating. I weighed a few days before I had the heart attack and I was heavier than I had ever been in my life.

I've had a heart attack and I'm attributing cigarette smoking to that heart attack, plus stress and tension.

Attribution was fairly easy when the informant was a smoker since all the smokers were aware that smoking may harm one's health. When the cause of the heart attack was not as readily identifiable, for example if the individual did not smoke or consume a high fat diet, the cause of the heart attack was still attributed to a lifestyle factor, such as overeating. Some informants reported having a history of hypertension, yet they did not indicate any awareness of hypertension as a coronary risk factor. Others demonstrated behaviors that have been associated with the coronary-prone behavior pattern, for example "I worked eighteen hours a day" and "I was responsible for supervising fourteen different operations at one time", yet neither of these individuals gave any indication of awareness that their behaviors may have been associated with an increased risk of coronary heart disease.

It appeared that attributing cause of the myocardial infarction may be influenced by the degree of threat associated with a perceived loss of the risk behavior. For example, one

informant reported that following coronary by-pass surgery nine years previously, and the realization that he had a heart problem, the changes he had made were primarily work-related. Yet, later he stated that his heart attack was caused by his diet and being overweight even though he denied having an elevated cholesterol level, and was not overweight. It was evident from his reports that he had had much difficulty over the years in retiring and letting go of his work role. As he described: "I was always back and forth in the hospital but I kept working. I never actually accepted that I was finished in the work force".

Thus, in the first phase of risk factor modification that following an acute myocardial infarction, risk factor modification begins with an acknowledgement that a heart attack has occurred. Following this acknowledgement, a search for a factor or factors which may have caused the heart attack is undertaken, and this cause is attributed to a factor which is perceived to have caused the infarction. In this study, all causal attributions identified by informants were lifestyle factors, such as cigarette smoking, a high fat diet, stress, and overweight. It was further shown that the timing of this search varies from the actual impact of the infarction to a day or so later, and that this search continues until a factor can be identified. This search may be dependent upon the individual's degree of awareness of factors that may contribute to coronary heart disease. In this study, hypertension and the coronary-prone behavior pattern were reported to be significant risk factors for several of the informants, yet an awareness of these behaviors as risks for coronary heart disease was not evident.

Phase II: Acknowledging Risk.

Following a search for attribution, there occurred a realization on the part of the participant that he or she was at risk for further heart damage, as well as possible death. This realization marked the beginning of the second phase of risk factor modification and was termed acknowledging risk. This was also a time when a confronting of values was undertaken of aspects of their lives which were of most importance. For those interviewed, this confronting of values was followed by resolution to do all that could be done to prevent

further damage to the heart. In this respect, three categories of behaviors were identified during the second phase of risk factor modification: perceiving susceptibility, confronting values, and resolving change.

Perceiving susceptibility

It was evident in this study that following acknowledgement and causal attribution of the heart attack, there occurred a realization with the informants that they were at risk for a recurrent myocardial infarction and possible death. Perceiving susceptibility was revealed with statements such as, "I can read the writing on the wall. I don't want another heart attack". These comments reveal that these informants realize they can no longer deny that they are at risk for a recurrent myocardial infarction, having experienced one already. "The writing is on the wall" that if they continue with their risk behavior(s) they will have another infarction.

It seemed that prior to the myocardial infarction these informants had dissociated themselves from this risk, as if believing it could not happen to them but to the "other guy". This dissociation of risk is revealed in the following comments:

I never thought it could happen to me. It always happens to the other guy.

This is something that happens to the other guy. I just found out that I'm somebody else's other guy.

These comments reveal that these informants' experienced feelings of disbelief that a myocardial infarction had happened to them. It appears that in some way they did not really believe that they could have a heart attack, that it was something that only happened to someone else. Some informants further revealed that they had had some awareness that their behaviors may have been detrimental to their health:

Fifteen years ago I knew all these things [starch, potatoes, bread, pasta] were bad for me .

You know it's [cigarette] not good for you. I'm not stupid. You just know that it's not good for you. It can do a lot of things. It can give you heart attacks, be the cause of heart attacks or attribute to heart attacks, plus lung cancer. You know all this before hand.

These comments reveal that these informants believed that such things as starch, bread and potatoes may have been "bad" for one's health and that smoking "is not good for you". These informants may have had an awareness that such behaviors could cause lung cancer or a heart attack but it was shown that they did not realize on a deeper level of awareness that their behavior may have placed them at risk for a heart attack: "I knew cigarettes were harmful but I didn't realize it would cause a heart attack". Thus, it appears that acknowledging risk of coronary heart disease is more than an intellectual awareness. This dissociation from the risk of coronary heart disease may also resemble denial, a defense mechanism, that may have enabled the individual to continue with the risk behavior regardless of the increased risk of a heart attack.

Several informants reported that had they realized the risk associated with a particular behavior was a threat to their life they believed they may have been more likely to discontinue that behavior before their heart had been damaged. One informant explained that "people don't want to give up the things that give them pleasure". This comment suggests that people do not attend to messages about health and tend to dissociate themselves from personal risk believing that it can only happen to the other guy.

It was further described that for an individual to be willing to change one's behavior, he or she had to get sick or in some way realize that his or her behavior was a threat to life. This is reflected in the following comments:

Those who smoke or drink do it until they make themselves sick. You go as far as you can.

People don't give up things until the doctor says, "You won't be here".

These informants are explaining that smoking and drinking are pleasurable and people will continue with these behaviors, not wanting to give them up, until they have to give them up. The point when they have to give them up is when the doctor says "unless you give them up, you will die". Until this time, they may tend to dissociate themselves from the risk for coronary heart disease believing that a myocardial infarction will not happen to them but to

someone else.

The above accounts illustrate that intervention may be more effective in secondary prevention than in primary prevention. Before symptoms of coronary artery disease appear, people tend to dissociate themselves from health-related risks believing that a heart attack will not happen to them. However, when symptoms of coronary heart disease begin to manifest, such as angina pectoris or a myocardial infarction, an individual becomes aware of his or her susceptibility to a myocardial infarction and more receptive to health teaching and measures to promote health.

Acknowledging risk of coronary heart disease and the association of coronary risk factors appeared to require more than just an intellectual awareness of risk, but rather an acknowledgement at a deeper level of internalization. This is reflected in the following comment: "I gotta believe in it. I keep telling myself, 'You take a drag and you're going to die,' because once I stop believing it, I'll start smoking again at a moment's notice". For this informant the desire to smoke is so strong that merely knowing smoking is harmful is not enough of an incentive for him to abstain. In order to avoid reinitiating he must believe the habit could be reinitiated with only one "drag", and he must believe that reinitiation would cause him to have another heart attack and possibly die.

As there developed an awareness that a certain factor or factors may have caused their heart attack, these informants described feelings of remorse for their risk behavior, particularly if the risk behavior was smoking since all were aware that smoking was harmful to one's health. Anger was also expressed at the risk object for causing damage to the heart. Remorse and anger are reflected in the following comments:

I kind of worried about it [weight] but I never took any steps to correct it and I should've.

I was always going on about stopping smoking. I'd cuss at them. I'd swear at them, get mad at them but it was to quit!

These comments indicate that these informants may have had a concern about the effect of their behavior(s) on their health; they worried about it and talked about changing their

behaviors but they did not change. The second informant has suggested that he used verbal expressions of anger to help himself focus on quitting smoking. He got angry at the cigarettes but the task was "to quit!".

Several informants also indicated that they would be angrier with themselves if they continued with the risk behavior after the heart attack and would feel guilty if they knowingly caused themselves further heart damage. As one informant said, "If I started [smoking] and had another heart attack, I'd feel guilty that I had gone out and purposefully done that to myself".

Thus, perceiving susceptibility involved a realization of one's risk for further heart damage and possible death. This realization was more than an intellectual awareness, but rather an acknowledgement at a deeper (affective) level of internalization. From these findings it appears that having a perception of susceptibility for further heart damage and possible death may be an important factor in an individual's determination to modify his or her coronary risk behavior(s).

Confronting Values

During the second phase of risk factor modification, this realization of personal susceptibility to further heart damage and possible death, precipitated a confronting of values. To confront means "to cause to meet face-to-face" (Mish, 1986) and with the informants in this study it appeared that a valuing of aspects of one's life which were perceived to be of importance was brought about by having had a myocardial infarction and a realization of susceptibility to further heart damage and possible death. As the following statements reflect, confronting values began with an examination of one's life and one's behavior:

You kinda start thinking in the back of your mind, why you been doing this to yourself . . . packing this doggone weight around when ya don't have to?

You've got a different outlook on life once these things [having a heart attack] happen to you.

These informants suggest that life, and aspects of it, take on a different meaning or value once a heart attack has been experienced. It was as if the experience of having had a heart

attack had brought them with an inescapable encounter with their values about life.

Confronting values was described as a balancing of, on the one hand, continuing with the risk behavior and realizing the risk and, on the other hand, giving up the risk behavior in the hope of a longer life:

I could start smoking again at a moment's notice and I'd disappoint a hell of a lot of people if I did. I wouldn't disappoint myself, I'd be as happy as a lark. I'm not afraid of death, but it would bother my wife, kids, father and mother.

This informant would have preferred to continue with his risk behavior knowing he could possibly die, however, his valuing of his family and his concern for what would happen to them if he were to die, outweighed his desire to continue smoking.

Other informants revealed that the determining factor in their change of behavior was not a desire to live for themselves but concern for their families, particularly their spouses, children, and grandchildren. This desire to live for others is illustrated in the following account:

I've always felt that it's not for myself. I'm doing it for her [wife]. I never worried about myself. If something happens you're gone. Nobody wants to die but I accept it. It's just that I'd like my grandson to remember me. If I went I'd like him to be a little older so that he can remember for himself, not what somebody tells him. Also so that he can accept it too. They'll be telling him that I won't be coming back again and he'll understand what that means.

It is not for himself that this informant attempted to make changes, rather, it was for his wife and grandson. He believed it would be easier for him if he were to die than it would be for those that would be left behind and he worried about how his wife would manage if he were to die. He also wanted to live long enough so that his grandson could remember him and understand why he would not be coming back (when he had a more advanced notion of death).

In addition to a concern for one's family, other values such as health and being in control of one's self or life also influenced decisions to change one's behavior. Values of health and self-control are reflected in the following statements:

I'm going to watch it real close, but I don't mind . . . it's for my health.

I just thought why should I let cigarettes rule my life. I should be able to do what I want to do and not be tied to something that is like being tied to a dope of somekind.

Informants also revealed that it was important for a person to undergo this valuing process if changes in behavior were to be made: "Just keep your mind straight, sorting things out and you got the chance". It was further suggested that if an individual does not undergo this valuing process there is a greater likelihood that the former risk behaviors will be resumed: "You just fall back to where you was before". These comments suggest that sorting one's values during hospitalization may be a critical to the risk factor modification process. In this study it was seen that prior to making decisions to change their risk behaviors, all informants had valued certain aspects of their lives which had resulted in a desire to live longer. Furthermore, this desire to live longer was stronger than the desire to continue the risk behavior.

Concomitant with this valuing process and a desire to live longer, behaviors of bargaining and hope were also evident with informants. It was as if an attempt was being made to bargain, perhaps with God, that in exchange for giving up their risk behavior, they might be granted longer life. Bargaining and hope is reflected in the following statements: "The prize at the end of it is too much . . . about another 30 or 40 years of life", and "If I get just a couple of more years . . . ". Hope is implied that in giving up their risk behavior, these informants will live longer. Bargaining and hope may reflect the fear that these informants experienced from having had a near encounter with death, as well as realizing their susceptibility to another such threat in the future.

Thus, it has been shown in the second phase of risk factor modification that perceiving susceptibility to further heart damage and possible death caused informants in this study to have a face-to-face encounter with their values of aspects of their lives which were most important to them. This was termed confronting values. Values such as health, longer life, self- control, and a concern for others, particularly one's spouse and grandchildren were seen to be more important than continuing the risk behavior.

Resolving Change

Once there was a realization of the risk of a recurrent myocardial infarction and possible death and a confronting of values had taken place, informants then made a resolution to change their behavior. This resolution was not a superficial decision but one that involved a deeper commitment; one that was described as "really making up your mind". As one informant stated: "You gotta make up your mind that you want to quit. You've just got to make up your mind and throw the package away and say, 'That's it!'".

Webster defines a decision as "to arrive at a solution, or to make a choice", whereas a resolution "implies a firm determination to do or to refrain from doing" (Mish, 1986). Changing one's behavior has been described as more than making a choice; an inner determination is needed for one to change and to refrain from reinitiating the risk behavior.

In making this resolution, a process of self-exploration was described. As one informant described: "We're two people; there's your inner self and your outer self". In order to change one's behavior, "You have to get right down to your inner self to not smoke". It was further suggested that the critical time for this resolution to occur is while the patient is in the hospital so that when he or she goes home behavior is simply a matter of following-through on one's resolve.

The importance of resolving to change while in hospital is reflected in the following statement:

It's important for him [patient] to sort his mind out . . . when he gets home then his mind's ready . . . whatever he's going to do, it's made up. Then it's just a matter of follow-up . . . that's the whole thing.

In resolving to change, informants indicated that they realized that the ability to change comes from an individual him or herself; it does not come from someone else. A realization of self-responsibility is reflected in the following statement: "Nobody else can help you . . . it's up to you . . . that's what makes it very hard to stop smoking". It was further suggested that unless an individual had really made up his or her mind to change, there was little that anyone else could do to help them change: "It's the person themselves . . . only those who

want to quit [smoking] are you [the nurse] going to help". Furthermore, the time when assistance was needed in changing one's behavior was when an individual demonstrates a readiness to change:

It's the person themselves. He's got to say something that makes somebody believe he wants to do something about it. Then that's the time you start working on them and say, "Fine, here's maybe what we can do for you".

Thus, it has been shown that the second phase of risk factor modification, acknowledging risk, involved a realization of susceptibility to a recurrent myocardial infarction and possible death. This realization precipitated a confronting of values where aspects of the informants' lives were evaluated to determine which were most important. Values of health, longer life, and a concern for others were identified in this study as most important. This confronting of values resulted in a resolution to change one's behavior. Confronting values may be a critical factor in assisting patients to modify their coronary risk factors following an acute myocardial infarction. It was also shown that modifying coronary risk factors involves more than a decision or a choice amongst alternatives, rather it involves a resolution and an inner determination to change one's behavior.

Phase III: Attaining Control

The third phase of risk factor modification following an acute myocardial infarction has been termed attaining control. Attaining means "to reach as an end by growth or effort" (Mish, 1986). Control means to regulate, to exercise a restraining or directing influence over (Mish, 1986). Attaining control of coronary risk factors, then, refers to the ability to exercise restraint or to direct an influence over the desire to reinitiate a risk behavior. The ability to attain control leads to a sense of mastery of one's risk behaviors.

During the process of risk factor modification, informants described that following a resolution to change their behavior, the risk behavior was then relinquished or given up, and a withdrawing or letting go of the risk object began to take place. Strategies were then developed to aid in controlling reinitiation of the risk behavior. It was evident that some informants reinitiated their risk behavior, and this reinitiation had been followed by the

development of further strategies to aid in attaining control. Thus, three types of behaviors were characteristic of the third phase of risk factor modification: relinquishing, withdrawing, and controlling reinitiation.

Relinquishing

Relinquishing "implies surrender and a giving up with reluctance" (Mish, 1986). As the following comment illustrates, relinquishing a risk behavior was very difficult: "I didn't want to give up that cigarette . . . something that you're been doing for a long time is awfully hard to stop". Another informant suggested that the difficulty in relinquishing a behavior is giving up something that brings one pleasure: "A lot of it is they [people] just don't want to give up the things that pleases them". The difficulty in relinquishing a risk behavior may have been outweighed only by a realization of susceptibility to a future threat and by a desire to live longer. This determination to prevent a recurrent myocardial infarction is revealed in the following comment: "I don't intend on having a second one. . . I'm not going to go through it again".

