HEALTH-PROMOTING BEHAVIOURS FOLLOWING CORONARY ARTERY BYPASS SURGERY: INFLUENCING FACTORS

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Health-Promoting Behaviours Following Coronary Artery Bypass Surgery: Influencing Factors

by

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Dedication

To the memory of my Grandmother

Caroline Gillingham

Abstract

This descriptive correlational study was conducted to describe the health-promoting behaviours of cardiac patients six months to one year after coronary artery bypass surgery. Differences in health behaviours before and after surgery and factors associated with health behaviour choice were also examined. Pender's Health Promotion Model (1987) was the theoretical framework used to guide the study. From this model, three cognitive-perceptual and three modifying factors were examined. Data were collected using mailed questionnaires. The sample was comprised of 58 subjects, a response rate of 92.1%. The majority (69%) of subjects were male, 86% were married, their average age was 62.6 years, and their average years of schooling was 9.2 years. Exercise and diet were the most frequently reported health behaviours among this group of subjects. Stress management activities, as indicated by the frequency of avoiding upset and talking about problems with others, were less frequently identified. In addition, a significant difference in the frequency of behaviours before and after surgery was indicated. Although no significant relationship was found between select

cognitive-perceptual variables and health behaviours, several modifying factors were identified as predictors of health behaviours among this group. Together, previous health behaviours and perceived support explained 48% of the variance in current health behaviours. The results of this study suggest that nurses need to be alert to the potential influences of health behaviour choice, particularly the influence of previous health behaviours and perceived support after CABS. Critical periods for relapse to former behaviours after surgery warrant further investigation.

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CHAPTER I

Introduction

Although much has been written about patients' recovery after Coronary Artery Bypass Surgery (CABS), there is limited research on health behaviours and factors influencing health behaviour choice after CABS. It is important to identify the influences of health behaviours for two reasons. First, knowledge of influencing factors can enable nurses to facilitate behaviour change and secondly, nurses can further use this knowledge to support individual commitment to change. In this study, the health behaviours of cardiac patients and factors associated with health behaviour choice after CABS were investigated.

The Problem

Coronary artery bypass surgery, a method of revascularization for people with coronary artery disease, is palliative and does not alter the pathological progression of the atherosclerotic process. In order to achieve long-term benefits from CABS, patients must initiate and maintain health behaviours that reduce disease risk and promote cardiovascular health. Failure to maintain behaviour change contributes to accelerated disease progression and graft closure (Solymoss, Nadeau, Millette, & Campeau, 1988).

Disease progression is related to the same risk factors

as those responsible for the development of coronary artery disease (Solymoss et al., 1988; Pearson et al., 1994). To alter or retard the disease process through risk factor control, it is recommended that patients modify or change lifestyle behaviours. Although short-term behaviour change after a cardiac event has been reported, it has also been found that health behaviours are seldom maintained in the long-term (Becker, 1985; Green, 1987; Radtke, 1989; Miller, Wikoff, Garrett, McMahon, & Smith, 1990; Kison, 1992). Further, while there has been much discussion about the health behaviours of patients after myocardial infarction, there is limited information regarding the health behaviours and factors that influence those health behaviours six months to one year after bypass surgery.

Relevance of the Study

Although the morbidity and mortality rates for cardiovascular disease have decreased significantly throughout North America over the last three decades, the mortality rate in Canada remains at 43% of all deaths below age 69 (Statistics Canada, 1986). Sixty-four percent of Canadian adults have one or more of the cardiovascular disease (CVD) risk factors and 21% have at least two (MacDonald, Joffres, Stachenko, Horlick, & Fodor, 1992). The death rate from cardiovascular disease in Newfoundland is

higher than the Canadian average with a widespread prevalence of two or more risk factors among men and women ages 45-74 (Newfoundland Department of Health and Department of National Health and Welfare, 1990).

To prevent disease progression after CABS, health behaviours aimed at control or reduction of risk factors for coronary artery disease are necessary (Stovsky, 1990). Progression of the disease results in restenosis and graft closure. Restenosis rates are reported to be as high as 46% within five to ten years after surgery (Fitzgibbon, 1991; Pearson, Rapaport, Criqui, Furgerg, Falter, Hiratzka, Little, Ockene, & Williams, 1994). In Newfoundland, approximately six to eight patients per week undergo bypass surgery as a method of treatment for coronary artery disease (Nurse Manager, Critical Care Unit, personal communication, 1994). Approximately 10% of those patients are repeat bypass surgery (Dr. K. Melvin, personal communication, 1994). Readmission for repeat procedures due to restenosis increases the economic burden for the patient, the family and the healthcare system. Therefore, maintenance of health behaviours aimed at reducing cardiovascular disease risk after CABS, may be both a cost effective measure and a necessary step to preserving cardiovascular health (Superko, 1995; Roberts, 1994). Information about health behaviours and factors that influence health behaviour choice, would be

valuable in facilitating and supporting behaviour change after CABS.

Purpose

The purpose of this study was threefold: (1) to describe the health-promoting behaviours of cardiac patients six to twelve months after coronary artery bypass surgery, (2) to compare the reported frequency of engaging in health behaviours after surgery with the reported frequency of engaging in health behaviours prior to surgery and (3) to examine factors associated with health behaviours in a group of patients post CABS.

Chapter II

Literature Review

In this chapter the theoretical framework for the study is described and a review of research studies that have investigated factors associated with health behaviour choice is presented. Specifically, health behaviours are discussed as they relate to cardiovascular disease risk reduction and factors associated with choice and maintenance of health behaviours.

Theoretical Framework

Pender's (1987) Health Promotion Model (HPM) provided the theoretical framework underlying this study (Figure 1). This model, based on Bandura's social learning theory (as cited in Pender, 1987), is presented by Pender as a causal explanation of an individual's health behaviour. An underlying assumption of the model is that health-promotion is a concern for everyone and is applicable to all individuals regardless of age, developmental stage or health status (Pender, 1987). A second underlying assumption of the health-promotion model is that motivation is necessary for individuals to initiate health behaviours and that the individual's readiness to initiate health behaviours is directly related to the person's cognitions and perceptions of "past behaviours, interpersonal influences, and

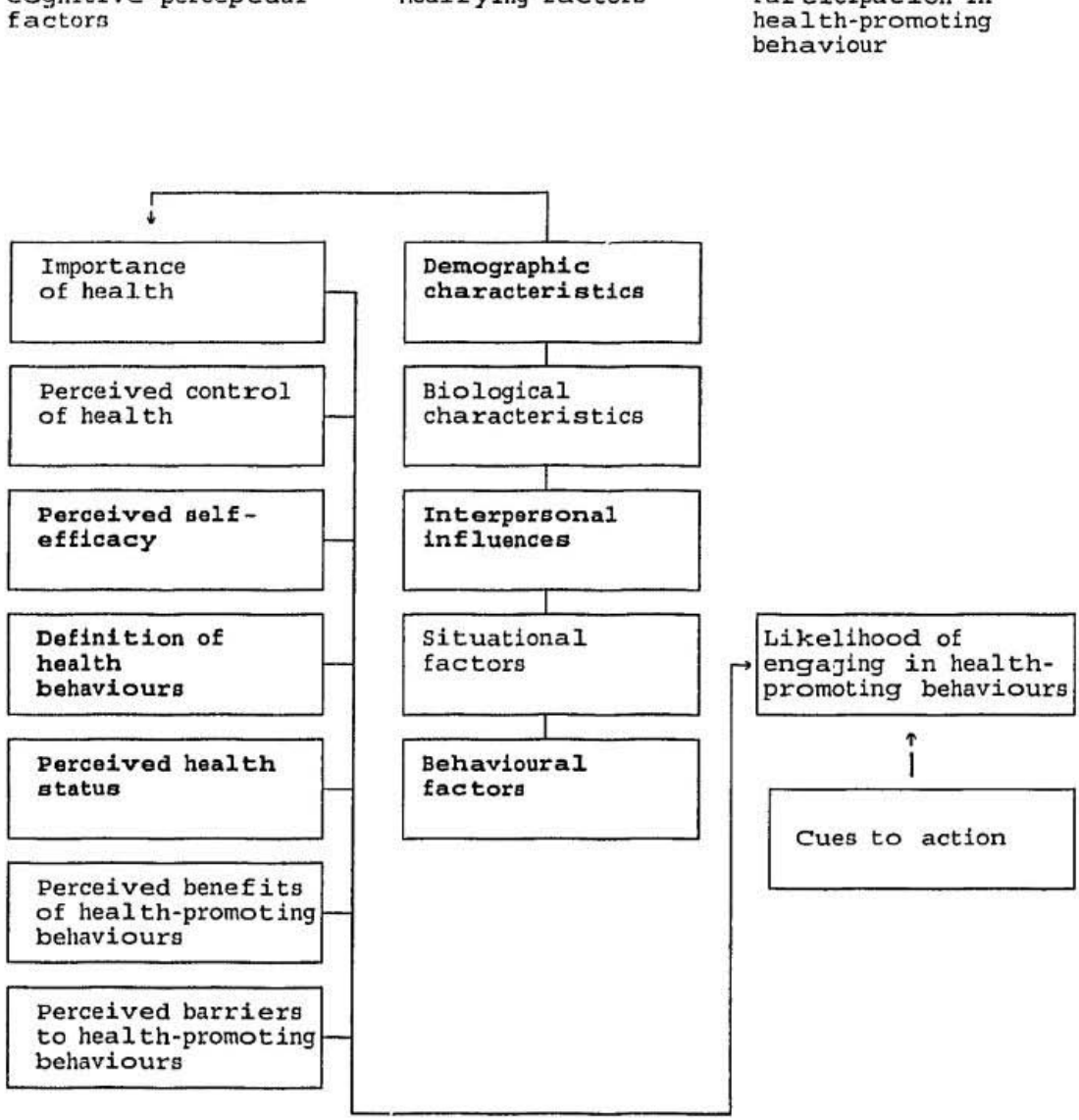

Fig.1. **Pender's Health Promotion Model. Pender N. Health Promotion in Nursing Practice, 2nd edn, Appleton-Lange, Norwalk, CT, 1987.**

environmental events" (Pender, Walker, Sechrist, & Frank-Stromborg, 1990, p.329).

The components of the health promotion model (Figure 1) include cognitive-perceptual and modifying factors that are thought to influence the health behaviours a person chooses (Pender, 1987). The cognitive-perceptual factors include: importance of health, locus of control, perceived self-efficacy, definition of health, perceived health status, and perceived benefits of and barriers to health promoting behaviours (Pender, 1987). The modifying factors include: demographic characteristics (age, gender, ethnic origin, education, income), biological factors (body size or weight), interpersonal influences (interaction with significant others, family or healthcare professionals), situational factors (lifestyle options and alternatives), and behavioral factors such as previous health behaviours (Pender, 1987).

The health promotion model has been tested by Pender and others who have investigated the determinants of health behaviours among well adults (Alexy, 1991; Weitzel, 1989) and among those with disabilities and disease (Pender et al., 1990; Frank-Stromborg, Pender, Walker, & Sechrist, 1990; Lusk, Ronis, Kerr, & Atwood, 1994; Stuifbergen & Becker, 1994). Findings from these studies provide some support for the model and identify variables that are most

frequently reported as determinants of health behaviours.

According to Pender (1987), cognitive-perceptual variables directly influence a person's choice of health behaviour while the modifying factors exert their influence on health behaviours indirectly through the cognitive-perceptual variables. For example, Pender (1987) suggests that people with positive perceptions of self-efficacy may be more likely to choose and maintain healthy behaviours than people who report low levels of self-efficacy. Pender also proposes that the frequency and intensity with which people engage in health-promoting behaviours are directly influenced by a person's perception of health status and definition of health.

Modifying variables are thought to influence health behaviours through the cognitive-perceptual variables. The indirect influence of modifying variables however, is less clearly supported than the direct influence of the cognitive-perceptual variables. For example, demographic characteristics - such as education, income, gender, and age - have been reported by Pender and others as strong predictors of health-promoting behaviours (Pender et al., 1990; Frank-Stromborg et al., 1990). In contrast, others have reported that the direct effects of age, income, and education on health-promoting behaviours are stronger than the indirect effects mediated through the cognitive-

perceptual variables (Johnson, Ratner, Bottorff, & Hayduk, 1993).