Relinquishing a risk behavior may be affected by the level of knowledge that is required to change one's behavior, particularly when the risk behavior is one's diet or the coronary-prone behavior pattern. For example, two informants reported having an elevated blood cholesterol level and were determined to prevent a recurrent myocardial infarction. However, they indicated that all they had to do was to lose weight and to cut back on certain foods. As the following comments illustrate, they may have lacked sufficient knowledge of the kinds of foods to avoid, as well as the kinds of foods that are generally recommended for a low-fat diet: "I don't count it. I don't weigh anything. I just eat to the point when my stomach's getting full. A few minutes later I break out half a dozen apples".

A lack of knowledge was also revealed in other comments that indicated that the main basis of dietary changes was common sense: "Basically it's common sense. You can almost look at a food and tell [what is high in cholesterol and what is not]"; or an activity regimen that was based on intuition: "Just a little bell goes off in the back of my head. It says 'Take it

easy'. That's about the only thing I can do. Just my own intuition to go by".

A lack of knowledge in changing the coronary-prone behavior pattern was also illustrated in the following comment: "I can't do all that's been expected of me in the past. . . lots gotta change but I don't know how".

Thus, relinquishing follows a resolution to change one's behavior and involves a surrendering or giving up of one's risk behavior(s) with reluctance. Relinquishing a risk behavior was described as a difficult thing to do and may only be outweighed by the determination to prevent further heart damage and possible death.

Withdrawing

Once a risk behavior had been relinquished, a process of withdrawing from it began to take place. Withdrawing is defined as "turning away from, detaching oneself, or releasing oneself from an object of which one has become entrapped" (Mish, 1986). It was found that whether the risk behavior was cigarette smoking, one's diet, or one's job, once the risk object had been relinquished, informants experienced similar feelings of loss and craving the risk object:

I don't even miss it as much after meals as I do the first thing in the morning when I wake up.

When I came home I felt like I was missing something. I miss the cookies. I used to love the roast beef.

I miss it [the job] terribly. You feel the let-down, that you're missing something. Even one phone call would bring back again for a week or so a feeling of let-down.

Craving the risk object and having an urge to reinitiate the risk behavior was also described: "When I think about them [cigarettes], I wait about two and a half minutes . . . that's about as long as it [urge] lasts".

In withdrawing from a risk behavior, informants distinguished between the difficulty of withdrawing from the risk object while in hospital, as opposed to later when they were at home. Some described having less difficulty in coping with this withdrawal during hospitalization as compared to later during the convalescent period: "In the hospital I knew I

couldn't smoke . . . and I wasn't feeling well . . . and I didn't really feel like smoking either". This account suggests that while in hospital, hospital regulations that did not permit smoking and not feeling well enough to smoke were two factors that contributed to little difficulty in withdrawing from a risk behavior. However, following discharge from the hospital, the coming home period was described as one of frustration and feeling unprepared to cope with cravings for the risk object. This difficulty during the coming home period is illustrated in the following statements:

When I came home I thought it [the smoking habit] was over but it wasn't. You don't realize until you get home and run up against a problem how these problems are going to trigger this habit [cigarette smoking] again.

It's like a frustration, the first week or so when you come home from the hospital. You can't eat . . . take a chunk out of the roast beef.

For some, these cravings became stronger and more difficult to resist the longer the informant was at home: "The last couple of days it's gotten worse. I found I was craving it [cigarette] more. When they [urge to smoke] grab you, they grab you . . . the urge to have one [cigarette]".

The experience of withdrawing from a risk behavior was described as one of withdrawing from an addiction, as the following statements illustrate:

That's why it is so hard to stop [smoking] . . . it's just an addiction.

I walk past people that are smoking and think "You poor slob, you're still hooked". In the back of my mind, I'm also the poor slob. I'm still hooked. I always will be.

These statements imply that in "being hooked", a risk behavior is an addiction and one that has control of the individual. In another description, even jogging which is generally considered to be a healthy behavior was described as an addictive behavior: "I know one chap, 72 years old running marathons cause he's hooked. He gets a kick from running". Others compared withdrawing from a risk object to that of an alcoholic:

It's an addictive bloody weed, the nicotine . . . it's an addictive habit . . . it grabs you . . . it's like heroin . . . it's the same as dope addicts . . . it's the same as an alcoholic.

Like an alcoholic, I'm a foodaholic.

These informants are suggesting that smoking, exercise, and dietary habits are addictive behaviors similar to being an alcoholic or a dope addict. They are also describing that withdrawing or letting go of these behaviors was found to be as difficult as letting go of an addiction, such as heroin. It was further described that once these habits develop, urges recur that grab, force, or impel an individual to continue the habit until the habit is broken.

It was further suggested that these habits may be broken or changed but that letting go of one's risk behavior is something that has to be learned: "Once they get onto it, then they've got to have another until they learn to get off it". "Learning to get off it" implies that changing one's behavior is not something that is intuitive or automatic but a skill that is "gained by instruction or experience" (Mish, 1986).

Withdrawing from a coronary risk behavior was described as a very difficult process that does not necessarily get easier with time. As one informant described: "It's not really getting easier. It's just I know it [stopping smoking] has to be done". This comment illustrates that withdrawing from a risk behavior may only be pursued because of a realization of the risk involved if the behavior were to be reinitiated. Furthermore, even though the habit can be broken or changed, in "being hooked" the tendency may always be there to reinitiate the risk behavior.

Thus, it has been shown that after a risk behavior has been relinquished, a process of withdrawing begins to take place. Withdrawing, whether it is from cigarette smoking, one's diet, or one's job, involves coping with feelings of loss and experiencing urges and cravings for the risk object. Withdrawing was described as more difficult after the informants had returned home, than it had been during hospitalization, as cravings for the risk object increased during convalescence. Withdrawing was described as a process of withdrawing from an addiction, and to some informants, risk behaviors, such as smoking and food were similar to that of being an alcoholic. It was further suggested that changing one's risk behaviors is something that is learned, it is not something that is automatic or intuitive.

Furthermore, even when risk behaviors are changed, the tendency may always be there for reinitiation to occur.

Controlling Reinitiation

In the third phase or risk factor modification, informants demonstrated significant and varying attempts at controlling reinitiation of the risk behavior. Controlling reinitiation refers to the ability to exercise a restraining or directing influence over the desire to reinitiate one's coronary risk behavior.

Controlling reinitiation was described as "working at it", as the following comment illustrates: "Something you've been doing for a long time is hard to stop. You have to work at it". Work, which is defined as "an activity in which sustained physical or mental effort is exerted to overcome obstacles to achieve an objective or result" (Mish, 1986), suggests that many activities, both mental and behavioral, were going on simultaneously as attempts were made to control the desire to reinitiate the risk behavior. These mental and behavioral activities to control reinitiation have been labelled cognitive and behavioral strategies and are described in the following paragraphs.

Cognitive strategies. Cognitive is defined as the process of knowing through conscious awareness (perception), understanding, and judgment (Mish, 1986). Thus, cognitive strategies were those in which the informant maintained a conscious awareness of the risk of reinitiating the risk behavior. These strategies were grouped by the investigator into four categories and labelled as: self-reinforcing statements, including self-affirmations; maintaining awareness; controlling thoughts; and controlling behavior, and are illustrated as follows:

a) Self-reinforcing statements were those in which the informant talked or reasoned with him or herself, as the following comment illustrates: "You have to talk to yourself". Self-reinforcing statements were described as both positive and negative, and were those that strengthened or increased the resolve to not reinitiate the risk behavior. An example of a positive self-statement is the following: "You have to talk to yourself, like 'You know a

cigarette is not going to solve it [a problem]'. Just tell yourself 'That's it!'. One type of self-reinforcing statements that involved positive thought statements which was repeated to oneself were self-affirmations, for example "I don't need it!" and "I've done it before, I can do it again". Negative self-reinforcing statements involved reminders of having had a myocardial infarction, as well as the consequences if the risk behavior were to be reinitiated, for example "I tell myself it [cigarette] isn't good for me. I don't want another heart attack. I don't want to go through that again".

b) Maintaining awareness involved a conscious alertness or guarding against reinitiating the risk behavior, as the following comment illustrates: "This is something I'm viciously afraid of [letting my guard down and starting smoking again]. This is something that I'm going to have to keep aware of for the rest of my life". This informant suggests that the tendency to reinitiate the risk behavior will always exist for him. "Viciously" implies dangerously aggressive (Mish, 1986) and it may be that he is so afraid of reinitiating the risk behavior that he will take aggressive measures to prevent this from happening.

c) Controlling thoughts involved exercising restraint or directing an influence over one's thinking, for example:

Just ignore it [thoughts about cigarettes]. Put your mind somewhere else.

If you can get it out of your mind. Keep your fingers busy and your mind occupied.

These comments suggest that one can control the desire to reinitiate the risk behavior by eliminatng thoughts of the risk behavior and keeping oneself occupied with other thoughts and activities not associated with the risk behavior.

d) Controlling behavior was a similar strategy but one that involved exercising restraint or directing an influence over one's behavior, for example "I got up and did something", and "I'm kinda forcing myself to walk away from the roast beef". These informants controlled the desire to reinitiate the risk behavior by either changing their behavior or exercising control over their behavior.

Behavioral strategies. Behavioral strategies were those that involved taking action to control one's environment in an attempt to avoid reinitiating the risk behavior. Several categories were developed from the data that described behavioral strategies; these were labelled controlling stimuli, substituting, self-monitoring, goal-setting, rewarding, being assertive, and exercising. These strategies are illustrated as follows:

a) Controlling stimuli were strategies aimed at structuring the environment in a way that decreased cues that had been found to stimulate cravings for the risk object. Controlling stimuli is illustrated in the following accounts:

The first thing is you don't buy them. This is the main thing because once you buy them, you've had it. You're going to smoke them, whether you smoke them all in one day or in a period of time, you're going to smoke them.

Watching T.V. with all the advertising. . . I've got to cut those off [Kentucky Fried Foods, McDonald's, A&W advertisements].

For these informants, the key to controlling reinitiation was to avoid or eliminate cues, such as the presence of cigarettes or watching advertisements of food on television, which would stimulate the urge to smoke or consume foods with a high-fat content. It was further suggested that the key to stopping smoking was to control access; if they were not available one could not reinitiate that behavior.

b) Substituting involved replacing the risk behavior with another behavior that the informant had determined to be more suitable in that it would not contribute to the progression of coronary artery disease. Substituting is illustrated in the following: "Take a drink of water, chew some gum. Grab a piece of carrot or something or a hunk of celery and munch on that. Munch on a toothpick". In this description, chewing on various alternate items were identified as substitutes for smoking.

c) Self-monitoring involved watching, observing, or checking one's behavior for the purpose of regulating or controlling it (Pender, 1982). The following are examples of monitoring weight and activity:

If I have to let out one (notch on belt) I know it's time to go back on the diet.

So I played [golf] hole-by-hole. I figured if I got tired after 1,2, or 3, I'd quit. These accounts suggest that notches on a belt may be used to gauge one's weight and golfing may be gauged by the number of holes golfed. Other indicators identified included weighing oneself daily and restricting oneself to small portions of food.

d) Goal setting involved identifying an end-point or goal toward which one's efforts were directed in order to attain control of the risk behavior. The following is an example where the goal to be attained was a specific weight-loss: "I've lost ten pounds since the hospital. I would like to get down to about 180 pounds". Similar goals were identified for reducing cholesterol level and increasing exercise activity.

e) Rewarding involved providing oneself with something that had been determined to be desirable upon attainment of a pre-set goal. Rewarding oneself is illustrated in the following statement: "If the doctor says down the road, you've brought your cholesterol level down fifty points, I might celebrate by going out and having a banana split. It'll be my reward for being a good boy". This informant was restricting his dietary intake of fatty foods and had decided that once his cholesterol level was within an acceptable level he would treat himself with a single food of a type that he had been denied.

f) Being assertive was another informant identified coping strategy and may be described as the ability to exercise one's personal rights, thereby acting in one's own best interest.

Being assertive is reflected in the following comments:

If somebody's in the family that's puffing away and this guy's got to quit smoking or he's decided he wants to quit smoking and he makes it known he wants to quit smoking....he can say "Look, you guys want to smoke? Go outside and smoke but don't do it in here. I want to quit".

g) Exercising was also described as a strategy to control reinitiation as the following account illustrates: "Cigarettes? I might take up jogging. . . get my heart pumping and show myself that I can run after the age of 46".

Thus, it can be seen that various cognitive and behavioral strategies were used by informants in their attempts to control reinitiation of their risk behavior. For some, however, reinitiation did occur.

Reinitiating

In risk factor modification, reinitiating may be defined as beginning a risk behavior following a period of abstinence. The process of reinitiating a risk behavior is described in the following statements:

All of a sudden you just break down. You go and get one and smoke them. You're feeling sort of weak or something.

It's funny how the mind operates. The subconscious can convince the conscious mind that one little drag isn't going to hurt you cause the subconscious wants it so damned much.

These comments suggest that reinitiation involved a "breaking down", where the informant weakened to the desire to reinitiate the risk behavior. It was further implied that breaking down occurred when the informant was feeling weak, that is, physically or mentally fatigued, and did not have the strength to resist the desire for the risk object. Reinitiating was also described as beginning with one "drag" of a cigarette or a sample of a high fat food item and occurred as the result of a subconscious voice luring the informant to resume the risk behavior. This process of reinitiating may be similar for returning to work at a high pressure job as the following account illustrates:

"I was completely away from it, although the company called about a year after in '86. 'The reason we called, we would like some opinion on something'. I started getting back into it and I enjoyed it".

For this informant, reinitiation of a high pressure job, which has been associated with the coronary-prone behavior pattern, occurred as the result of being lured back into his former role through the influence of external forces. Then as he got back into this role, the feelings of satisfaction that had been derived from it returned.

It was also revealed that it was difficult to remain away from one's job when feeling well enough to do the job. This difficulty of relinquishing a high pressure job is described in the following statement: "It's when I'm feeling good, when I have my good spells . . . you wonder why did I quit? Why do I stay down?" This comment illustrates the difficulty that some patients have in abstaining from performing a risk behavior when feeling well.

It appears then that there are several factors that contribute to reinitiation. These factors may include: a) feeling physically and mentally weak and not having strength to resist the desire for the risk object; b) luring thoughts of the subconscious; c) being lured by external forces into reinitiating ; and d) having difficulty abstaining when feeling well. It has also been shown that the process of reinitiating is similar for many of the coronary risk behaviors, whether it is cigarette smoking, diet, or one's job.

Informants reported that, upon reinitiation, the risk behavior was continued until a conscientious attempt was again made to relinquish it. Overcoming it the second time was brought about by a renewed effort at self-exploration and a reexamination of one's values and behavior, such as that which occurred during the second phase, acknowledging risk. This process of self-exploration is illustrated in the following statement:

It's inside yourself. We're two people. There's your inner self and your outer self. You have to get right down to your inner self to not take that cigarette. You just have to get down inside and say, "This isn't good".

This informant suggests that a person has an external self and an internal self and in order to relinquish the risk behavior, an individual has to delve into one's inner core, one's inner self, where feelings, values, and emotions exist, in order to have the strength to refrain from the risk behavior.

This act of confronting what is important to an individual has been termed self-confrontation and involves encountering and recognizing an inconsistency between one's values and one's behavior (Pender, 1982). Self-confrontation is reflected in the following statement: "I thought I had it out of the way. When you realize this you have to get yourself on the right track again". Thus, self-confrontation was an impetus for this informant to once again relinquish the risk behavior.

It can be seen, then, that risk factor modification may be a cyclical process in which following the myocardial infarction a confrontation of values occurred which precipitated a resolution to change. Reinitiating a risk behavior, precipitated once again a similar process of self-examining one's values which lead to renewed efforts to relinquish the risk behavior.

It was suggested that other factors, such as admitting that the behavior is a problem and breaking the pattern of behavior may also be important in regaining control of one's risk behavior. These points are illustrated in the following comments:

Realize that you have a problem in dealing with it [stopping smoking].

You have to get over not smoking, going back, running out of cigarettes and starting all over again.

Admitting that a risk behavior is a problem may be an important step in relinquishing that behavior and in accepting help to attain control. Breaking the pattern of behavior may be important in recognizing cues that lead to the risk behavior itself, as well as in developing new behaviors.