Not all variables from the Health Promotion Model were measured in this study due to the complexity of the model and the time frame for completion of the study. Based on the literature review of factors which have been consistently associated with health-promoting behaviours, three cognitive-perceptual variables and three modifying factors were included for investigation (Pender et al., 1990; Frank-Stromborg et al., 1990; Gillis, 1993; Palank, 1993). The cognitive-perceptual variables selected were (1) definition of health, (2) perceived self-efficacy, and (3) perceived health status (Figure 1). The modifying factors included: (1) demographic characteristics (age, gender, education, time lapse since surgery), (2) interpersonal influences (marital status, number of people living in the household, and perceived support), and (3) behavioral factors (previous health behaviours). Although previous health behaviours have not been reported as a strong predictor of health behaviours after CABS, they are of particular interest in this study because of the potential for relapse to former behaviours within a year after surgery.

Health Behaviours and CVD Risk Factors

"Health-promoting behaviours almost without exception

are continuing activities that must be an integral part of an individual's lifestyle" (Pender, 1987, p. 59). The activities recommended after a cardiac event are both health-promoting and risk-reducing (Cunningham, 1992). They include physical exercise, nutritional eating practices, smoking cessation, development of social support, and use of relaxation or stress management techniques (Pender, 1987). These activities are consistent with the self-care activities recommended to patients after a cardiac event to control or reduce the major risk factors for disease progression after CABS (Solymoss et al., 1988; Miller et al., 1990; Conn, Taylor, & Casey, 1992; Pearson et al., 1994). Risk factors that are amenable to change and that have been associated with increased mortality following a myocardial infarction (Koenig, 1986) and with early and late graft closures after CABS (Solymoss et al., 1988) include smoking, hypertension, hypercholesterolemia, and a sedentary lifestyle.

Studies have shown that smoking cessation after CABS favourably changes the morbidity and mortality rates while continued smoking results in return of angina and increased relative risk of death (Pearson et al., 1994). Dietary control of cholesterol combined with drug intervention has been shown to improve underlying atherosclerosis within one year after the interventions were initiated (Pearson et al.,

1994). Similarly, physical activity has been associated with reduced CVD risk as related to lipoprotein and cholesterol control and its lowering effect on blood pressure (Pearson et al., 1994). Since the control of multiple risk factors reduces total mortality it follows that promotion of lifestyle changes such as in smoking cessation, dietary modification and increased exercise will help to reduce cardiovascular disease risk after CABS (Anderson, Odell, & Wilson, 1991; Kotke, Puska, & Salmon, 1985; Sytkowski, Kannel, & D'Agostino, 1990). However, although successful short-term behaviour change has been reported after a cardiac event, it has also been shown that 50% to 80% of patients relapse to former patterns of behaviour within six months (Hubbard, Muhlenkamp, & Brown, 1984; Becker, 1985; Green, 1987; Fleury, 1991; McSweeney, 1993). Thus, successful short-term behaviour change is not predictive of long-term maintenance.

Miller, Wikoff, McMahon, Garrett, & Ringel, (1988) and Miller et al. (1990) measured the health behaviours (diet, smoking, activity, stress, medications) of patients at one month, two months, one year and two years post MI and reported that perceived beliefs of others was the most predictive of medical regime adherence. Subjects' attitude towards the value of following prescribed medical regimens further predicted compliance with diet, smoking, and stress

management (Miller, 1991). Conn et al. (1992), in a study of 197 women and men at one to two years post MI, reported significant correlations between participation in cardiac rehabilitation and exercise ($r = .42$), rehabilitation and diet ($r = .27$), and rehabilitation and medication compliance ($r = .25$).

In summary, health behaviour choice can influence CVD risk reduction. The choice of health behaviours and the continued frequency with which they are engaged in after a cardiac event may be influenced by many factors.

Health Behaviours and Influencing Factors

The influences of health behaviour choice and maintenance have been studied extensively in the health-promotion literature during the past decade. The cognitive-perceptual and modifying factors proposed in Pender's model are examples of the variables frequently examined (Pender, 1987; Pender et al., 1990; Frank-Stromborg et al., 1990). Specifically, definition of health, perceived self-efficacy, perceived health status, demographic variables (age, gender, education), perceived support and previous health behaviours are the variables discussed here as related to Pender's (1987) health promotion model and to their proposed influence on the likelihood of engaging in health behaviours.

Definition of health. Definition of health is a cognitive-perceptual variable thought to directly influence health-promoting behaviours (Pender, 1987). Research has shown that the meaning of health for an individual is not a universal meaning and therefore may vary in its function as a determinant of health behaviour choice (Woods, 1984; Laffrey, 1986). According to Laffrey and Crabtree (1988), when health means more than the absence of illness, particularly in the presence of a chronic condition such as coronary artery disease, there is increased opportunity to support health behaviour change.

Health is defined by Laffrey (1986) as "the personal meaning of health for the individual" (p. 108). Laffrey proposes that a broad and complex conception of health is more likely associated with healthy behaviour choice than a more narrowly focused definition based on the absence of illness. This broader definition of health includes the components of Smith's (1981) four concepts of health: the absence of disease, ability to function, adaptability, and achievement of high level well-being. Laffrey's work supports this broad conceptualization of health as related to health behaviour choice (Laffrey, 1985; Laffrey, 1986; Laffrey & Crabtree, 1988). In addition, Laffrey (1986) also supports the proposed relationship between the cognitive-perceptual factors and health-promoting behaviours in

Pender's model.

In a random sample of 90 adults, Laffrey (1985) tested the hypothesis "that health behaviour choice would become increasingly promotive with increasing development of the individual and with increasing complexity of health conception" (p.283). Laffrey concluded that the significant correlation ($r = .44$; $p < .05$) found between conceptions of health and a health-promoting pattern of behaviour choice, indicated that individuals with a more complex conception of health chose more health-promoting behaviours and those who held a clinical conception of health chose more disease preventing behaviours.

Laffrey and Crabtree (1988), also examined the relationship between definition of health, perceived health status and health behaviour choice in a sample of 58 adults (29 with chronic cardiovascular disease and 29 who were healthy). Although the cardiovascular group perceived themselves to be less healthy than the comparison group, their definition of health and choice of health behaviours were similar. This finding suggests that the meaning of health and health behaviour choice may not necessarily change in the presence of a chronic condition. Significant correlations ($r = .33$; $p < .01$ to $r = .55$; $p < .01$) between the four conceptions of health and age were also reported, indicating increasing complexity of health conception with

increasing age (Laffrey & Crabtree, 1988).

In a study of 589 employees enroled in a workplace health promotion program, Pender et al., (1990) investigated the individual's definition of health as a determinant of health behaviour. Pender combined three of the four health dimensions - adaptive, role-performance, and well-being - to form a wellness subscale. The wellness subscale represents a wellness conception of health as opposed to the illness conception of the clinical subscale (Pender, 1990). Pender (1990) reported that 31% of the variance in health-promoting behaviours was explained by a combination of definition of health, health status, locus of control (external), self-efficacy, gender, age, and behavioral factors. Results of Pender's investigation indicated a significant correlation ($r = .30$; $p < .001$) between the wellness subscale and health behaviours but no evidence of association between the clinical (absence of illness) definition of health and health behaviours. These results suggest that increased health-promoting behaviours occur among subjects who define health as wellness as compared to those who define health clinically as the absence of illness. Pender (1990) concluded that motivation to maintain health is stronger than fear of future illness and will thus have a greater impact on health-promoting behaviours. It is also possible that people who feel well do not associate their current

health behaviours with illness prevention.

In a study of ambulatory cancer patients, Frank-Stromborg et al. (1990), found that patients' definition of health and perceived health status were the cognitive-perceptual variables most strongly associated with their life-style behaviours. Also, respondents who defined health as wellness were more likely to engage in health-promoting behaviours ($r = .23$; $p < .001$) than those who defined health as the absence of illness.

Stuifbergen and Becker (1994), examined the health-promoting behaviours of 117 adults with disabilities. Although only two percent of the variance for health behaviours was explained by the wellness definition of health, when definition of health was combined with self-efficacy, a total of 46% of the variance was explained by these two cognitive-perceptual variables. The increased explanatory power of combined constructs supports the findings reported by Frank-Stromborg et al. (1990) and Pender et al. (1990).

Segall and Wynd (1990), examined the influence of definition of health, health locus of control, and power, as predictors of smoking behaviour among 64 adults who were engaged in an eight-week smoking cessation program. Results indicated that a narrow, clinical conception of health was associated with continued smoking. Conversely, those who

successfully abstained from smoking had higher mean scores for the more complex definitions of health than did those subjects who continued to smoke. The authors concluded that people who feel well may ignore any associated health risk in preference for the perceived pleasures and benefits of smoking (Segall & Wynd, 1990).

In summary, the influence of definition of health on health behaviour choice has been demonstrated among groups of young and middle aged adults, individuals with physical disabilities and those with cancer. Clinically defined health conception has been associated with risk of failure among smokers engaged in smoking cessation programs.

Perceived self-efficacy. Self-efficacy is defined as an individual's beliefs about one's capability to perform certain behaviours (Bandura, 1977). The concept of self-efficacy has been studied frequently as a determinant of health-promoting behaviours and there has been some evidence of a small to moderate relationship between these two variables.

Two studies examined the influence of self-efficacy on the health behaviours of patients following CABS (Tirrell & Hart, 1980; Gortner & Jenkins, 1990). Tirrell and Hart (1980), investigated patients' compliance with a structured walking program at 10-12 months after surgery. Semi-structured interviews were carried out with 30 men and women

aged 46-75 years. No significant relationship was found between compliance levels and age, sex, education, occupation, marital status, or time since surgery. The strongest relationships reported were those between compliance with the walking program and knowledge of the walking regime and between compliance and perceived self-efficacy. An inverse relationship was reported between perceived barriers to participating in the program and compliance with walking. In addition, decreased health behaviour activity was associated with lapse of time since surgery (Tirrell & Hart, 1980).

Gortner and Jenkins (1990) examined the effects of in-patient education and follow-up telephone monitoring on patients' perceived self-efficacy and activity level at 4, 8, and 24 weeks after cardiac surgery. In a study of 149 recovering cardiac surgery patients aged 30 to 75 years, subjects were randomized to an experimental or control group. In addition to the provision of routine information to both groups, the experimental group received added information and counselling following surgery. The experimental group also received weekly and bi-weekly follow-up by telephone. Walking, climbing, lifting, and general activities were the behaviours examined. Correlations between self-efficacy expectations and general activity ranged from .36 at baseline to .63 and .48 at 4 and

12 weeks respectively, becoming non-significant at 24 weeks. However, a strong correlation ($r = .83$) between self-efficacy and walking at 24 weeks was found. A significant difference ($p = .03$) was also found between the experimental and control groups for walking and general activity at 4 and 8 weeks after surgery. Gortner and Jenkins (1990) concluded that although it was not determined whether the impact on continued activity was due to the information provided or continued contact or both, intervention during the early weeks following surgery is important to promote self-efficacy and continued general activity.

McAuley and Jacobson (1991) examined the role of self-efficacy in exercise behaviour among 58 university employed women who participated in an eight-week, low impact exercise program. These subjects were healthy but sedentary in that they had limited aerobic activity prior to the study. The authors reported a significant correlation ($r = .28$; $p < .05$) between perceived self-efficacy and regularity of exercise and between self-efficacy and duration of exercise ($r = .32$; $p < .05$) at a two month follow-up.

Comparison of participants and nonparticipants in a worksite health promotion program for bluecollar workers revealed similar findings with 6.6% of the variance explained by perceived self-efficacy (Alexy 1991). Nonparticipants in the worksite wellness program described

themselves as being unfit, too old, or lacking the energy to participate.

A positive correlation ($r = .50$; $p<.0001$) between self-efficacy and self-management of epilepsy was reported by Dilorio, Faherty, and Manteuffel (1992), further supporting the predictive value of self-efficacy in self-care behaviours. This finding is congruent with Waller and Bates (1991) who reported a moderate association ($r = .46$; $p<.001$) between self-efficacy and healthstyle in a study of the well elderly.

Stuifbergen & Becker (1994) investigated the occurrence of health-promoting behaviours among adults with disabilities. Both general and specific self-efficacy were measured for their predictive value in determining health behaviour choice. General self-efficacy was defined by Stuifbergen and Becker (1994) as "a measure of beliefs about personal ability to affect outcomes in various situations" (p. 5) and specific self-efficacy as a measure of "beliefs about one's ability to perform health-promoting practices in the domains of nutrition, physical activity, psychological well-being and responsible health practices" (p. 6). Significant correlations were found between general self-efficacy and health behaviours ($r = .44$; $p < .01$) and between specific self-efficacy and health behaviours ($r = .62$; $p < .01$), depicting a stronger association between

health behaviours and specific self-efficacy than between health behaviours and general self-efficacy.