Regaining control may also involve a recognition of the ease with which the risk behavior can be reinitiated, as the following comment illustrates: "If I have one [cigarette], it'll be two. You can't seem to stop at one cigarette. You can't allow yourself to have one cigarette". For some informants, once the ease with which a risk behavior could be reinitiated was recognized, a state of maintaining awareness or guarding against situations which might lead to reinitiation of the risk behavior was developed. Once the risk behavior was again relinquished, renewed attempts at attaining control were employed. These attempts involved cognitive and behavioral strategies as previously described. This again points to risk factor modification as a cyclical process in which resolutions are made to relinquish the risk behavior, followed by renewed attempts at controlling reinitiation.

Thus, reinitiation involves beginning a risk behavior following a period of abstinence. It has been shown that there are several factors that contribute to reinitiating a risk behavior, such as breaking down and feeling physically or mentally fatigued and unable to resist the desire for the risk object; a luring subconscious; external forces, such as other people; and having difficulty abstaining when feeling well. Once the risk behavior was reinitiated, it continued until a process of self-exploration and reexamination of one's behavior in relation to values took place. This self-confrontation of values led to a further resolve to relinquish

the risk behavior and renewed attempts to control reinitiation using various cognitive and behavioral strategies demonstrating that risk factor modification may be a cyclical process. Further, the descriptions reveal that regaining control may be facilitated by admitting that the risk behavior is a problem, breaking the pattern of behavior that leads to the risk behavior, and realizing the ease with which the risk behavior may be reinitiated.

Summary

The findings of data obtained from informants' accounts of their experiences in modifying their coronary risk factors following an acute myocardial infarction have been presented. These themes contribute to the development of an analytic framework that explains participants' understanding of the process of modifying coronary risk factors following an acute myocardial infarction. Based on these findings, risk factor modification is viewed as a process of gaining mastery over one's coronary risk behavior that occurs in three phases: searching for attribution, acknowledging risk, and attaining control. Each of the three phases is described by the research participants in terms of various characteristics, each of which has been elaborated within the process theory outlined in the first part of this chapter. Attributing a cause of the infarction to a factor within the participants' realm of awareness was seen as critical for risk factor modification to occur. Following attribution of cause, a confronting of values of aspects of the informants' lives occurred which precipitated a resolution to change their behaviors. Following resolution to change, a process of relinquishing and withdrawing from the risk behavior occurred which led to the development of cognitive and behavioral coping strategies to control reinitiation. For some, reinitiation did occur which precipitated once again a self-exploration of values and a renewed resolution to relinquish the risk behavior. It was also shown that once again cognitive and behavioral strategies were employed to prevent reinitiation. These data indicate that risk factor modification may be a cyclical process which may be repeated each time reinitiation occurs.

It has been shown that risk factor modification is a process whereby mastery of one's coronary risk behaviors is gained through the proficient use of knowledge and skills that

enables an individual to attain and maintain control over the risk behavior. The identification of measures employed by participants in this study in controlling reinitiation of their risk behaviors has led the researcher to delineate specific interventions and strategies which may be used to aid other patients in modifying their coronary risk behaviors following an acute myocardial infarction. These interventions and strategies will be described in the following section, Part B.

Part B: Intervention in Risk Factor Modification

As well as exploring the experience of risk factor modification following an acute myocardial infarction, the investigator identified measures that could be provided to assist patients to modify their coronary risk factors. These measures were identified through informants' descriptive accounts and have been conceptualized in three main categories of intervention: teaching, counseling, and support. Under each category specific strategies that arose from the data have been delineated.

Teaching Intervention

Teaching may be broadly defined as "the imparting of knowledge" (Mish, 1983). It has also been referred to as "communication specially structured and sequenced to produce learning" (Redman, 1980, p. 10). In patient education the goal is to "bring about attitudinal or behavioral changes which benefit the person's health status through the interpretation and integration of information (Bell & Whiting, 1981).

Knowledge Required in Risk Factor Modification

In order to change one's behavior, one must have knowledge. The findings, as described in Part A: The experience of risk factor modification, have illustrated that this study's participants could identify specific knowledge that is required for them to be able to modify their coronary risk factors. The knowledge that is required is summarized as follows:

a) Knowledge of specific risk factors that may contribute to the development of coronary heart disease as indicated by comments, such as "I asked my doctor what causes one

[blockage] to go like that";

b) Knowledge of ways that specific risk factors influence the development of coronary heart disease, as the following statements indicate: "I knew that cigarettes were harmful but I didn't realize it could cause a heart attack", and, "My doctor told me, 'You should quit smoking, it's bad for your heart' but he never told me why it was bad for my heart. I didn't realize it plugged up your arteries". These comments suggest that patients may benefit from knowing the effects of their behavior in the pathogenesis of coronary artery disease.

Patients' need for an explanation was further revealed in the comment: "Explain what the food does to your system . . . you gotta see what it does to your system . . . that way you're well aware . . . you wouldn't eat so much of it";

c) Knowledge of specific behavioral changes required to reduce the risk of coronary heart disease. The findings of this study revealed that some informants were not aware that their behavior may have placed them at risk for premature coronary heart disease, particularly when the risk behavior was hypertension and the coronary-prone behavior pattern;

d) Knowledge of the effects of modifying one's coronary risk factors in reducing the progression of coronary heart disease. One informant indicated that, "[he] might take up jogging . . . get my heart pumping and show myself that I can still run after the age of 46";

e) Knowledge of how to change one's coronary risk factors, of the specific skills that might be employed in making any changes in lifestyle. As the following comments reveal, changing one's behavior is a difficult task, does not come automatically, but is learned: "it is so hard to stop [smoking]", and "[you've] got to learn to get off it [smoking]". The findings of this study have shown that patients need specific skills in attaining control of their coronary risk behaviors and that these skills are of a cognitive and behavioral nature.

Thus, it can be seen that patients need specific knowledge of coronary heart disease to enable them to modify their coronary risk behaviors, yet, some informants did think they had

sufficient information. Several factors were identified that may have contributed to a lack of knowledge.

Factors Influencing Learning

It was apparent from some informants' descriptions that many did not have sufficient knowledge to enable them to modify their coronary risk behaviors, particularly in the risk areas of diet and the coronary-prone behavior pattern. From their accounts, several factors were identified that may have contributed to a lack of knowledge. These included an inability to recall information, difficulty understanding information presented, insufficient learning time, and not receiving teaching. These factors are illustrated as follows:

a) An inability to recall information is described in the comment: "I saw one video and that was in day three in CCU and, honest to God, I couldn't tell you what it was on". This comment suggests that retention of information during the acute period of hospitalization, particularly during the critical period in the coronary care unit, may be very limited. This also suggests that the timing of a teaching intervention must be considered in relation to the patient's readiness for teaching to be effective in increasing knowledge.

b) Difficulty understanding information was another factor identified in the following comment: "It would have been nice if I could understand it [dietary information]". As this suggests, for learning to occur, the information must be understood. The importance of assessing the patient's ability to understand that which is being taught is reflected in another comment: "I'm not that knowledgeable a person. I only went to grade eight". These comments illustrate that for teaching to be effective, consideration must also be given to the patient's background of experiences that enables him or her to absorb and comprehend the information that is provided.

c) Insufficient learning time was another factor that was revealed in the following statement: "There just wasn't enough time. By the time she [dietitian] got through it her time was up. She had to rush". Patients have different learning needs and internalize information

at different rates, therefore sufficient time must be provided to enable the individual to learn. In this case, the patient felt inadequately prepared due to the teacher's rush (and unable to supplement learning by an opportunity to ask questions).

d) Not receiving teaching was also identified as a factor. It appeared that for various reasons, some informants may not have had the opportunity to learn, as the following comments illustrate: "Nobody said a darn thing to me at all [about how far to walk]" and "I didn't learn about it [foods to eat, foods to avoid]". A lack of knowledge of how to change the coronary-prone behavior pattern was also illustrated: "I can't do all that's been expected of me in the past . . . lots gotta change but I don't know how". If patients are to be expected to change their behavior, they must have sufficient knowledge to enable them to do so.

Measures to Facilitate Learning

Informants' descriptive accounts have also led to the identification of measures that may be important in providing teaching that is effective in increasing patients' knowledge of coronary heart disease and modifying coronary risk factors. These measures have been grouped into two sub-categories of teaching strategies: those that pertained to the teacher-learner interaction and those that pertained to the teaching approach.

Teacher-learner interaction. Given that teaching is a "special form of communication" (Redman, 1980), five measures were identified from the data that pertained to the interaction that takes place between the teacher and the learner. These measures were termed teaching nurse, engaging the learner, teaching at the patients' level of understanding, encouraging motivation, and involving the learner. Each strategy is described as follows:

a) A teaching nurse in hospital was one measure that was identified as important and is described in the following comment:

Make sure the patients get there. Have another nurse, someone with a helping hand . . . she'd go around to every room and wake everybody up who belongs to that portion of the class . . . to keep track of it . . . and make sure the patient . . . if he's healthy enough . . . to go.

This informant suggests that patients would benefit by having one hospital nurse whose responsibility it was to teach, record teaching provided, motivate patients to attend classes and in other words, ensure that patients received the amount and content of teaching that is required to enable them to manage their illness and modify their coronary risk factors.

b) Engaging the learner was another strategy identified through informants' descriptions. Informants believed it would have been beneficial if the information they had received on coronary risk factors had been communicated to them in such a way that they realized that continuation threatens life. The following comments illustrate the importance of engaging the learner's attention:

You can't tell anybody . . . they're not going to listen . . . but if the doctor says, "You're going to die . . ."

You have to threaten them so they will quit [smoking]. Don't mince the words . . . don't be soft on that.

These informants suggest that unless the patient is aware that the risk of continuing with a particular behavior is a threat to their life, they do not attend or internalize health messages. These comments further reveal that health messages must do more than create an intellectual awareness; for patients to attend to health messages, his or her attention must be more than superficially engaged.

c) Teaching at the patient's level of understanding was another measure identified as the following comment illustrates: "I only went to grade 8" and "If you buy a book [about heart disease], you don't know the first thing about the words in there . . . the words are so complicated". This suggests that for learning to occur, the learner must have had the background of learning experiences that enables him or her to learn.

The importance of communicating at an understanding level is further reflected in the following statement: "She [dietitian] didn't have time to explain what all those little words mean". Teaching is communicating and in health teaching where medical terminology is foreign to most people, comprehension begins with understanding the meaning of words

used in health care.

d) Encouraging motivation was another strategy identified that is reflected in the following statement: "I see a lot of guys just lying there. You gotta get them going. Get them motivated. Wake them up!" Some informants believed that for patients to have the opportunity to learn about their illness and the changes they might make to prevent further damage to the heart, they should be vigorously encouraged to attend the patient education classes even if this means disturbing their sleep.

e) Involving the learner in the teaching-learning process was another measure identified as important as the following comment illustrates: "I could've asked questions in the class session but you have no time". This comment illustrates that for learning to occur, the learner must be actively involved in the material being presented. Allowing time for the learner to ask questions involves the learner in the teaching-learning process and may strengthen learning outcomes.

Teaching approach. In addition to the nature of the teacher-learner interaction, the ability to learn is dependent upon the amount of time given for learning to occur and the quality of instruction provided (Redman, 1980). Thus, the teaching approach provides for conditions under which learning occurs and gives consideration to such factors as learning objectives, content, teaching methods, environment, teaching tools, and evaluation. In this study, the participants cited several measures that pertained to the teaching approach. The investigator labelled these multidisciplinary approach, group instruction, incremental learning, explaining information, demonstrating, and providing printed material.

a) A multidisciplinary approach refers to patient teaching that is provided by a variety of health professionals, such as is reflected here: "There should be a dietitian there every afternoon for an hour and then later a stress nurse talking about stress the same way ". This suggests that patients may benefit by having patient education taught by various health professionals, such as a dietitian, a stress nurse, a physiotherapist, or a social worker, who

is an expert in the sub-field (or speciality). It also illustrates how patients want accessibility to these health professionals when they feel they need them.

b) Group instruction was also identified as important in the following comments:

Classes provide the patient with a way to deal with what happened.

In the classes you are thinking about how to be healthy and how to stay healthy. These informants suggest that group classes help patients to adapt to the change that has occurred in their lives, and helps them to focus on changing from illness to health.

c) Incremental learning refers to providing information in increments and is illustrated in the following comment: "Everyday she [dietitian] will have to talk a little bit more; continually every day you get a little bit more". This informant suggests that teaching would have been more effective for him if he had had an opportunity to build learning in small increments daily, rather than attempting to absorb all of the content in one learning session.

d) Explaining information was another strategy that informants identified as important: "My doctor told me, 'You should quit smoking. It's bad for your heart', but he never told me why it was bad for my heart. I didn't realize it plugged up your arteries". The importance of explaining or expanding information was also described in this way: "Explain what the food does to your system . . . you gotta see what it does to your system, that way you're well aware . . . you wouldn't eat so much of it". These comments illustrate that patients know themselves that they need full explanation(s) of the effects of various behaviors on their health.

e) Demonstrating involves showing an intellectual skill, an attitude, or the performance of a procedure or psychomotor skill so that the learner knows what to do (Redman, 1980). Demonstrating has also been termed modelling (Redman, 1980). Several informants revealed that in order to follow the low-fat diet that had been prescribed, they collected the menus from their meal trays as examples of a low-fat diet that could be used when they went home as the following statement illustrates: "Another thing we're doing is following

basically what was given to me, the menus, that I brought home from the hospital".

Modelling is therefore important to retention of learning.

f) Printed material in books and pamphlets was another measure described as important: "I read everything in the books over and over so I can understand most of it". As this comment suggests, when printed information is constantly available to the patient, he or she can control the speed and depth of learning new information.

Thus, it can be seen that for teaching to achieve its goal of bringing about behavioral or attitudinal change to benefit the person's health status, knowledge is required for patients to be able to modify their coronary risk behaviors. In addition to providing information that may enable teaching to be more effective in increasing patients' knowledge of risk factor modification, participants of this study also described measures that could be provided to assist them to develop skills to enhance control of their coronary risk behaviors. These client skills may be developed through counseling.

Counseling Intervention

Counseling, in a general sense, is defined as "professional guidance of an individual" (Mish, 1986). More specifically, health counseling is "a mutual interaction process that is designed to enable a client to promote his or her own well-being, health" (Litwack, Litwack, & Ballou, 1980). Informants' descriptions of measures employed in attaining control of their coronary risk behaviors have led to a description of strategies that may be used to assist them and other patients in risk factor modification. These strategies have been grouped under the major descriptive category of counseling intervention. Under this main category, three sub-categories of strategies were identified and labelled as affective, cognitive, and supportive measures.

Affective Measures

Affective measures are those that focus on an exploration of attitudes, emotions, and feelings (Banks, 1985). Gaining insight into personal feelings, attitudes, and behavior

incongruencies involves a process of self-exploration (Redman, 1980, p. 25). Informants in this study underwent a process of self-exploration during the second phase of risk factor modification when they confronted values about their lives and resolved to make certain behavioral changes based on these values. Self-exploration and confronting values also occurred after the risk behavior had been reinitiated and led to a further resolve to relinquish the risk behavior. It was indicated that in order for an individual to change behavior, he or she had to "get right down to your inner self" for a resolution to be made. This validated the need for self-exploration and a confronting of values, initiated by the individual him or herself or facilitated by another, as a critical step in the risk factor modification process.

Further, participants report that it was critical for self-exploration and values confrontation to take place during the first four days after a heart attack: "The first four days when you get it [heart attack], that's the most important cause that's when you are depressed. You're not doing a darn thing for four days in the hospital and you have to be on your back. You can't get out of that". This suggests that the first four days after the MI, may be a "depressed phase" and the time when patients would benefit from a self-exploration of feelings, emotions, and attitudes related to the myocardial infarction and to possible changes in lifestyle. This period of time may be referred to as a "coasting period" and is described in the following statement: "You get a person who is just coasting along . . . you start talking to them about smoking . . . don't wait too long until they're feeling pretty chipper". This coasting period, then, may be a critical time for intervention to assist patients in risk factor modification, as it may be the time when the patient is most receptive to making decisions about changes in behavior. The importance of intervening at this critical time is further reflected in the following account:

It's important for the nurse to get him [patient] started [thinking] . . . A lot of people will tell you right there they've got nothing to look forward to or they've got so many things you don't know where to start . . . get him started . . . when he gets home his mind's ready, whatever he's gonna do, it's made up. You gotta start the patient . . . that's the whole thing.