The findings of Kelly, Zyzanski, and Alemagno (1991) suggest an interactive relationship among beliefs, self-efficacy and motivation to change behaviour. Lifestyle areas, including cigarette smoking, dealing with stress, amount and type of food eaten, and exercise habits were examined. Risk assessment data were collected from 215 patients at a medical clinic, with a portion of the sample assigned to prescribed lifestyle changes. Specific instructional materials, based on the identified risk and lifestyle prescription, were given to the experimental group. A high degree of change was associated with a high degree of motivation for change when combined with health beliefs, self-efficacy and support. The strongest predictors of motivation were perceived benefits and self-efficacy ($p < .05$) (Kelly et al., 1991).

In summary, although a wide range of correlations ($r = .28$ to $r = .83$) between self-efficacy and health behaviours has been reported in the literature, there has been consistent support for the association between these two variables.

Perceived health status. Perceived health status "is the subjective assessment or evaluation of one's current state of health" (Frank-Stromborg et al.,1990, p.1160).

Although health status has not been identified as a strong predictor of health behaviour, there is some evidence that it influences health behaviour choice. Several studies, using varied populations with chronic conditions have been conducted.

Frank-Stromborg et al. (1990) measured the influence of health status on the health-promoting behaviours of 385 ambulatory cancer patients. Although health status alone was not significantly related to health behaviours, when combined with definition of health and internal control of health, these three variables explained 15.8% of the variance in health-promoting lifestyle behaviours. Others have reported low to moderate, significant relationships ranging from r = .29 to r = .34 (Duffy, 1988; Pender et al., 1990; Lusk, Ronis, Kerr, & Atwood, 1994).

Contrasting results are reported by Gillis and Perry (1991). In a study of 126 middle-aged women, half of whom were randomly assigned to an experimental exercise class, no significant relationship was found between subjects' perceived well-being and health-promoting behaviours (Gillis & Perry, 1991). Perceived well-being was measured, using a visual analogue scale to indicate subjects' degree of well-being from least to best well-being possible.

In summary, although health status has not been presented in the literature as a strong predictor of health

behaviour, its reported association with health behaviour activity among well individuals and among those with chronic conditions makes it a valuable concept to explore in relation to health behaviour choice among post-CABS patients.

Demographic characteristics. Age, gender, and education were the demographic characteristics reviewed for their influence on health behaviours.

In research over the past decade, varied results of the influence of demographic factors on the health behaviours of the well elderly and those with chronic conditions have been reported (Miller, 1991; Frank-Stromborg et al.,1990; Brown & McCreedy, 1986). Duffy (1988) examined the determinants of health behaviours among 262 women, aged 35 to 65 years, and found that demographic variables have little influence on health-promoting behaviours. In a study of 386 men and women, aged 55 years and older, only 7.2% of the variance was explained by the combined variables of age, sex, socioeconomic standards and marital status on health behaviours (Brown et al., 1986). In other studies, older people are reported to practice more health-promoting behaviours than younger people and women report more health-promoting behaviours than men (Kenny, 1992; Brown & McCreedy, 1986; Woods et al., 1988; Harris & Guten, 1979). In addition, Conn, Taylor, and Abele (1991), reported an

inverse relationship between age and activity in an investigation of health behaviours among well adults, aged 40 to 88 years, at one to two years post MI. Women were reported to have poorer health status with advanced age, a factor that may influence the likelihood to participate in health behaviour activities. Education alone has generally not been identified as a strong predictor of health-promoting behaviours. However, because education is amenable to change, its potential to influence a patient's cognition and perception should be acknowledged (Laffrey, 1990).

Interpersonal Influences

Social support, as indicated by the perceived expectations of others and interactions with family, friends, and health care professionals, is a component of the modifying influences of health-promoting behaviour proposed in Pender's Model (Pender, 1987). Perceived support has frequently been examined as a determinant of health behaviour change. However, in most of these studies, social support is not clearly conceptualized and measures of the concept may have lacked sensitivity to identify and measure the type of support needed in specific situations (Dilorio, Faherty, & Manteuffel, 1992).

Callaghan's and Morrissey's (1993) description of interpersonal support lends some clarity to the overall concept. According to these authors, social support "may be

expressed structurally (marital status, size of network or frequency of social interaction) and/or functionally (offering emotional, tangible or informational support). It may derive from a variety of sources (spouse, partner, colleague, or friend), and its value often lies in the perception of people that it is available, without this actually being the case" (p. 203). The majority of studies reviewed, examined spousal support as an influence on behaviour change and maintenance.

According to Pender (1987), expectations of significant others, family health practices, and the relationships of patient and family with health professionals, are all factors which affect the patient's cognitive-perceptual pattern and consequent likelihood of initiating and maintaining health-promoting behaviours. This notion is supported by Palank (1991) in an extensive review of the literature in which social support was found to be a strong influence on self-care practices, the degree of participation in health-promotion programs, smoking cessation, exercise activities and weight control.

Findings from several studies provide support for the examination of perceived support as an interpersonal influence on health behaviour change. A study of 10 women, ages 42-72 years, was carried out by Hawthorne (1993) to examine their behaviours during the recovery process at 6-30

months post cardiac surgery. According to Hawthorne, the women indicated a need for greater social support during the recovery period, a need that was further reflected in subjects' lack of attention to risk factor modification during this period. Hawthorne (1993), also reported a difference in subjects' definition of health, depending on the life-span stage and individual life experiences. Since cardiovascular disease generally affects both middle and older age groups, any differences in perception of or definition of health due to life-span stage, may influence a person's health behaviour choice.

Conn, Taylor, and Abele (1991) reported an inverse relationship between age and support, suggesting a decrease in perceived support over time. Although the relationship between social support and age for men ($r = -.31$) was stronger than the relationship between social support and age for women ($r = -.08$) there was no significant gender difference when men and women were compared on this variable (Conn et al., 1991). McSweeney (1993) in a descriptive study of the health behaviours of post-MI patients, reported that support from the spouse, friends, family, and health care professionals influenced health behaviour activities. In addition, Hildingh, Segesten, Bengtsson, and Fridlund (1994) reported that of those who participated in self-help groups, 64% reported having changed daily activities as a result of

support from group participation.