This also suggests that if the process of self-exploration and confronting values does not occur during hospitalization, there is a greater likelihood that the patient will resume his or her former risk behaviors following hospital discharge. This was emphasized by another informant: "A lot of people don't make up that little bit of their mind to not smoke . . . so they smoke and have a heart attack".

Thus, as self-exploration and confronting values is a prerequisite to making resolutions to change one's behavior, patients may be assisted in this process through an affective approach to counseling. Furthermore, providing this type of counseling during hospitalization may be vital in assisting patients in making health-related decisions that will benefit their health status.

Cognitive and Behavioral Measures

Cognitive measures are those that emphasize the importance of increased awareness, as well as factual knowledge, and involve the use of intellectual resources. In this study informants described many strategies that they used to attain control of their risk behavior. The writer has labelled these cognitive and behavioral strategies. Both types reflect a cognitive approach to counseling (Banks, 1985). Through a cognitive approach, these and other patients may be assisted to modify their coronary risk behaviors by employing strategies similar to those used by the informants in this study. These cognitive strategies included self-statements, maintaining awareness, controlling thoughts, and controlling behavior, described previously (pp. 74-76). Behavioral strategies, on the other hand, involved taking direct action on the environment and were identified as controlling stimuli, substituting, self-monitoring, goal-setting, rewarding, being assertive, and exercising, and were also described previously (pp. 76-78).

Thus, these findings have shown that many of the strategies used by informants in this study to attain control may be employed by other patients to attain control of their risk behavior through affective or cognitive approaches to counseling. Simply put, counseling in

risk factor modification may be viewed as a process whereby the risk of an initial or recurrent myocardial infarction is reduced through the use of affective and cognitive strategies which enable an individual with coronary heart disease to attain control of his or her coronary risk behavior.

Supportive Measures

The third type of measure described by informants as important in their efforts to attain control of their risk behaviors was supportive in nature. Support is broadly defined as "assisting, helping, or providing comfort" (Mish, 1986). Support is also defined "to subsume both the quantitative description of a person's social network and his or her subjective perception of the amount and adequacy of help received" (Davidson, 1987). In this study, support refers to both the assistance, help, and comfort provided by others, as well as to the informants' social networks. Specific measures of support that were identified in this study were labelled providing emotional support, reinforcing behavior (positively and negatively), providing encouragement, and providing guidance. These measures are described as follows:

a) Emotional support may be expressed as caring or empathy and provides an individual with a sense that he or she is loved, valued, and has worth. The importance of feeling cared for is reflected in the following comment:

"It helps if you eat with the family cause you stay together and it helps you think about it [heart attack] more seriously. When you eat by yourself, then who cares [if you die]".

For this man, eating with his family reinforced their love for him which, in turn, causes him to think more seriously about what has happened and the changes he wants to make in hopes of living longer. He is also saying that when he eats by himself he feels less cared about by himself and his family (or others), then he does not care enough to change.

Emotional support, in the form of empathy from health professionals, was also described as important as the following statement reflects:

If they [patients] had a little bit more attention by the nurses. . . because a lot of people will tell you right there that they've got nothing to look forward to or that they've got so many things [to do] that they don't know where to start. The nurses never come in and talk to you and ask you how you're doing.

This comment suggests that patients need to feel that nurses care about them, particularly when ill in hospital. Supportive empathy and time to talk helps patients feel that someone cares.

b) The reinforcement of behavior was an aspect of support that was identified as important in patients' efforts to attain control of their risk behavior. Support that reinforces positively increases or strengthens the desired behavior and is illustrated in the following comment:

If you eat with somebody you eat just a little bit. You feel like somebody is watching that you eat too much. You gotta eat with somebody who's on about the same diet. I've got the wife on the same one as I'm on.

Reference to undesirable consequences by significant others (negative reinforcing) was also described as a supportive measure as the following illustrates: "My wife had to say 'No' or I would've gone for another round [golf]".

Reinforcing behavior was also identified as occurring in support groups that help individuals in behavior change. This is reflected in the following statement:

You can help them with support programs just like alcohol problems. They work on one another sometimes in these programs, supporting each other . . . 'Boy, I've gone four days' . . . and 'I've got it over you, I've gone a week'.

It was further indicated in the following comment that this kind of support was most important during the initial period of recovery when the individual was attempting to relinquish a risk behavior: "The only problem is just to get it started, until you get this monkey off your back. It's an addictive habit, like an alcoholic".

c) Providing encouragement was another supportive measure identified as important in risk factor modification. Encouragement means "to stimulate or to inspire with spirit and hope" (Mish, 1986). The importance of encouragement is reflected in the following

statement:

My wife is a great help. I think without her, I would've given up a long time ago. I would've just pushed it until I dropped. I would never have retired or tried to change or prolong . . .[life]. I'd never have made it without her. She helped me in every way to overcome everything.

This informant is indicating that without the support and encouragement that he received from his wife he would have not only given up a long time ago, he never would have tried to change or prolong his life.

d) Providing guidance through post-hospital follow-up was also identified as an important supportive measure in assisting patients to modify their coronary risk factors. The following comment describes a follow-up visit where the patient's progress was monitored and guidance was provided by a community home care nurse: "I had the community nurse come around for the first week and she advised me not to walk; the [heart] rate was down and the blood pressure was down". Follow-up in the form of smoking cessation clinics after hospital discharge was another form of support identified as important as the following statement reflects: "People can go to a clinic if they need help to stop [smoking]"

Thus, support has been shown to be important to informants' attempts to attain control of their risk behaviors. Supportive measures from significant others in the forms of emotional support, reinforcement of behavior, and encouragement have been identified. It has also been illustrated that support from others, including health professionals, in the form of empathy to help overcome the effects of illness, and encouragement and guidance in achieving health goals were also identified as important. In addition, it was indicated that support groups are valuable during the initial period of recovery when patients are attempting to relinquish a risk behavior. In these groups patients can identify with others and receive support from those who are attempting to make similar changes in lifestyle.

Summary of Findings

The findings from data obtained from patients' accounts of their experiences in risk factor

modification have led to an identification of measures that could be provided to assist patients in risk factor modification following acute myocardial infarction. These measures have been categorized under three main types of intervention: teaching, counseling, and support. Within each category specific strategies were delineated.

When discussing teaching, these patients identified specific knowledge that they needed to modify their coronary risk behaviors, in particular knowledge of ways specific risk factors influence the development of coronary heart disease and how to change one's coronary risk behaviors. Strategies to facilitate learning were also identified and were labelled as: a) those that pertained to the teacher-learner interaction, such as a teaching nurse, engaging the learner's attention, teaching at the patient's level of understanding, and encouraging motivation; and b) those that pertained to the teaching approach, such as a multidisciplinary approach, group instruction, incremental learning, explaining information, demonstrating, and printed material. These strategies are illustrated in the following table (Table 4).

Table 4. Summary of Measures to Facilitate Learning

<u>Teaching Intervention</u>	<u>Specific Measures</u>
Teacher-learner Interaction	Teaching Nurse Engaging Learner Teaching at Patient's Level of Understanding Encouraging Motivation
Teaching Approach	Group Instruction Incremental Learning Explaining Information Demonstrating Printed Material

Counseling in risk factor modification is a process whereby an individual with coronary heart disease is assisted to reduce the risk of an initial or recurrent myocardial infarction through the use of affective, cognitive, and behavioral strategies which enable him or her to attain control of one's coronary risk behaviors. The participants of this study employed

affective strategies, such as self-exploration and values confrontation in resolving to relinquish their risk behaviors. It was indicated that the use of such strategies may be beneficial in assisting other patients in resolving to change their behavior, particularly if provided during the acute period of hospitalization. Cognitive strategies that were used included self-statements, maintaining awareness, controlling thoughts, and controlling behavior. Behavioral strategies included controlling stimuli, substituting, self-monitoring, goal-setting, rewarding, being assertive, and exercising. Through a cognitive approach to counseling, other patients may be assisted to develop similar skills to control reinitiation of their coronary risk behaviors following hospitalization. These strategies, employed to gain a sense of mastery over coronary risk behaviors, are illustrated in the following table (Table 5).

Table 5. Strategies for Gaining Mastery of Coronary Risk Behaviors

<u>Strategies for Gaining Mastery of Coronary Risk Behaviors</u>	
<u>Counseling Intervention</u>	<u>Specific Strategies</u>
Affective Measures	Self-Confrontation Self-Exploration
Cognitive Measures	Self-Statements Maintaining Awareness Controlling Thoughts Controlling Behavior
Behavioral Measures	Self-Monitoring Controlling Stimuli Rewarding Self Goal-Setting Being Assertive Exercise

Support from significant others, as well as from health professionals, was found to be an important measure in informants' attempts to modify their coronary risk behaviors. Specific measures of support that have been identified in this study include emotional support, reinforcing behavior, providing encouragement and providing guidance. These support

measures are illustrated in the following table (Table 6).

Table 6. Summary of Support Measures Required in Risk Factor Modification

<u>Support Measures Required in Risk Factor Modification</u>	
<u>Support Intervention</u>	<u>Specific Measures</u>
Support	Emotional support Reinforcement Encouragement Guidance

In conclusion, this chapter has presented the findings of a phenomenological study to explore patients' perceptions of the experience of risk factor modification and to identify measures that could be provided to assist patients to modify their coronary risk factors following an acute myocardial infarction. In order to provide a context for these findings, in relation to current professional literature and previous research, a discussion of these findings will be presented in the following chapter.

Chapter 5

DISCUSSION OF FINDINGS

A summary of six patients' perceptions of their experiences in risk factor modification following an acute myocardial infarction (MI) have been presented in Chapter 4. These findings led to the development of an analytic framework in which risk factor modification was described as a process of gaining mastery over the coronary risk behavior. The purpose of this chapter is to discuss the significance of these findings in relation to current professional literature, and thus to develop a further understanding of the phenomenon of risk factor modification. This discussion is organized in two sections: the first section, "The Experience of Risk Factor Modification" will discuss the process of modifying coronary risk factors following an acute myocardial infarction; and the second section, "Intervention in Risk Factor Modification" will address measures to assist patients in this process. Throughout this discussion reference is made to literature reviewed in Chapter 2, as well as to additional literature required to provide a context for the research findings.

Part A: The Experience of Risk Factor Modification

Risk factor modification following an acute myocardial infarction has been shown to be a process of gaining mastery over the coronary risk behavior that occurs in three phases: searching for attribution, acknowledging risk, and attaining control. These phases and behaviors have been illustrated in Figure 1 (p. 51).

Mastery means "to become the master of, to become skilled or proficient in the use of, or to become the device or mechanism that controls the operation of another" (Mish, 1986). Mastery centers upon gaining control of one's life (Parkes, 1971; White, 1959). In gaining mastery, three types of personal control have been distinguished by Averill (1973) as: a) cognitive control, the interpretation of events or information; b) decisional control, having a choice among alternative courses of action; and c) behavioral control, taking direct action on the environment. In this study some form of personal control was demonstrated in each

phase of risk factor modification as informants attempted to gain a sense of mastery over their risk behavior(s). The following section will discuss the phases of risk factor modification and will illustrate how personal control is integral to the process of gaining mastery.

Phase I: Searching for Attribution

The first phase, searching for attribution, was initiated by all informants with an acknowledgement that a heart attack had occurred. Following this acknowledgement, a search was undertaken for a cause, and the cause was attributed to a factor or factors which was (were) perceived by the informant to have caused the infarction. As such, searching for attribution was characterized by three behaviors: acknowledging, searching, and attributing.

An acute myocardial infarction may be viewed as a crisis event in an individual's life. A crisis is experienced when "one's repertoire of coping responses are inadequate in effecting a resolution of stress" (Fink, 1967). As such, it is "a turning point where there occurs a reorganization of some of the important aspects of psychologic structure" (p.592). A crisis event has been described in terms of sequential phases, from prelude or the first sign of distress, to impact of the critical event, and finally to acknowledgement and adaptation (Fink, 1967; Shontz, 1975). Acknowledgement begins when the realities of the crisis are faced and is followed by the beginning of a reorganization in terms of altered reality perceptions; that is, things are recognized for what they are and a planned course of action is undertaken (Fink, 1967).

Shontz (1975) states that acknowledgement often occurs once a physical plateau has been experienced and in this study it was shown that acknowledgement may have begun as early as two to four days post-infarction. At this time, a "coasting period" was described in which the informant was "just coasting along". This "coasting period" appeared to be a time when the realization of the event was beginning to impact upon the individual's conscious awareness as it was described as a time when a patient would be receptive to discussing risk behaviors.

Retreat from the reality of a traumatic event is often observed following an acute myocardial infarction and may be manifested as avoidance or denial (Shontz, 1975). Denial serves to protect an individual from the pain of a traumatic event but it also "perpetuates destructive (addictive) behaviors and prevents an individual from seeking and accepting needed help" (Kiening, 1978, p. 215). Although denial was not observed in any of the informants in this study, it is an important behavior to be assessed since risk factor modification cannot begin until acknowledgement takes place.

The informants in this study also initiated the interviews with a description of a factor (or factors) which was (were) perceived to have caused their heart attack. Searching for the cause of an event, such as a myocardial infarction, is an attempt to understand and find meaning in an experience; why it happened and what the significance is on one's life (Taylor, 1983). This imposition of meaning on a potentially threatening event is a form of personal control, termed cognitive control by Averill (1973). Imposing meaning is one way of predicting and controlling one's life (Averill, 1973, p. 300).

A number of investigators (Bulman & Wortman, 1977; Taylor, 1983; Wong & Weiner, 1981) have observed that following a crisis event individuals seem compelled to find meaning in an experience by asking "why?" questions. In an investigation of this issue with spinal cord injury patients, Bulman and Wortman (1977) found that all respondents had asked themselves this question of why it happened? In another study, Taylor (1983) found that 95 per cent of cancer respondents had some explanation for why their pathology had occurred. It was hypothesized that "positive adaptation to a life-threatening event requires an attempt to understand why the event happened and what impact it has on one's life" (Taylor, 1983, p. 1162). Silver and Wortman (1980) believed that psychologic adjustment may be influenced by one's ability to find a sense of meaning in an experience. Wong and Weiner (1981) also found that people engage in a search for cause or attribution, particularly when the outcome of an event is negative and unexpected, but how this search is conducted is

unknown. Therefore, it should not be surprising that informants in this study underwent a search for the cause of their myocardial infarction. People need to understand why an event happened, particularly when it is perceived to be an aversive event, and what the significance is on one's life.

Wong and Weiner (1981) hypothesized that individuals use heuristic rules that restrict causal search to selected areas of the total possible solutions; that is, causal search is neither random nor exhaustive but is guided by a set of heuristics. Heuristics are conceptualized as various foci of attention that guide individuals to formulate hypotheses and seek relevant information in their search for causal understanding. It is further hypothesized that causal search will focus first on the source or locus of causality (whether the cause resides within the person or in the external world) and will then shift to the controllability of the cause (whether it is subject to personal influence). In this search for causality "an individual implicitly asks 'Is it because of me?' followed by 'Could I have prevented it from happening?'" (p. 654). Although participants in this study did not state that they questioned themselves directly like this, the findings of this study revealed that they believed their behaviors may have caused the heart attack and that they might have been able to prevent it from happening.

Kelley (1972) maintained that attributions and causal inferences are derived from causal schemata. A causal schema is a general conception the person has about how certain kinds of causes interact to produce a specific kind of effect. A schema is derived from an individual's experience in observing cause and effect relationships, and from implicit and explicit teachings about the causal structure of the world. Attributing cause is derived from attribution theory (Kelly, 1967) which is concerned with the process by which an individual interprets events as being caused by particular parts of a relatively stable environment. This theory describes the processes that operate "as if the individual were motivated to attain a cognitive mastery of the causal structure of his or her environment" (Kelly, 1967, p.193).

In this study, all causal attributions were lifestyle factors: smoking, diet, weight, or stress. However, Bar-On and Cristal (1987), in an exploratory study of causal attributions of patients after their first myocardial infarction, found that there were five causal patterns among subjects' interpretation of their infarction: a) fate and luck where the MI and coping with it was attributed to external causes, such as fate, luck, lack of attention from others, and life's pressures; b) denial, that included responses such as "Nothing happened to me"; c) control of the future where no causes for the MI were mentioned only internal control for coping, "I will start to follow my physician's advice"; d) limits and strength where it was believed that anger, not fate, caused the attack; and e) physical model where the individual believed that it happened because he or she smoked, or ate too much.

In Bar-On and Cristal's (1987) study, subjects were interviewed using a set of structured questions, such as "Why did the MI happen?". Subjects selected their answers from a list of twenty possible answers. These answers were then factor-analyzed into clusters which resulted in the emergence of five main categories of causal attributions. Although this approach to data collection may provide for much variation in the responses selected, it may also eliminate possible responses, as well as leading the respondents into selecting certain answers.

In this present study, the investigator asked subjects semi-structured questions, such as "What is it like making certain lifestyle changes following a heart attack?". This was intended to be a general question to introduce the main theme of the interview. Although participants in this study did not identify such causal attributions of fate and luck, they did express their understanding or perception of what may have caused their heart attack. Further research with a larger sample of patients recovering from an acute MI might reveal a larger variety of causal attributions.

Bar-On and Cristal (1987) also explored whether causal attribution patterns at early stages of a myocardial infarction experience may affect later behavioral outcomes. The findings

indicated that subjects who attributed the occurrence of their infarction, and success in coping with it, to externally determined factors, such as fate, luck, and chance planned and practiced fewer behavior changes, relied less on the help of wife and physician, and returned to work more slowly, and functioned at a significantly lower rate than patients who attributed the MI to internally determined factors, such as anger or lifestyle habits. It was suggested that patterns of attribution may be important cognitive patterns that influence rehabilitation after a myocardial infarction. Bar-on and Cristal (1987) suggest that asking patients "Why did it happen to you?", may help identify those who are in need of more intensive help. It was also suggested that attributions of fate and luck can be defined as psychologic risk factors that should be diagnosed and treated accordingly as these attributions may lead to fewer behavioral changes following hospitalization. It is noted that such longer term observations of attribution were not the scope of this study.

The influence of causal attributions on behavioral changes following hospitalization was also explored by Newton and others (1985) who found that patients who accurately identified their coronary risk factors at an early time following their myocardial infarction had significantly more behavioral changes in the areas of smoking and weight loss, but not regarding dietary changes or exercise. It was not the purpose of this current study to examine behavioral changes following hospitalization, however findings similar to those of Newton and others (1985) were observed. In this study participants who identified causal attributions of smoking and diet during hospitalization reported making changes in smoking and dietary behavior following discharge. Other risk factors, such as the coronary-prone behavior pattern and a lack of exercise were not identified as causal attributions and behavioral changes in these areas were not observed during this study.

Phase II: Acknowledging Risk

The second phase in the process of risk factor modification, acknowledging risk, was characterized by perceiving susceptibility to a recurrent myocardial infarction and possible

death, confronting values, and resolving to change one's behavior.

Susceptibility to coronary heart disease had new significance for informants in this study once a heart attack had been experienced. These informants stated that prior to the infarction, they had been aware that certain behaviors, such as smoking and being overweight were unhealthy, but didn't realize they contribute to a heart attack. Once a heart attack had occurred, however, they could no longer dissociate themselves from this risk.

Leventhal (1973) and Becker (1974) state that perceived susceptibility to a health risk is an important factor in people's decisions to take health action. Becker (1974) maintains that in order for an individual to take health action, a triggering factor is required, such as an interpersonal crisis or interference of a symptom with a valued social activity. The Health Belief Model (Becker, 1974) states that people are not likely to take health action unless:

- a) they believe they are susceptible to the disease in question,
- b) they believe the disease would have serious effects on their lives,
- c) they are aware of certain actions that can be taken and believe that these actions may reduce their likelihood of contracting the disease, or reduce the severity of it, and
- d) they believe that the threat of taking the action is not as great as the threat of the disease itself.

Participants in the current study often acknowledged personal susceptibility to a recurrent myocardial infarction. Their beliefs that serious repercussions would result was clearly expressed. Becker (1974) states that in understanding a person's decisions to take health action, this variable of perceived susceptibility must be extended to the individual's estimate of "resusceptibility" or the likelihood of recurrence of the illness. Even when an individual recognizes personal susceptibility action will not occur unless he or she also believes that becoming ill would bring serious organic and/or social repercussions.

An individual who has sustained an acute myocardial infarction can no longer deny his or her susceptibility to coronary heart disease and realizes that this disease may have serious

impact on his or her life. He or she also learns, from health professionals and various education programs, that taking certain actions, such as quitting smoking or becoming physically active, may reduce the risk of further heart damage and that taking such actions is not as great a threat as coronary heart disease itself.

These findings, of the association between perceived susceptibility and decisions to take health action, are contrary to those of Muench (1987), where a relationship between perceived susceptibility and health motivation was not found. Muench (1987) postulated that one explanation may have been the composition of the sample. Of the sample, 62.5 % had had a myocardial infarction and 34.1 % had had coronary artery bypass surgery (CABG). It was felt that the CABG subjects and the post-myocardial infarction subjects may have had different perceptions of susceptibility to complications. These perceptions may have been influenced by "the degree of atherosclerosis present; the length of symptoms, such as angina prior to the event; the reason for surgery; and the postsurgery or post-myocardial infarction course" (p. 134).

During Phase II, informants indicated that changing one's behavior required more than an intellectual awareness of risk, but rather a realization on a deeper level of awareness: "you have to get down to your inner self". Other comments that suggested that an individual has to "believe" that a heart attack or possible death may occur if the risk behavior is continued, reflect an awareness at the affective domain of behavior. Reilly (1980) states that behavior is manifested in three ways: cognitive or intellectual, affective or feeling and valuing, and psychomotor or motor skills. The affective domain relates to "ethics and the standards or principles, or value indicators, upon which behavior is based" (p. 54).

The informants of this study described that, as a result of having had a heart attack and realizing that they were at risk for further damage to their heart and possible death, they began to examine their behavior in terms of their values about themselves and their lives. A value is defined as "an enduring belief that a specific mode of conduct or end-state of

existence is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence" (Rokeach 1973, p. 6). Values function as standards that guide behavior and helps one to choose between alternatives, resolve conflicts and make decisions. It has been stated that "a change in behavior arises from a conflict, discrepancy, inconsistency, or discontent with the status quo" (Redman, 1980, p. 101). Confronting one's values relates to the affective domain of behavior and was seen by this study's participants to be an important step in the process of risk factor modification.

Confronting values was brought about by the experience of having had a myocardial infarction, as well as a realization of susceptibility to further damage and it involved encountering values of one's life which were perceived to be important. This process was described as one of sorting and balancing of, on the one hand, continuing with the behavior knowing the risk, and on the other hand, giving up the risk behavior in hope of longer life. Confronting values was shown to be an important factor in resolving to change behavior.

Changing one's behavior was described as more than making a decision. It required a deeper commitment, one of "really making up your mind". This required not just a decision to change but a resolution. Whereas a decision is defined as making a choice, a resolution implies a firm determination to do or to refrain from doing (Mish, 1986). To these informants, changing behavior required more than making a choice, but an inner determination to change, to refrain from reinitiating the risk behavior.

Fink (1967) and Shontz (1975) have asserted that it is when the crisis event has been acknowledged that a genuine self-examination begins to take place. In this study it was shown that a self-examination took place during the acknowledgement phase, and that it was in terms of the values possessed by each individual. Furthermore, this self-examination of values was shown to have influenced health-related decisions and to be important to behaviors that occurred following hospitalization.

Informants also indicated that it is important for this valuing process to take place while

the patient is in hospital. The patient needs to come to terms with his or her values of what is important in life so that upon discharge from hospital he or she is committed to a course of action and behavior is then a matter of following through on one's resolve. It was further indicated that if this valuing process is not undertaken during hospitalization, there is a greater likelihood that the risk behaviors will be resumed when the patient goes home. As Matheson, Selvester, and Rice (1975) stated, the patient returns to the life that was led before becoming disabled.

Pender (1982) has suggested that a fundamental shift in personal values may be a prerequisite to significant health-related behavior changes (p. 212). This study has shown that the values held by an individual are important determinants of behavior and that an examination of these values is a prerequisite to health-related behavior changes.

Resolving to change one's behavior may be seen as decisional control, a form of personal control, as distinguished by Averill (1973). Decisional control relates to pre-decisional processes and, as Averill (1973) states, "it is not the objective range of choices which determines whether or not a person experiences control, rather it is the degree to which one agrees or identifies with the choices one has, no matter how limited" (p. 300). A person will experience choice "when he or she is acting according to his or her beliefs or by doing that with which he or she agrees; in this way one controls one's destiny" (p. 300).

The process of making health-related decisions, and the role of values in these decisions, has been examined by Baric (1969). Baric postulated that a decision to undertake a health-related action begins when a person is faced with several mutually exclusive alternatives, for example to continue to smoke and risk an initial or recurrent myocardial infarction, or to not smoke and reduce this risk. This decision-making process consists of three stages: receiving information, making a decision, and undertaking an action. The decision on whether or not to undertake an action is dependent upon the kind of information received and the state of health in which the recipient of the information finds him or herself

at that time. Since a choice must be made between two possible decisions, and because each alternative has certain attractiveness, a state of conflict exists. To resolve this conflict, each alternative must be evaluated. If the conflict is not resolved, no action will follow and different alternatives will continue to be assessed. If the conflict is resolved, an action will be undertaken and the decision made will be equal to a commitment to the alternative chosen. Since behavior reflects one's values, resolving this conflict may be through a self-examination of one's values. Therefore, the goal of intervention, during the acknowledging risk stage of risk factor modification, may be seen as helping patients resolve this conflict so health-related decisions can be made.

Phase III: Attaining Control

Following a resolution to change, the third phase of risk factor modification began which was termed attaining control. Attaining control is seen as the ability to exercise restraint or to direct an influence over one's coronary risk behaviors. The ability to attain control leads to a sense of mastery. Attaining control was characterized by three behaviors: relinquishing or giving up the risk behavior; withdrawing or letting go of the risk behavior; and controlling reinitiation.

Relinquishing is defined as the surrendering or giving up of a risk behavior with reluctance. Relinquishing one's risk behavior was described as a difficult thing to do and may have been outweighed only by the determination to prevent further heart damage and have longer life. In this study, relinquishing was seen to have been influenced by the degree of awareness that a particular behavior may increase one's risk of coronary heart disease, for example several informants exhibited behaviors that have been associated with the coronary-prone behavior pattern as described by Rosenman and colleagues (1964) and illustrated in Chapter 3 (page 42). However little awareness was demonstrated by these informants of this behavior pattern as a coronary risk factor. Therefore, it is unlikely that any changes will occur to modify this coronary risk factor. Similar findings were revealed for

hypertension as a coronary risk factor. In addition, relinquishing was also shown to be associated with knowledge the informant may have had of how to change a risk behavior, for example one informant acknowledged that "changes had to be made" but that he did not know how. Patients cannot be expected to modify their coronary risk behaviors if they do not know how to change them.

Relinquishing may also be influenced by how well a person judges his or her capability to give up a risk behavior. How well a person judges his or her capability of performing an action has been termed self-efficacy by Bandura (1982). Self-efficacy judgements, whether accurate or faulty, influence an individual's decisions and subsequent behavior. Bandura (1982) asserts that people avoid activities that they believe exceed their coping abilities but undertake and perform assuredly those that they judge themselves capable of managing. Judgments of self-efficacy also determine how much effort people will expend and how long they will persist in the face of obstacles or aversive experiences. When faced with difficulties, people who doubt their capabilities give up, whereas those who have a strong sense of self-efficacy exert greater effort to master the challenges. In this study, several informants reflected doubts of their ability to relinquish a risk behavior, partly because they had been unable to give them up in the past. However, in most instances the experience of having had a myocardial infarction provided an additional impetus for them to developing strategies to facilitate change.

The study by Ewart and others (1987), of patients' perceptions of their ability to perform various physical activities, showed that self-efficacy was a reliable determinant of physical performance. It was shown that patients appeared to realistically appraise their capability to perform various physical activities even before carrying out these activities. This study was also significant in demonstrating that counseling by a nurse and a physician resulted in changes in self-efficacy that enhanced patients' activity levels but unfortunately, this counseling intervention was not described by Ewart and colleagues (1987). In a similar way,

it is postulated that counseling in risk factor modification may enhance patients' abilities to modify their coronary risk factors and, hence, prevent an initial or recurrent myocardial infarction.

Once the risk behavior had been relinquished, a process of withdrawing began to take place. Withdrawing from a risk behavior was described as one of giving up an addiction, of being like an alcoholic. Many references were made to smoking and to food as an addiction, and similar comments reflected concerns about exercise and one's high-pressure job. One informant described his job in terms of the inability to give it up even though he recognized the stress associated with it had been detrimental to his health. In another description, jogging which is generally considered to be a healthy behavior was also described as an addictive behavior.

Informants' accounts that coronary risk behaviors may be regarded as addictive behaviors were unexpected findings for the investigator. However, Schaef (1987) contends that, "we are an addictive society" and that the majority of people today have some form of addiction" (p. 15). An addiction by definition is "anything or process over which we are powerless, that has control of the individual. It is anything that we are not willing to give up" (p. 19). Schaef (1987) divides addictions into two major categories: substance addictions and process addictions. Substance addictions are those that are deliberately taken into the body, such as alcohol, drugs, nicotine, caffeine, and food. One can be addicted to eating (overeating), to not eating (anorexia), or to eating a huge quantity and then desperately trying to get rid of it (bulimia). Sugar can be a fix in much the same way as mood-altering chemicals, as can salt. In a process addiction one becomes hooked on a process, a specific series of actions or interactions. Process addictions include: relationships, accumulating money, gambling, sex, work, religion, and worry. Not all addictions are of equal severity but "all exhibit similar processes and behavioral dynamics and all addictions, like any serious disease, eventually lead to death" (p. 16). Even in an addictive relationship, "the stress can

kill you" (p. 15). To recover from an addiction, control must be gained of the addictive behavior.

Recently, the United States Surgeon General suggested that smoking is an addiction (Brody, 1988). However, it is believed that no other research to date has shown or indicated that other coronary risk behaviors may also be regarded as addictive behaviors. Viewing these behaviors, and the difficulty in modifying them, in terms of addictive behaviors, provides some insight into the difficulties experienced by individuals when attempting to give up these risk behaviors, including those in this study.

Withdrawing from a risk behavior was described as more difficult when the informants went home from the hospital. It was indicated that while in hospital, it was not as difficult to abstain from the risk behavior as they were "not feeling well", and "didn't really feel like smoking". However, upon returning home, feeling unprepared to cope with urges and cravings for the risk object led to feelings of frustration. These feelings of frustration, and the lack of skills to control reinitiation led some informants to reinitiate the risk behavior.

Another significant finding of this study was that withdrawing from a risk behavior is something that is learned. It is postulated by the author that cardiac rehabilitation programs may expect patients to intuitively know how to change their behaviors. However, these findings clearly illustrate that changing one's behavior is not something that is automatic or intuitive, but a skill that is gained by instruction or experience.

Attaining control of one's coronary risk behaviors was described as something that one works at. Work is "an activity in which sustained physical or mental effort is exerted to overcome obstacles and achieve an objective or result" (Mish, 1986). In informants' accounts of their attempts to prevent or control reinitiating their risk behavior it was evident that many mental and physical activities were employed, such as cognitive and behavioral strategies. As described in Chapter 4, such strategies are forms of personal control that have been distinguished by Averill (1973). Cognitive strategies, such as self-reinforcing

statements and controlling thoughts and behavior were those that involved a conscious awareness and exerting a direct influence over one's thinking. Behavioral strategies, such as controlling stimuli, substituting, and self-monitoring were those that involved taking action to control one's environment.