In contrast, Kelly et al., (1991) found that although support was highly predictive of most lifestyle behaviours ($p < .05$) when patients were highly motivated to change, it had less influence when motivation was absent. Similarly Hilbert (1985), did not find a relationship between spousal support and compliance with prescribed activities after an acute myocardial infarction. These activities included medication use, diet, weight loss, physical activity, exercise, avoidance of stress and smoking cessation. Hilbert suggests that in the presence of conflict, spousal efforts may have limited rather than enhanced behaviour change. For example, spousal support may be perceived by the patient as a method of control to prevent non-compliance to the prescribed medical regime and as such, may be inappropriate or ineffective (Hilbert, 1985). Fleury (1993) in a grounded theory approach, also found that conflicting values and beliefs among family members led to an unwillingness of the spouse to participate in the change process and resulted in decreased effort to change.

In summary, perceived support, particularly spousal support, has been shown to positively influence health behaviour choice after a cardiac event, although conflicting results of the influence of support on health behaviour choice have been reported.

Previous health behaviours. A person's ability to engage in health-promoting behaviours may be influenced by previous experiences with specific health behaviour activities (Pender, 1987). Such behaviours may have included previously learned skills that enable the individual to choose and sustain healthy behaviours (Pender, 1987; McSweeney, 1993). According to Pender (1987), past experience with stress management, planning a balanced diet and engaging in exercise activity are some examples of activities that may influence a person's ability to change and maintain healthy behaviours. If one has been successful in changing behaviours in the past, then one is more likely to engage in behaviour change again. Conversely, if one's attempt to change a behaviour has been unsuccessful, then that person may be inclined to avoid any further attempts to change.

There is some evidence to suggest that health behaviour choice and maintenance may be influenced by the perceived benefits of past experience with health behaviour change (Palank, 1991). Palank also states that "the perception of a behaviour as pleasurable is possibly more relevant in its adoption than its perception as having health implications" (p. 826). Associated positive feelings with behaviours such as exercise activity, play a role in feeling better and thus promote and reinforce the behaviour by increasing self-

motivation (McSweeney, 1993). Healthy choices may become habitual if past experiences are perceived to have been successful (Palank, 1991).

Although behavioral factors, in terms of previous life experiences, have not been clearly defined in the literature, they have the potential to influence health behaviour choice. Because of the chronic nature of coronary artery disease it can be expected that the subjects in the present study have been exposed to health behaviour change in the past with the subsequent potential to influence behaviours after surgery.

Summary

In this chapter, I have described Pender's (1987) health promotion model as the organizing framework and discussed a literature review of the variables included in this study. Specifically, the literature review included: health behaviours of patients after a cardiac event and related risk factors for coronary artery disease; definition of health, perceived self-efficacy, and perceived health status as the three cognitive-perceptual variables; and demographic characteristics, interpersonal influences, and previous health behaviours as the three modifying factors. The major variables were discussed as they related to the health promotion model and health behaviour change and

maintenance after CABS.

Research Questions

The following research questions were identified:

1. What health behaviours are reported by cardiac patients six months to one year after cardiac surgery?
2. What changes in frequency of health behaviours are reported by patients after cardiac surgery?
3. What is the relationship between health behaviours and definition of health, perceived health status, perceived self-efficacy, demographic characteristics, perceived support and previous health behaviours?

Chapter III

Research Methods

This chapter includes a description of the study design, ethical considerations, data collection and analysis procedures and a description of the instruments used.

Design

A descriptive correlational study was conducted: (1) to describe the current health behaviours of cardiac patients after coronary artery bypass surgery (2) to examine the change in health behaviours reported by patients after coronary artery bypass surgery and (3) to explore the relationships among selected cognitive-perceptual and modifying factors as possible determinants of health-promoting behaviours

Sample

A convenience sample was obtained from an adult population of patients who were five to thirteen months post coronary artery bypass surgery. A sample of at least 50 subjects was considered necessary to provide a description of the health behaviours of a group of patients post surgery and to be feasible within the time frame available for the study. The criteria for sample selection were: (a) a diagnosis of coronary artery disease (b) six months to one

year post coronary artery bypass surgery (c) consent to participate and (d) ability to speak English.

Sixteen of the subjects were concurrently participating in a longitudinal nursing research study on family functioning after cardiac surgery. Initial contact was made by letter from the investigators of the Family Functioning Study. It was determined early in the data collection phase that sufficient numbers would not be available from this group. Additional subjects were then obtained from the client population of a local cardiac surgeon who initiated contact through a letter to patients who had undergone cardiac surgery during the previous year.

Ethical Considerations

Consent forms, signed by the participants, were returned with the completed questionnaires. Confidentiality was maintained by coding all materials. Subjects' names and other identifying data were not used in any written materials. Subjects were informed that although no direct benefits may be realized, the information they provided may be helpful in assisting others who have coronary artery bypass surgery. Approval to conduct this study was obtained following review by the Human Investigations Committee of Memorial University of Newfoundland.

Data Collection and Analysis

A covering letter (see Appendix A), consent form (see Appendix B), and a questionnaire (see Appendix C) were sent to subjects who indicated their agreement to participate. Mailings were staggered to correspond to the 6 to 12 month anniversary dates of surgery. The questionnaire consisted of five sections: (1) definition of health scale, (2) self-efficacy scale, (3) health status scale, (4) lifestyle profile and open-ended question and (5) a personal profile sheet. Participants were asked to return the completed questionnaire within two weeks. Follow-up phone calls were made to 11 participants who did not return the questionnaires within the requested time frame. Data were collected over a period of four months.

Two subjects who returned questionnaires that did not meet the time criteria were included in the study. Since both subjects were within one week of the time frame and met the remaining criteria for admission to the study, it was decided to include the data in the analysis.

Data were coded and analyzed using the SPSS for Windows program (1994). The data were analyzed using descriptive and inferential statistics. Part of the questionnaire contained Likert-type scales, which are ordinal scales and technically call for non-parametric techniques. However, there is support for the use of parametric statistics with ordinal

data and these have been used for some analyses (Kerlinger, 1973; Knapp, 1990; Munro & Page, 1993). Treating ordinal measurements as interval measurements is acceptable when the possibility of error in interpretation is acknowledged (Kerlinger, 1973).

Qualitative data were analyzed by a system of coding responses into categories. Responses were initially categorized by the researcher and a colleague, expert in cardiovascular nursing, with 90% agreement. Areas of disagreement were recategorized with 100% agreement.