Averill (1973) defines cognitive control as "the processing of information or events (in such a manner as to reduce the long-term stress of adaptation" (p. 292). This definition infers conscious awareness and interpretation of events or information. Averill (1973) also distinguishes between two types of cognitive control: information gain and appraisal. With information gain the evaluation of the threat is relatively objective, while with appraisal interpretation of an event is "modified to conform to the needs and desires of the individual" (p. 293). Research has shown that when a situation is complex or ambiguous, a person does not simply obtain information, he or she actively imposes meaning on an event (Averill, 1973), such as that which occurred in informants' search for attribution.

Averill (1973) further defines behavioral control as "the ability to take action on the environment to directly influence or modify the objective characteristics of a threatening event" (p. 287). There are two types of behavioral control: regulated administration, where "an individual controls such things as how and when a stimulus will be encountered" (p. 287); and stimulus modification, where "the stimulus may be prevented entirely, terminated prematurely, or otherwise modified by some form of direct action, such as avoidance or escape" (p. 287).

Behavioral strategies, as described by informants in this study may also be seen as those that regulated how and when a stimulus would be encountered (regulated administration) and those that prevented or modified the stimulus through direct action (stimulus modification). Those that involved regulated administration were those that controlled stimuli (where the environment was structured to decrease cues that had been found to stimulate cravings for the risk object) and where the informant exercised personal control over the environment in

order to decrease these cues (being assertive) . Stimulus modification strategies may be seen as those that involved substituting or replacing the risk behavior was with another behavior; self-monitoring (watching, observing, or checking one's behavior for the purpose of regulating or controlling it), goal-setting (identifying a goal toward which one's efforts are directed in order to attain control of the risk behavior), and rewarding (providing oneself with something upon attainment of a pre-set goal).

Finally, an important aspect of mastery in relation to the environment is the feeling that one's actions can influence events in a way that is perceived to be favorable (Auger, 1976). The extent to which individuals believe they have or do not have the power to control what happens to them has been termed locus of control (Rotter, 1966). Individuals who believe that what happens to them is primarily due to their own actions or attributes are characterized as having an internal locus of control, while those believing that what happens to them is principally because of luck, fate, chance, or powerful others are considered to have an external locus of control. Locus of control has been shown to have considerable predictive power in determining the degree to which individuals accept or claim personal responsibility for health-related behaviors. Persons with an internal locus of control appear to be more motivated, more able to extract relevant information or situational cues from the environment and to use this data in effective problem-solving, and have a greater sense of self-responsibility for their behavioral outcomes (Arakelian, 1980).

In this study informants made no indication that they believed that what would happen to them would be principally because of fate or luck. On the contrary, they demonstrated a determination to do all that they could to prevent a recurrent myocardial infarction and made significant attempts at changing their behavior. It is possible that these endeavors were a function of being in a study in which they may have perceived that the investigator would be evaluating their behavior. However, as it has been shown, many of these informants demonstrated behaviors that have been associated with the coronary-prone behavior pattern

and this behavior pattern has been associated with an internal locus of control (Strickland, 1979, p. 228). Indeed, informants in this study were motivated, self-reliant, and were well able to develop strategies for attaining control based on environmental cues and information they possessed. Therefore, it is not surprising that they were engaging in behaviors to facilitate health and well-being.

In studies of locus of control and health behavior, it has been shown that internals are able to change smoking behavior to a greater extent than externals (Steffy, Meichenbaum, & Best, 1970) and are more likely to stop smoking either independently or following participation in a planned program, than those with an external locus of control (Best & Steffy, 1971). In studies of weight loss, externality has been associated with being overweight (Cohen & Alpert, 1978) and internals have been found to be more successful in losing weight (Manno & Marston, 1972). An internal locus of control is seen to be a desirable perspective in patients' adherence to a prescribed treatment program, therefore interventions that focus on promoting internality may promote behaviors that facilitate health (Arakelian, 1980).

Summary

The findings of the experience of risk factor modification have been discussed in relation to current professional literature and previous research. It can be seen from this discussion that several significant findings have been derived from this study. One finding was that searching for attribution may be an attempt to find meaning in the experience of having had an acute myocardial infarction and the significance of it on one's life. Finding meaning in an experience is a form of personal control that enables an individual to predict and control one's life and may facilitate positive adaptation to an aversive event. A second finding was that changing one's behavior involves more than making a decision; it requires a resolution at a deeper level of commitment, one that reflects an inner determination to change. Furthermore, this resolution to change derives from one's perception of susceptibility to

further heart damage and possible death, as well as one's values about life. One of the most significant findings was that coronary risk behaviors, whether it is smoking, food, exercise, or one's job may be regarded as addictive behaviors. Changing these behaviors involves a process of relinquishing, withdrawing, and developing strategies to control reinitiation. Finally, another major finding was that changing one's coronary risk behavior(s) is not something that is automatic or intuitive, rather it is a skill that is learned through experience or instruction. The next section, Part B, will discuss intervention to assist patients in risk factor modification following an acute myocardial infarction.

Part B: Intervention in Risk Factor Modification

In cardiac rehabilitation, the goal is to assist those with coronary heart disease to attain and maintain an optimal level of physical and psychosocial functioning (Hoepfel, 1982). However, as has been stated, an optimal level of functioning can only be attained when those factors that are known to contribute to the progression of coronary artery disease are reduced or eliminated (Matheson, Selvester, & Rice, 1975). Risk factor modification is integral to comprehensive coronary care (Kellerman, 1983) but the measures required to assist patients to modify their coronary risk factors had not been made explicit in any of the literature reviewed. Hence, the impetus for this study arose from a need to identify specific measures to assist patients in risk factor modification following an acute myocardial infarction.

It has been shown that risk factor modification is a process of gaining mastery over one's coronary risk behaviors. Gaining mastery, as Bandura (1982) points out "is not simply a matter of knowing what to do but involves a generative capability in which component cognitive, social, and behavioral skills are organized into integrated courses of action to serve innumerable purposes" (p. 122). Findings of this study have also shown that gaining mastery of one's coronary risk behaviors requires knowledge, skills, and support. Therefore, intervention to assist patients in risk factor modification is described as teaching, counseling, and support intervention. For each intervention, specific strategies have been

delineated. In this section these measures, based on informants' descriptive accounts, will be discussed in relation to current literature and a framework for intervention in each phase of risk factor modification will be presented.

Teaching Intervention

Teaching is "the imparting of knowledge" (Mish, 1986), but it is also "any interpersonal influence aimed at changing the way in which other persons can or will behave" (Redman (1980, p. 10). It is "communication specially structured and sequenced to produce learning" (Redman, 1980, p. 10). As Jenny (1976) also stated, "teaching is more than telling . . .telling simply enlarges one's informational base . . .effective teaching results in altering the patients' behavior in the desired direction" (p. 341). However, in order to change behavior, patient education must begin with "the interpretation and integration of factual information" (Bell & Whiting, 1981, p. 26).

The findings of this study have shown that in order for patients to be able to modify their coronary risk behaviors, specific knowledge is required; knowledge that pertains to coronary heart disease, coronary risk factors, and skills to enable one to change one's behaviors. In addition it has been shown that the ability to learn is affected by many factors related to the patient's illness and the teaching- learning process. For teaching to be effective these factors must be taken into consideration. These findings and their impact on the teaching-learning process are discussed in this section.

Knowledge Required in Risk Factor Modification

It has been shown that in risk factors modification, patients require specific knowledge that includes:

- a) coronary risk factors that increase an individual's susceptibility to coronary heart disease;
- b) the effect of specific risk factors in the pathogenesis of coronary heart disease;
- c) behavioral changes required to reduce the risk of coronary heart disease;

d) the effect of these behavioral changes on coronary heart disease, such as the effect of exercise on the cardiovascular system;

e) specific cognitive and behavioral skills that may be employed in modifying coronary risk factors.

In this study, informants had more awareness of such risk behaviors as smoking, diet, and weight in the development of coronary heart disease, and less awareness of other behaviors, such as a lack of exercise, hypertension, and the coronary-prone behavior pattern. The first step in assisting patients in risk factor modification is to help them develop knowledge of those factors that may contribute to the progression of coronary artery disease. The basis for this is a thorough assessment of the patient's lifestyle and health problems, as well as what they already know about coronary risk factors. This may be facilitated with the use of a conceptual model for nursing, such as the Model for Nursing developed by the University of British Columbia, School of Nursing (1980). Risk of coronary heart disease may be further estimated by the use of a risk appraisal tool, such as those found in the literature (Pender, 1982) or through a computerized analysis of individual risk. Patton and others (1986) provide a detailed outline of Health-Risk Appraisal instruments that may be obtained from commercial sources.

A comprehensive assessment provides information that is critical to developing a plan of care that assists patients in gaining increased personal control over their own health and in decreasing the probability or severity of a recurrent myocardial infarction. It is the author's view that patients cannot be expected to modify their coronary risk factors if they are not aware of those factors that may have placed them at risk for coronary heart disease.

Factors Influencing Learning in Risk Factor Modification

In this study, informants described various measures that may be important in facilitating patients' knowledge of coronary heart disease and coronary risk factors. These measures were grouped under two main categories. Those that pertained to the teacher-learner

interaction included a teaching nurse, engaging the learner, teaching at the patient's level of understanding, involving the learner, and encouraging motivation. Those that pertained to the teaching approach included a multidisciplinary approach, group instruction, incremental learning, explaining information, and providing printed material. These findings have implications for teaching in a cardiac rehabilitation program.

In engaging the learner's attention, health messages must be presented in a manner that patients realize the risk of continuing with the risk behavior, that the risk is a threat to his or her life. As one informant stated, "don't be soft on that . . . don't mince the words". Health messages must do more than create an intellectual awareness of risk. They must appeal to the affective domain of behavior (Redman, 1980); to the patients' values of what is important to him or her and his or her life.

For information to be understood, teaching must be provided at the patients' level of understanding. One informant revealed that he had gone only to "grade eight in school", and this may be indicative of the educational level of many patients attending an in-hospital patient education program at any given time. This informant's comments emphasize the need to consider the patients' background of experiences, skills and attitudes, as well as his or her ability to learn that which is considered desirable. This has been termed experiential readiness of the learner (Redman, 1980).

In addition, it must be kept in mind that in providing health teaching, medical terminology is foreign to most people as it was to subjects in this study. Therefore, health information must be presented in such a way that even patients with poorly developed skills, and little or no academic preparation, can develop an understanding that will enable them to modify their coronary risk behaviors.

Motivation is essential to the teaching-learning process. The learner must have the willingness to put forth the effort to learn. However, due to the physical and psychological effects of illness, many patients may not appear interested in their own education. It is

important to encourage motivation even when it means waking patients up. Motivation can also be encouraged by focusing the patients' attention on what he or she may need to know about their illness and coronary risk factors. In addition, incremental learning in which the patient is introduced to the topic and information is provided in increments (Redman, 1980) may stimulate an interest in learning and aid in promoting motivation.

Informants in this study supported a multidisciplinary approach to teaching through group classes. With a multidisciplinary approach, patients are able to benefit from the expertise of each health professional. Group instruction has also been shown to be an effective approach to providing teaching (Owens, McCann, & Hutelmyer, 1978; Steele & Ruzicki, 1978). Comments were made that a class helps the patient "to deal with what happened" and focuses his or her attention on "how to be healthy and how to stay healthy". With group classes it is important to provide sufficient time to enable patients to ask questions. Learning is facilitated when the learner becomes involved in the learning process (Redman, 1980).

Teaching sessions may be supplemented with printed material to enable the patient to learn and comprehend at his or her individual speed. However, reading comprehension is also affected by experiential readiness. Teaching tools must also reflect the needs of the learner (Redman, 1980).

In addition to these strategies, the timing of when teaching is provided is also an important factor. As was described in the findings, one factor that affected learning was an inability to recall information particularly during the first part of the myocardial infarction experience. Providing teaching at a time when the effects of a life-threatening illness are high has been shown to hinder learning. Scalzi and colleagues (1980) pointed out that, "retention of information during the acute phase of illness is very limited" (p. 851) and White, Lemon, and Albanese (1980) questioned the effects of physical and psychological stress associated with a life-threatening event on learning.

A study by Rahe, Scalzi, and Shine (1975) of patients who had had a myocardial infarction also revealed that significant learning was not demonstrated during the fourth to seventh day of hospitalization but occurred prior to discharge when patients thoughts were centered upon their return home. Other than providing teaching to reduce anxiety as Scalzi (1980) suggests, teaching for risk factor modification may be more effective just prior to patients return home. Steele and Ruzicki (1987) also suggested that prior to returning home patients need information for safe and adequate functioning but knowledge for areas requiring long-term behavioral changes, such as stress modification and diet may be more successful if followed up and reinforced in out-patient settings that are more conducive to patient learning and more relevant to patient experience (p. 310).

The findings of this study support those of Rahe and colleagues (1975) and Steele and Ruzicki (1987) where there was little retention of information during the initial period of hospitalization, particularly during the acute coronary care unit experience. In addition, knowledge required for such behavioral changes as stress modification, diet, and exercise was also limited reflecting that patients may not have been able to retain the information provided, the knowledge and skills they required may not have been provided, and/or possibly they did not attend to the information as it may not have been relevant to them at that particular time during hospitalization. Clearly, it can be seen that teaching related to risk factor modification must be introduced during the in-hospital experience but it may be more effective in facilitating changes in coronary risk behaviors if followed up in out-patient settings.

In providing patient education, it has been shown that "attitude and behavior change require considerably more than information availability" (Redman, 1985, p. 163). In this study, informants gave a clear indication that for people to change their behavior, they must come to realize that their behavior is a threat to life. Informants' accounts illustrated that health messages must appeal to the affective domain of behavior (Reilly (1980). The

affective domain is characterized by receiving or attending to information and becoming aware of a phenomenon on a conscious level, responding to that information, and acting out one's behavior on the basis of an accepted value (p. 77).

The process by which a given phenomenon or value passes from a bare awareness to a position of some power to guide or control the behavior of a person is termed the principle of internalization (Krathwohl, Bloom, & Masia, 1964, p. 27). Internalization refers to that inner growth of an individual by which a value system is developed which guides behavior and making choices for action. Redman (1980) further states that "attitudes may be best taught by assisting patients to gain insight into their feelings and by helping them to take actions" (p. 25).

Thus, it can be seen that for teaching to be effective, it must be based, at least implicitly, on theories of learning. As Redman and Thomas (1985) state: "some very basic principles of learning should underlie all teaching practice" (p. 162). In patient education there are many factors that effect learning and therefore the ability to manage one's illness and modify one's coronary risk behaviors. These factors include "the limitations of memory, the effects of anxiety on perception and memory processing, getting messages through several senses and exploiting natural readiness to learn when it is available" (p. 162). Teaching that is based on theories of learning gives consideration to these factors and results in increased knowledge for the patient.

In a patient education program, the elements of a teaching intervention (goals, teaching methods, including institutional environment and the readiness of the learner) must be brought together as a teaching protocol or standardized nursing care plan. Without such tools and a consistent and coherent structure within which they are used it is likely that there will be little consistency of teaching provided and that little teaching will be effective (Redman & Thomas, 1985). A set of tools and protocols communicates an expectation that not only will teaching be provided but how it will be provided. A teaching protocol or standardized

nursing care plan also provides a standard upon which to evaluate learning.

Providing patient education is an expensive and time consuming activity. Health professionals must be able to meet the patients' need for knowledge but they must also be able to demonstrate that their teaching efforts are effective, that teaching does result in change in the patient. In risk factor modification, patient education must result in changes in coronary risk behaviors. However, as it has been indicated by the author, patients cannot be expected to modify their coronary risk factors if they do not understand why or how to do so. Modify coronary risk behaviors requires, in addition to knowledge, skills that are of an affective, cognitive, and behavioral nature. These skills may be developed through various approaches to counseling, a discussion of which follows.

Counseling Intervention

A common perspective on health counseling is that it is "a mutual interaction process designed to enable a client to promote his or her own well-being, health" (Litwack, Litwack, & Ballou, 1980, p. 19). Health counseling is regarded as a function of the professional nurse (Banks, 1985; Reiter, 1966), since the goal of nursing is to promote and nurture human potential (Paterson & Zderad, 1976). Although there are numerous approaches to counseling, all have predominately a cognitive or an affective approach (Banks, 1985).

Affective approach. An affective approach to counseling is one that focuses on an exploration of the client's attitudes, emotions, and feelings (Banks, 1987). One such approach is client-centered therapy as developed by Rogers (1951). Rogers viewed the person as rational, positive, and forward moving toward self-actualization. The goal of client-centered therapy is to promote client congruency, self-direction, and full functioning through the expression of genuineness, acceptance, and unconditional self-regard. This approach is useful in establishing a therapeutic relationship with patients and was the approach used by the investigator in this study to elicit informants' descriptive accounts. A relationship based on trust and acceptance is the basis of any helping relationship.

The role of an affective approach to counseling in risk factor modification was indicated by informants' accounts in which it was described that in order to resolve to change one's behavior, it is necessary to "get right down to your inner self". This process in which informants "got down to their inner self" and confronted their values in order to resolve to change their behavior was a process of self-exploration. It was further revealed that self-exploration and confronting values is vital to the process of risk factor modification and if this did not occur during hospitalization, the patient was more likely to resume his or her risk behaviors upon return home. Self-exploration and confronting values may be self-initiated, as it was by informants in this study, but it may also be facilitated by another individual. Assisting patients in self-exploration and values clarification has been examined by nurses in other studies (Berger, Hopp, & Raettig, 1976; Rheinscheld, 1980).

Values clarification, as propounded by Rath and others (1966), is one technique for helping people become aware of their values. Values clarification is a process whereby persons are assisted to apply critical thinking to matters that are in the affective domain. In initiating values clarification, the patient focuses on a life issue and progresses through the steps of the valuing process that includes: choosing, prizing, and acting. The interaction is usually brief and the objective is to get the patient to be more able to think through the situation at hand.

Another approach to values clarification is the technique of self-confrontation (Rokeach & Cochrane, 1972). Self-confrontation is based on the premise that change results from the arousal of an affective state of dissatisfaction within an individual due to a recognition of inconsistency between one's values, belief, and behavior. Using the technique of the clarifying response, questions are asked of patients with the aim of getting them to reflect on their situation and what is important to them. A contradiction is pointed out by the helping individual between what is important to the patient (his or her values) and his or her behavior. The interaction is brief but the attempt is to encourage the patient to assess what he

or she prizes and what the consequences of his or her behavior might be. Once significant dissatisfaction is experienced, it is assumed that the person will change values, attitudes, and behaviors to make them more congruent with one another. Self-confrontation has been shown to be effective in facilitating both values and behavior change (Lockwood, 1980). Conroy (1979) found self-confrontation techniques to be a more effective approach to smoking cessation than a variety of other more typical smoking-clinic treatments.

The importance of values and behavior in patients who have had a myocardial infarction have been reported in studies by Berger, Hopp, and Raettig (1975), and Rheinscheld (1980). Berger and colleagues (1975) conducted an exploratory study of the degree of consistency between values and related attitudes and behavior (values clarification) as an aid in assisting chronic heart patients to examine their lifestyles, establish priorities, and implement changes in lifestyle necessitated by their disease condition. The findings indicated that after reviewing their lifestyles, fifteen of the twenty patients became aware of specific conflicts that were distressing to them and were able to set very specific objectives for themselves. All of the patients who had set goals for themselves, evaluated themselves two weeks after the final clarifying strategy and concluded that they had acted upon these self-set goals.

Rheinscheld (1980) hypothesized that the patient who had had a myocardial infarction and who did not adhere to a prescription for reduced activity might become more compliant following increased personal awareness of value priorities. It was believed that once the patient's values became clearer, he or she would see the dissonance between his or her values and behavior and if health was valued, the patient would change his or her behavior to be congruent with these values. The findings of this study appear to have supported this hypothesis. Although Rheinscheld (1980) provides a clear description of implementing a values clarification intervention, unfortunately its effectiveness was not reported.

Thus it can be seen that there is a need for an affective approach to counseling in risk

factor modification. With an affective approach of client-centered therapy and techniques of values clarification and self-confrontation, patients may be assisted to gain insight into their attitudes, beliefs, and feelings, and to make health-related decisions that may promote health and reduce their risk of a recurrent myocardial infarction.

In addition to the role of an affective approach to counseling in risk factor modification, the need for a cognitive approach was also demonstrated by the findings of Chapter 4 in which informants' described strategies for controlling reinitiation of their risk behavior(s). Through a cognitive approach to counseling, these strategies may be developed in other patients to assist them in risk factor modification.

Cognitive approaches. The cognitive and behavioral strategies described by informants to control reinitiation of their risk behaviors reflect skills that may be developed through a cognitive approach to counseling. A cognitive approach "emphasizes the importance of factual knowledge and increased awareness by the client" (Banks, 1987). The major cognitive approaches include the viewpoints of rational-emotive therapy (Ellis & Grieger, 1977), reality therapy (Glasser, 1967), and behavioral theory, including behavioral strategies (Watson, 1970).

As previously described, cognitive strategies were those that involved cognitive control and modifying or changing one's perception or interpretation of environmental cues or events. In the theory developed from these data, these strategies included self-reinforcing statements, maintaining awareness, controlling thoughts, and controlling behavior and may be developed through such approaches as rational-emotive therapy (Ellis & Grieger, 1977) and control theory (Glasser, 1984).

Self-reinforcing statements were described as positive and negative self-statements that these informants reported that they said to themselves in an attempt to avoid reinitiating a risk behavior. This strategy included self-statements, such as: "I don't need it", and "You take a drag and you're going to die". Self-reinforcing statements reflect an intervention technique

derived from rational-emotive therapy developed by Ellis and Greiger (1977). This strategy is also referred to as cognitive restructuring. The basic assumption is that the way an individual labels or evaluates a specific situation determines his or her emotional reaction to that situation. The critical factor that determines an individual's response is not the actual situation but what the person says to him or herself in the form of appraisals, attributions, or evaluations as self-statements. Eliot and Breo (1984) advocate the use of this strategy for controlling hypertension

Controlling thoughts and controlling behavior are strategies that may be developed using principles of control theory (Glasser, 1984). Glasser maintains that behavior is made up of four components: doing, thinking, feeling, and physiology (p. 46). He states that "we may not always have control over how we feel but we do have control over what we do" (p. 45). Therefore, the way to change behavior is to choose to change its doing and thinking components. This technique was illustrated by informants when they described: "Put your mind somewhere else", and "[I] got up and walked away".

In addition to cognitive strategies, other strategies were described by informants that were behavioral and involved taking action to control one's environment. These included self-monitoring, rewarding self (self-reinforcing), controlling stimuli, goal-setting, being assertive, and exercising. Behavioral strategies may also be developed through a cognitive approach to counseling (Banks, 1985).

Behavioral theory maintains that the key to altering behavior is environmental manipulation (Hosford, 1969). Behavioral techniques are derived from the work of Skinner (1935) and Watson (1970) and such techniques involve observing the causes of behavior and the reinforcers of behavior, then changing the behavior by altering either the cause or the reinforcer, or both. Behavioral techniques provide the patient with a method of controlling a problem and also place the responsibility for doing so with the individual and not someone else. These strategies have been described previously, but they will be further illustrated in

terms of selected current literature.

Self-monitoring has been described as watching, observing, or checking one's behavior for the purpose of regulating or controlling it. Self-monitoring enables the individual to be aware of internal cues that initiate behavior (Pender, 1982). In this study, examples of this strategy included: "letting a notch out [on belt] . . . I'll know it's time to go back on the diet"; "played golf hole-by-hole". In another study, by Sackett and colleagues (1978), self-monitoring of blood pressure and recording antihypertensive medications taken and missed was a strategy identified as effective in improving compliance to an antihypertensive regimen

Rewarding was another strategy and may also be considered self-reinforcing. It involves giving oneself something that is deemed to be desirable upon attainment of a goal. Self-reinforcing has been shown to be effective in achieving behavior changes in the areas of weight control (Mahoney, 1974).

Controlling stimuli involves structuring the environment to decrease cues that stimulate a behavior and increase cues for positive behavior (Pender, 1982). Examples of controlling stimuli in this study included staying away from situations where people are smoking and not buying cigarettes. In order to use stimulus control effectively, the client must have accurate information about when and where desirable behaviors occur more frequently and/or under what conditions undesirable behaviors occur (Pender, 1982). This reflects the importance of assisting patients to identify cues that stimulate the risk behavior(s) and to develop strategies to control reinitiation in such situations.

Goal-setting involves identifying an end point toward which one's effort is directed in order to attain control of the risk behavior. An example of goal-setting identified in this study was a specific cholesterol level. Goal-setting has also been used effectively to increase adherence to an exercise program (Martin & Dubbert, 1984) and was a strategy identified for weight loss in the report by Johnson, Cantwell and Fletcher (1976).

Being assertive was another behavioral strategy this study's participants identified in this study in managing other smokers in the informant's environment. Being assertive, or self-assertion may be described as the ability to act in one's own best interest or to exercise one's personal rights in controlling the environment and has been identified as a strategy for managing stress by Lachman (1983).

Finally, exercise was also been identified as a behavioral strategy in this study and has been shown to facilitate weight loss (Hartung, Squires, & Gotto, 1981), reduction of serum triglycerides and increase high-density lipoproteins (Ballantyne, Clark, Simpson, & Ballantyne, 1982), lower resting diastolic blood pressure (Haskell, 1979), modify the coronary-prone behavior pattern (Blumenthal, Williams, Williams, & Wallace, 1980) and counter the adverse effects of cigarette smoking (Oberman, Cleary, LaRosa, Hallerstein, & Naughton, 1983). Exercise is often used in combination with other behavioral interventions, such as controlling stimuli and controlling behavior (Pender, 1982).

It can be seen, then, that a cognitive approach to counseling, to aid patients in developing cognitive and behavioral skills to attain and maintain control of their coronary risk behaviors, is an essential component of intervention in risk factor modification. Finally, in addition to knowledge and skills, support was also identified as important in informants' ability to attain control of their risk behaviors.

Support Intervention

Parkes (1971) states that "mastery of one's environment requires knowledge and skills, but it is also necessary to depend upon the abilities of others" (p. 105). It is evident from informants' accounts that their ability to exert effective personal control over their coronary risk behaviors was influenced by the support they received. Support may be defined as including both "the quantitative description of a person's social network and his or her subjective perception of the amount and adequacy of help received" (Davidson, 1987).

The role of support in the performance of health behaviors has been examined in a

number of studies. A significant positive relationship has been found between an individual's perceived level of social support and the performance of specific, positive health practices (Hilbert, 1985; Hubbard, Muhlenkamp, & Brown, 1983). The literature suggests that for most individuals the family serves as the primary support group (Dimond & Jones, 1983, p. 156). However, other types of support may include: peer support systems; religious affiliations; helping professionals; and organized support groups not directed by health professionals, such as Alcoholic Anonymous. It has been stated that "support provides a buffer against the effects of high-level stress and has a mediating effect that stimulates the development of coping strategies and promotes mastery over one's situation" (Davidson, 1987, p. 197).

In this study various measures of support were described as important, including emotional support that provides an individual with a sense that he or she is loved, valued, and has worth; reinforcing to strengthen a desired behavior; and providing encouragement to enable one to attain a desired health goal.

In some of the studies reviewed (Johnson, Cantwell, & Fletcher, 1977; Pozen et al., 1977; Scalzi, Burke, & Greenland, 1980), support following hospital discharge, consisting of telephone and/or in person contact at least once a week, was shown to be an important factor that contributed to the positive outcomes demonstrated by study group patients.

In another report (Kort, 1984), support is described as an essential component of a health promotion program that focuses on behavior changes in the areas of nutrition, fitness, and stress management. The basic premise of this program is that "information alone is not enough to bring about permanent change on the part of the participant" (p.24). "On-going support, offered with an attitude of objectivity and acceptance, and focusing on the desired behavior change is a vital component of real lifestyle change" (p. 24). Support may be offered through telephone support calls, follow-up groups, bi-monthly workshops, and individual counseling sessions.

Specific measures of support from health professionals were also described in informants' accounts. These included empathy to help overcome the effects of illness and reinforcement through follow-up support groups after hospital discharge, particularly during the initial period "to get it [stopping smoking] started . . . until you get this monkey off your back". Support during this time was emphasized as important in helping someone to stop smoking as it is to helping an alcoholic stop drinking.

Thus, it can be seen that support from others, particularly one's family and health professionals, is an important measure in assisting patients in risk factor modification. Support has been implicated as particularly important during the initial stages of convalescence when one is giving-up an old behavior and learning a new behavior.

Summary of Intervention in Risk Factor Modification

In summary, a discussion of the research findings of this study of measures that could be provided to assist patients in the process of risk factor modification has been presented. It can be seen from the findings of this study, and the literature reviewed, that intervention in the form of teaching, counseling, and support is important in each phase of risk factor modification to assist patients to modify their coronary risk behaviors. These measures have been described as teaching, counseling, and support interventions and are seen to be a vital component during each phase of risk factor modification. In the first phase, searching for attribution, an affective approach to counseling may be important in assisting patients in their search for attribution and to identify psychologic risk factors, such as fate, luck, and denial, which may hinder successful rehabilitation. It has been indicated that finding a sense of meaning in the event is an important aspect of positive adaptation after a myocardial infarction.

In the second phase, acknowledging risk, the techniques of values clarification and self-confrontation have been shown to be important in assisting patients to gain an increased personal awareness of their value priorities in order that health-related decisions, may be

made to facilitate health and well-being.

During the phase of attaining control, intervention in the form of teaching and a cognitive approach to counseling is directed towards assisting patients to gain a sense of mastery of their risk behavior. Knowledge is required, as well as cognitive and behavioral skills, to facilitate a sense of personal control. In addition, support, particularly during the initial period of convalescence, was also shown to be an important factor in enabling patients to attain control of coronary risk behaviors. These interventions and strategies as delineated for each phase of risk factor modification are illustrated in the following table (Table 7. p. 125).

Table 7. Summary of Intervention in Risk Factor Modification

<u>Phase of Risk Factor Modification</u>	<u>Intervention and Strategies</u>
I Searching for Attribution	Assess Psychologic Risk Attributions
II Acknowledging Risk	Counseling (Affective Approach) Values Clarification Self-Confrontation
III Attaining Control	Teaching (Based on Theories of Learning) Teacher-Learner Interaction Teaching Approach Counseling (Cognitive Approach) Cognitive Skills Self-Statements Maintaining Awareness Controlling Thoughts Controlling Behavior Behavioral Skills Controlling Stimuli Self-Monitoring Self-Reinforcing Goal-Setting Self-Assertion Exercise Support Measures Emotional Support (empathy) Encouragement Reinforcement Guidance

Chapter 6

SUMMARY, CONCLUSIONS, AND IMPLICATIONS FOR NURSING

This study was designed to explore patients' perceptions of their experiences in risk factor modification following an acute myocardial infarction, and to identify measures that could be provided to assist other patients in this process. This chapter presents an overview of this study, followed by articulation of the framework that was developed based on these findings and the literature reviewed. In addition, this chapter summarizes the conclusions and implications for nursing (practice and education) and future research.

Summary of the Study

This qualitative study examined the phenomenon of risk factor modification following an acute myocardial infarction. The impetus for the study arose from the need to identify specific measures that could be provided to assist patients to modify their coronary risk factors following an acute myocardial infarction; specifically to stop smoking, adhere to a low-fat diet, attain a normal body weight, maintain a diastolic blood pressure below 90 millimeters of mercury, develop a habit of regular exercise, and modify their coronary-prone behavior pattern. Since the literature indicated there was a scarcity of information on measures to assist patients in risk factor modification, and since the experience of risk factor modification had not been examined from the perspective of patients who had had an acute myocardial infarction, a phenomenological design was selected.