Instruments

Definition of Health (HC). The Laffrey Health Conception Scale (LHCS) (see Appendix C) was used to measure what "health" or "being healthy" means (Laffrey, 1986). The instrument consists of 28 Likert-response items with four subscales of seven items each to measure differing views of health. These dimensions of health are based on the four conceptions of health described by Smith (1983, as cited in Laffrey, 1986) and include: (1) clinical health concept (absence of disease, illness, or symptoms), (2) role performance health concept (ability to function as expected), (3) adaptive health concept (ability to adapt to changing life situations), and (4) eudaemonistic health concept (maximum self-actualization or reaching one's

highest potential). "The four dimensions of health are not mutually exclusive but all four need to be examined because an individual may weigh them differently in arriving at a personal conception of health" (Laffrey & Crabtree, 1958, p. 43). A higher total score indicates a broader conception of health which is associated with health-promoting behaviour choices (Laffrey, 1986).

The validity and reliability of the LHCS has been estimated in a variety of settings and among varied populations (Laffrey, 1985, 1986; Laffrey & Crabtree, 1988; Pender et al., 1990; Stuifbergen & Becker, 1994). Laffrey (1986) and Laffrey and Crabtree (1988), reported alpha coefficients for the four subscales ranging between .87 and .88 and a one-week test-retest reliability of .84. Pender et al. (1990) reported coefficient alphas of .95 for the wellness subscale (a combination of the role performance, adaptive, and eudaemonistic subscales), and .89 for the clinical subscale. Similar alpha coefficients were reported by Stuifbergen and Becker (1994).

Perceived Self-Efficacy Scale (SE). Self-efficacy was measured using a published general self-efficacy scale (Sherer et al., 1982,). This subscale is a 17-item Likert scale (see Appendix C) with a response selection ranging from 1 (strongly agree) to 6 (strongly disagree). Negatively worded items were reverse-scored. Higher scores indicate

higher levels of self-efficacy. Alpha coefficients between .83 and .94 have been reported (Sherer and Adams, 1983; Weitzel,1989).

Perceived Health Status Scale (HS). A single item, self-rating scale was used to measure individuals' perceptions of their current health status. Subjects were asked to respond to a single question, "How would you rate your overall health at the present time?", using a 6-point scale (see Appendix C) ranging from poor to excellent (Pender et al., 1990). Single-item ratings are reported to be both reliable and reproducible and the validity strengthened by the association with other measures of health status (Ware, Davies-Avary, & Donald. 1978, as cited in Pender et al., 1990; Gillis, 1993).

Demographic Characteristics. Demographic characteristics were obtained by asking subjects to complete a personal data profile (see Appendix C) which included age, gender, occupation, work status (return to work/return to former activities), years of schooling, marital status, number of people in the household and time since surgery.

Current Health Behaviours Scale (CHB). The current health behaviours scale (see Appendix C) is an investigator-prepared instrument consisting of 12 Likert-response items which address behaviours related to the major risk factors for coronary artery disease. The CHB scale was developed,

based on a review of the cardiovascular and health-promotion literature. The areas addressed by items in the scale include exercise, diet, health management (having blood pressure checked regularly), stress management (avoiding upset), and socializing with friends. The scale has a response selection ranging from 1 (never) to 4 (routinely), to measure the current frequency of engaging in health behaviours. One negatively worded item in the scale was reverse-scored. In addition to the literature review, the instrument was reviewed for face and content validity by a group of health professionals, including a dietitian, four nurses involved in cardiovascular nursing practice and research, and one former patient who had undergone coronary artery bypass surgery during the past year. No changes were made based on this review.

In addition, an open-ended question, "What are the three most important things you do to keep healthy?" was used to obtain qualitative data related to current health behaviours and to elicit behaviours other than those included in the current health behaviours instrument. The item was reviewed for face and content validity as described for the current health behaviours scale. No changes were made as a result of the review.

Previous Health Behaviours Scale (PHB). The previous health behaviours scale (see Appendix C) was identical to

the CHB scale except that past tense was used to permit comparison of data. The instrument was reviewed for face and content validity as described for the CHB scale. No changes were made as a result of the review.

Perceived Support Scale (PS). The perceived support scale (see Appendix C) was prepared by the investigator to measure the individual's perceived support. Items reflected sources of emotional and informational support, based on a review of the social support literature. The scale consisted of five Likert-response items to measure the perceived availability of emotional and informational support ranging from 1 (never) to 4 (routinely). Two items from the demographic profile, marital status and number of people in the household, were used as a measure of actual available support. The instrument was reviewed for face and content validity as described for each investigator-prepared instrument. No changes were made as a result of the review.

Summary

A descriptive correlational study was designed and data collected from a sample of patients six to twelve months post CABS. Pre-existing and investigator prepared instruments were assessed in terms of validity and reliability and used to collect data on the variables in the study. The results of data analysis are presented in the next chapter.

CHAPTER IV

Results

Study results are presented in this chapter under the headings of response rate, sample characteristics and data pertaining to each research question. Results for each research question will be presented under the headings of: (a) current health behaviours, (b) differences in health behaviours before and after surgery, and (c) factors influencing health behaviours after coronary artery bypass surgery. Influencing factors are presented under two major headings: (a) cognitive-perceptual variables and (b) modifying factors. The cognitive-perceptual and modifying factors are further subdivided according to the three cognitive-perceptual and three modifying factors examined.

Response Rate

Of the 104 eligible subjects, 63(61%) agreed to participate. A total of 63 questionnaires were mailed. Follow-up phone calls were made to 11 subjects who had not returned the questionnaires within two weeks resulting in a total of 59 returned questionnaires. Of these, one was eliminated from data analysis because the majority of items were unanswered. The total sample size was 58 for a response rate of 92.1% of those who agreed to participate.

Sample Characteristics

The sample consisted of 58 adults (18 women and 40 men), aged 42 to 79 years. The mean age was 62.6 years. The mean age for women was 64.5 (48-79) years and for men 61.7 (42-76) years. Forty-five percent of the men in this sample were 65 years or older compared to 61% of the women. The majority of respondents (86%) were married. One person lived alone and the remainder of subjects lived with at least one other person in the household. Subjects' level of education ranged from 4 to 20 years with an average of 9.6 years of schooling. Less than one-half (37.9%) of the sample had returned to work. Since the item concerning return to work/ former activity was seemingly confusing for respondents, these data were not included in the analysis. The average length of time since surgery was 8.4 months with clustering at six months (24%) and at 9-10 months (28%). A description of respondents by age, gender, education, and other demographic factors is presented in Table 1.