A purposive sample of six participants, one woman and five men, provided data for this study. Using an interview guide with semi-structured questions, each participant was interviewed on two occasions: on approximately day seven and day thirty-two after hospital discharge. The timing of these interviews enabled the researcher to collect data during the time of initial impact of the myocardial infarction and of giving up the risk behavior(s), to the time when it was anticipated that the participant would have either reinitiated the risk behavior or would have developed strategies to aid in controlling reinitiation. The interviews were

approximately one hour in length, were audio-tape recorded, and took place in participants' homes. In addition to obtaining verbal data, recorded observations were made of the participants' non-verbal behavior and of the physical setting.

All participants interviewed were in the process of modifying one or more coronary risk factors. Of the six participants: three were attempting to stop smoking; three were attempting to adhere to a low-fat diet to reduce an elevated blood cholesterol level; no one was obese; two reported having a history of hypertension; and four demonstrated behaviors that have been associated with the coronary-prone behavior pattern.

The method for data coding and analysis was the constant comparative method of discovering grounded theory, as outlined by Glaser and Strauss (1967). The findings revealed that, following an acute myocardial infarction, patients experienced behaviors that were common and formed a pattern over time. This method of data analysis led to the development of an analytic framework that describes risk factor modification as a process of gaining mastery over one's coronary risk behaviors. This process was seen to occur in three phases: searching for attribution, acknowledging risk, and attaining control.

Phase I, searching for attribution, was characterized by acknowledging that a myocardial infarction had occurred, searching for a cause of the infarction, and attributing cause to a perceived factor. In this study all causal attributions were lifestyle factors: smoking, diet, weight, and stress. Neither hypertension, the coronary-prone behavior pattern, nor a lack of physical activity were identified as causal factors by any of the informants. Searching for attribution may be seen as a search for meaning in the experience of having had a myocardial infarction; an attempt to understand why it happened and the significance of it on one's life (Taylor, 1983). This search for meaning is also seen as a form of cognitive control, an attempt to predict and control one's life (Averill, 1973). Other research has shown that early attributions patterns during hospitalization may affect later behavioral outcomes (Bar-On & Cristal, 1987; Newton, Sivarajan, & Clarke, 1985).

Phase II, acknowledging risk, was characterized by perceiving susceptibility of risk for further heart damage and possible death, confronting values of aspects of one's life that are most important, and resolving to change one's behavior. The informants revealed that changing one's behavior is more than making a decision but requires a deeper commitment and a firm determination in the form of a resolution to change. This resolution was described as one that comes from "one's inner self" and reflects the affective or valuing domain of behavior (Reilly, 1980; Redman, 1980). Confronting values was shown to be an essential step in informants' resolve to change their behaviors. It was further explained that unless this resolve occurs during hospitalization, there is a greater likelihood that the risk behaviors will be resumed when a patient goes home. Resolving to change was shown to be a form of decisional control (Averill, 1973) and may, indeed, be a prerequisite for significant health-related behavior changes.

Phase III, attaining control, was characterized by relinquishing or giving up the risk behavior, withdrawing or letting go, and developing strategies to control reinitiation. Relinquishing was described as a difficult thing to do as "people don't want to give up the things that pleases them". Informants described the process of withdrawing from a risk behavior as one of letting go of an addiction, not unlike that of being a dope addict or an alcoholic. Their accounts revealed that coronary risk behaviors, whether it is smoking, diet, exercise, or one's job may be regarded as addictive behaviors. Furthermore, it was clearly shown that giving up these behaviors is not something that is automatic or intuitive, but a skill that is learned through instruction or experience. Withdrawing and attaining control of these risk behaviors was further described as more difficult when the patient went home than it had been during hospitalization, and it was suggested that this is a time when assistance is most needed in risk factor modification.

In attaining control, these informants described many strategies that they developed to prevent reinitiating the risk behavior. These strategies were both cognitive and behavioral.

Cognitive strategies were those that involved conscious awareness, often in the form of talking to oneself, and included: self-statements, maintaining awareness, controlling thoughts, and controlling behavior. Behavioral strategies were those that involved taking action on the environment and included: controlling stimuli, self-monitoring, rewarding, goal-setting, being assertive, and exercising. These strategies were also seen as forms of personal control (Averill, 1973).

In addition to exploring the experience of risk factor modification, informants' accounts led to a delineation of measures that could be provided in a cardiac rehabilitation program to assist patients in risk factor modification. These measures were identified as teaching, counseling and support. Teaching is defined as "communication especially structured to produce learning" (Redman, 1980, p. 10). Knowledge required for risk factor modification was identified through informants' accounts and various strategies were identified as important in facilitating learning. These teaching measures were described as those that pertained to the teacher-learner interaction including: a teaching nurse, engaging the learner's attention, teaching at the patient's level of understanding, encouraging motivation, and involving the learner; and those that pertained to the teaching approach including: a multidisciplinary approach, group instruction, incremental learning, explaining, demonstrating, and providing printed material.

Counseling in risk factor modification is a process whereby an individual with coronary heart disease is assisted to reduce the risk of an initial or recurrent myocardial infarction through the use of affective and cognitive strategies which enable him or her to attain control of their coronary risk behaviors. Counseling, that utilizes both an affective and a cognitive approach (Banks, 1987), was shown to be an important intervention in risk factor modification. An affective approach is important in assisting patients to confront their values in order that health-related decisions could be made during phase II, acknowledging risk. A cognitive approach to counseling is important in assisting patients to develop both cognitive

and behavioral skills that will enable them to control reinitiation of their risk behaviors following hospitalization.

Finally, knowledge and skills are important but, as this study demonstrated, it is also necessary to depend upon the abilities of others. Support from others, described as emotional support, reinforcement, encouragement, and guidance, was also shown to be essential to informants' abilities to modify their coronary risk behaviors. Support may be provided through telephone calls, follow-up groups, or home visits and has been described as particularly important during the initial post-hospital period while the patient is developing the skills to enable him or her to attain control of the risk behavior.

Conclusions and Implications for Nursing

In conclusion, this study has demonstrated the significance of viewing the experience of risk factor modification from the perspective of those who are living a given reality. As a result of this study, a number of conclusions can be deduced that have particular implications for nursing, particularly in cardiac rehabilitation.

The first conclusion is that patients cannot be expected to modify their coronary risk behaviors if they are not aware of those lifestyle factors that may have placed them at risk for premature coronary heart disease. A thorough assessment of the patient's behavior, lifestyle, and health problems is the basis of a plan to assist the patient in risk factor modification. The use of a conceptual framework for nursing in this assessment will ensure completeness, accuracy, and consistency.

A second conclusion is that changing coronary risk behaviors requires more than a decision or a choice among alternatives. It requires a resolution at a deeper level of commitment, one that implies a firm determination to want to change and to prevent further heart damage. Resolutions to change one's behavior derived from one's values about life and a self-examination of these values has been shown to be a prerequisite to health-related behavior changes. An important role of the nurse is to assist patients in confronting their

values following the myocardial infarction in order that resolutions for behavior changes can be made. Furthermore, this resolution, if facilitated during hospitalization may result in a greater number of behavioral changes following hospitalization.

A third conclusion, and the most distinct of the findings, is that coronary risk behaviors including smoking, food, exercise, or one's job may be regarded as addictive behaviors. Viewing risk behaviors in this manner provides some insight and, thus, some understanding of the difficulties involved in relinquishing and changing coronary risk behaviors. Furthermore, it has been demonstrated that attaining control of one's risk behaviors is not something that is automatic or intuitive, but a skill that is learned. Patients cannot be expected to intuitively know how to change their behavior. They need knowledge, skills, and support for effective changes in behavior to occur. Patients need information that is taught based on theories of learning.

Another conclusion is that in modifying their coronary risk behaviors, patients require knowledge, but they also need assistance in developing skills, both cognitive and behavioral, to enable them to control reinitiation of their risk behaviors. These skills may be developed through various approaches to counseling. It is recommended that the patient is introduced to these skills through an in-hospital cardiac rehabilitation program but it may be most effective in assisting patient in making these changes if followed through outpatient clinic programs or post-hospital cardiac programs.

Finally, the need for follow-up support in the form of reinforcement, encouragement, guidance, and assistance particularly during the initial post-hospitalization period must be recognized. Support must be an essential component of any health promotion program, and as one informant indicated at least "until you get this monkey off your back".

In cardiac rehabilitation, patients have many needs which must be met if they are to be able to modify their coronary risk behaviors. Patients need more than to be provided with information. They need teaching that is based on theories of learning, counseling both of

an affective and cognitive nature, and support. If patients are to be effective in their efforts to modify their coronary risk behaviors, these needs must be met. At the present time, given the current economic environment with its on-going budgetary cutbacks, and the focus of coronary care on surgical measures and clinical therapies, it is questioned whether these needs are being addressed by many cardiac rehabilitation programs

Implications for Further Research

As a result of this study, there are several questions that have implications for future research. The first that arises is a need to duplicate this research study with a larger sample to compare these findings and to further investigate the experience of risk factor modification. It must be kept in mind, however, as Giorgi (1975) points out, it is not to duplicate this study exactly but to investigate further the process of modifying coronary risk factors following an acute myocardial infarction. It remains the author's view that only when the experience is fully understood from the perspective of those who are attempting to modify their coronary risk behaviors following an acute myocardial infarction can intervention be truly effective.

Future research is also needed to identify causal attribution patterns of patients who have had an initial myocardial infarction and to determine if causal attributions of lifestyle factors, such as smoking, diet, or the coronary-prone behavior pattern do result in greater behavioral changes following hospitalization.

Since confronting values has been shown to be an integral part of resolutions to change one's behavior, and as it has been suggested that resolutions made during hospital result in greater behavioral changes following discharge, further research is warranted to determine the effect of specific interventions that helps patients in confronting values and making health-related decisions during hospitalization.

It has been clearly illustrated that patients need more than information to change their behavior. In fact, this study has demonstrated that cognitive and behavioral skills are

important in patients' attempts to attain control of their coronary risk behaviors. Therefore, further research is needed to determine the effect of teaching and counseling of these skills to patients who are attempting to modify their coronary risk behaviors following an acute myocardial infarction. Does the teaching of these skills enable patients to attain more effective control of their risk behaviors?

Finally, as this is a nursing research study, and since the literature reviewed indicated that various measures, such as relaxation, exercise, and teaching and counseling may be effective in assisting patients to reduce hypertension and the coronary-prone behavior pattern, future research in nursing is needed to examine the effects of these types of interventions on these coronary risk behaviors.

To conclude, these findings have demonstrated that a phenomenological study to explore patients' perceptions of their experiences in modifying their coronary risk behaviors has provided valuable insight into the phenomenon of risk factor modification following an acute myocardial infarction. This research also contributes to the knowledge of cardiac rehabilitation and to theories of behavior change, and it emphasizes the need for further investigation into intervention strategies that will promote the well-being of patients with coronary heart disease .

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APPENDICES

Appendix C

Physician Approval Form

I, the undersigned, understand that Sheila Stewart RN, BSN, (MSN candidate in the nursing program at the University of British Columbia) will contact patients in the intermediate coronary care unit of

who are admitted under my medical care with an acute myocardial infarction. I understand that Sheila Stewart will interview these patients in their homes at approximately one week and four weeks after hospital discharge. The purpose of these interviews will be to explore the experience of having to make certain lifestyle changes following an acute myocardial infarction, such as: quitting smoking, losing weight, adhering to a low-fat diet, developing a habit of regular physical activity, and developing ways to manage stress from the perspective of the post-MI patient. I also understand that the interviews will be transcribed, and the data will be analyzed and written in the form of a Master's Thesis.

Physician's signature_____

Researcher's signature_____

Date_____

Appendix D

Introductory Letter

June 20, 1987

Dear Patient;

My name is Sheila Stewart and I am a Registered Nurse in the Masters of Nursing program at the University of British Columbia. As you have had a heart attack (an acute myocardial infarction), this letter is to invite you to participate in a study for nursing research.

It is important for nurses to understand the needs of their patients in order to provide the best nursing care. Therefore, I am conducting a study to learn what it is like for the patient to make certain changes in lifestyle following a heart attack in order to reduce the risk of a recurring heart attack. These changes include: quitting smoking, reducing dietary intake of fats, losing weight, becoming physically active, and developing techniques to manage stress.

As you may be attempting to make some of these changes when you go home, you may have some ideas of the type of assistance that could be provided to yourself and to others who are attempting to make similar changes in lifestyle. In order for nurses and other health professionals to know what might be most helpful, it is important to ask the patient, the individual who is undergoing the experience of modifying his or her coronary risk factors, what kind of assistance he or she feels might be most helpful.

After you have been discharged from the hospital I would appreciate the opportunity to discuss your experience in changing some of these lifestyle habits. If you agree to participate in this study it would involve:

1. A discussion with you in your home of what it is like for you to make certain changes in lifestyle following an acute myocardial infarction, and of the measures you believe would be helpful to you in making these changes.
2. Discussions will take place at about one week and four weeks following hospital discharge and will involve approximately one hour of your time. A third session may be requested. All times will be arranged for your convenience.
3. Our discussions will be private; between you and me alone.
4. All discussions will be tape-recorded and later typed out in order for me to be able to examine the data collected.

All information obtained will be kept confidential and anonymous. No names will appear on any tapes or written material, only a coded number. The only other people that may be aware of the content of the discussions will be

Outline of Initial Meeting with Participants

1. Introduce self: Sheila Stewart, a Registered Nurse in the Masters of Nursing program at the University of British Columbia.
2. State purpose of visit: to follow-up written letter that patient had received a few days previously inviting him or her to participate in a nursing research study.
3. State purpose of study: to investigate the experience of modifying coronary risk factors from the perspective of individuals who have had an acute myocardial infarction and to identify patients perceptions of the measures required for providing assistance in risk factor modification.
4. State rationale for study: It may be assumed that certain measures are important but no one has asked patients what they feel is important for health professionals to provide in assisting post-MI patients to modify their coronary risk factors.
5. Explain methodology of study:
 - a) number of meetings, and time and place;
 - b) content of discussions;
 - c) tape-recorded discussions;
 - d) discussions restricted to participant and nurse researcher;
 - e) confidentiality and anonymity;
 - f) participation voluntary;
 - g) written summary of study results if desired;
 - h) consent to participate.
6. Obtain home phone number of participant; time to call after discharge.

Participant Information and Consent FormPerceptions of post-myocardial infarction patients
of measures required for risk factor modification

I, _____, agree to participate in a study conducted by Sheila Stewart, RN, BSN, (Masters in Nursing candidate at the University of British Columbia). The purpose of this study is to explore what it is like to have to modify coronary risk factors following an acute myocardial infarction. In addition, to identify measures that might be helpful to myself and other patients in making these changes. Information from this study may help health professionals provide more assistance to other cardiac patients who are attempting to make such changes in lifestyle following an acute myocardial infarction.

I understand that:

1. I will be interviewed in my home for approximately one hour by Sheila Stewart on two or three occasions.
2. The interviews will be tape-recorded and later typewritten.
3. All data collected will be kept strictly confidential and will be identified by code number only.
4. I may refuse to answer any question or discuss any topic and may withdraw from the study at any time without jeopardizing further health care.
5. I am entitled to a copy of this consent form.
6. If I have any further questions about the study, I may contact Sheila Stewart at _____

Signature of participant _____

Witness _____

Date _____

Address if copy of results desired _____

Appendix G

Sample Questions

Interviews will begin with the researcher's explanation of the purpose of the interview: to explore the experience of risk factor modification from the perspective of individuals recovering from an acute myocardial infarction. Risk factors that may be modified through lifestyle change include: cigarette smoking, a diet high in saturated fats, obesity, physical inactivity, and stress. Questions will be organized in an attempt to elicit an understanding of the experience of risk factor modification from the perspective of the post-MI patient, and of the measures required by post-MI patients in modifying their risk factors. Sample questions are:

1. What it is like having to:
 - a) quit smoking,
 - b) adhere to a low-fat diet,
 - c) lose weight,
 - d) develop a habit of regular physical activity,
 - e) develop methods of managing stress?
2. What do you feel would be of help to you in:
 - a) quitting smoking,
 - b) adhering to a low-fat diet,
 - c) losing weight,
 - d) developing a habit of regular physical activity,
 - e) developing methods of managing stress/