Current Health Behaviours (CHB)

Current health behaviours were the behaviours engaged in by subjects at the time of data collection. Data were gathered using the CHB scale to obtain quantitative data and an open-ended question was used to obtain qualitative data.

Table 1.

Description of Sample (N = 58)

Characteristics	n (%)	Range	M	SD
Age		42-79	62.6	8.4
Under 55	11 (19)			
55-64	18 (31)			
65-74	25 (43.1)			
75 and over	4 (6.9)			
Schooling(years)		4-20	9.6	3.4
Time since surgery(months)		5-13	8.4	2.3
No. people in household		2-5	2.5	1.0
Gender				
Men	40 (69)			
Women	18 (31)			
Marital status				
Married	49 (86)			
Single	5 (8.8)			
Widowed	4 (5.2)			
Returned to work				
Yes	22 (37.9)			
No	36 (62.1)			
Retired	28 (48.3)			

Quantitative data

The CHB scale consists of 12 behaviours and a 4-point Likert response to indicate the frequency of participating in each behaviour ranging from never to routinely. Scores on the CHB scale were between 26 and 48. The mean was 38.5 out of a possible score of 48. The standard deviation was 5.6. The mean for men's scores was 38.7 (SD = 5.2) and for women's scores 38 (SD = 6.6). Higher scores indicate increasing frequency of health-promoting behaviours. The alpha coefficient for the scale was .80.

Data from the CHB scale indicated that the majority (93%) of people in this sample exercise in some form. Approximately one half (43.9%) of the subjects exercise three times a week, and 55% take walks. High scores were also shown for dietary habits with 85% of respondents eating three regular meals a day which included whole grain cereals, raw fruits and vegetables, and low fat milk products. Fifty-four percent of the sample read labels on canned and packaged foods.

One person smoked cigarettes routinely while the remaining 57 respondents did not smoke. Forty-five percent had their blood pressure checked even when there were no problems. Scores for stress management items were slightly lower than those for other health behaviours with 48% reporting that they avoided upsetting situations and 24%

reporting that they routinely talked about their problems with others.

Qualitative data

Qualitative data were obtained in response to the question, "What are the three most important things you do to keep healthy?". The most frequently reported health behaviours to maintain health were exercise, diet, and health management (Table 2). Health management included comments such as "having blood pressure checked regularly", "taking medications on time", and "keeping doctor's appointments". Health behaviour data from the open-ended question were similar to the data obtained through the CHB scale in that exercise and diet are the behaviours most frequently engaged in, while stress management behaviours were reported less frequently by this group.

Previous Health Behaviours (PHB)

The previous health behaviour scale measured the frequency of health behaviours prior to surgery. The means, standard deviations and range of scores for each behaviour and for the total PHB scale were calculated. Scores ranged from 18 to 46 with a mean of 32. The standard deviation was 6.7. The mean for men's scores was 32.6 (SD = 6.7) and for women's scores 30.8 (6.9). Higher scores indicated greater frequency of health-promoting behaviours. The alpha coefficient for the scale was .79.

Table 2.

Number and Percentages of Subjects Who Reported Health Behaviours in Each Category in Response to the Question:"What Three Things Do You Do To Keep Healthy?"

Behaviours	n (%)
Exercise	56 (97%)
Diet/Weight Control	54 (93%)
Health Management	29 (50%)
Sleep/Rest	14 (24%)
Smoking Cessation	11 (19%)
Stress Management	8 (14%)

Previous health behaviour scores and CHB scores were then analyzed to compare the frequency of behaviours before and after surgery. The mean score ($M = 32$) for previous health behaviours was lower than the mean score ($M = 38.5$) for current health behaviours (Table 3). The difference in mean scores was 6.61. A paired t-test indicated a significant ($t = 9.1$, $p < .001$) difference in the reported health behaviours of subjects before and after surgery.

Table 3.

Comparison of Means and Standard Deviations Between Current and Previous Health Behaviours (N=58)

Variables	Previous M(SD)	Current M(SD)
Exercise 3x/week	2.2 (1.10)	2.9 (1.10)
Take walks.	2.5 (0.99)	3.4 (0.77)
Smoke cigarettes	3.3 (1.20)	3.9 (0.43)
Eat regular meals	3.7 (0.78)	3.8 (0.48)
Eat whole grain foods	2.7 (1.18)	3.2 (0.88)
Eat raw vegetables/fruits	2.7 (0.96)	3.3 (0.81)
Eat low fat milk products	2.6 (1.10)	3.4 (0.80)
Read labels	2.3 (1.10)	3.2 (0.97)
Check blood pressure	2.4 (1.20)	3.0 (1.10)
Avoid upset	2.1 (0.77)	2.5 (0.88)
Talk about problems	2.5 (0.82)	2.7 (0.87)
Socialize with friends	3.0 (0.82)	3.1 (0.80)
Total scores	32.0 (6.74)	38.5 (5.60)

paired $t = 9.1$, $p < .001$

Influencing Factors

Three cognitive-perceptual factors and three modifying factors were measured to examine their influence on health behaviours. Descriptive statistics (Table 4) and Pearson's r correlations (Table 5) are presented for each variable. Finally, results of a stepwise multiple regression analysis are reported.

Cognitive-Perceptual Factors

Definition of health(HC). Definition of health (Table 4), as a cognitive-perceptual variable, was measured using the Laffrey Health Conception Scale (LHCS)(Laffrey, 1986). The mean for the total scale was 139.3 out of a possible score of 168. Scores ranged from 59 to 168. Higher scores indicate a broad and complex conception of health. The mean for women was 153.8 and for men 133.5 ($F = 4.087$, $p < .049$). The alpha coefficient for the scale was .96.

Perceived self-efficacy (SE). Self-efficacy (Table 4), was measured using the specific self-efficacy scale (Sherer & Sherer, 1982). The mean self-efficacy score was 75.7 and a standard deviation of 15.6. Scores ranged from 36 to 101 out of a possible range of 17 to 102. Higher scores indicated greater self-efficacy. The alpha coefficient for the scale was .89.

Perceived health status (HS). Perceived health status (Table 4), was measured by asking respondents to rate their

Table 4.

Means, Standard Deviations, and Ranges of scores for the Cognitive/Perceptual and Modifying Factors

Factors	Possible Range	Actual Range	M	(SD)
Cognitive/Perceptual Factors				
Health Conception	28-168	59-168	139.3	25.1
Self-efficacy	17-102	36-101	75.7	15.6
Health Status	1-6	2-6	4.7	1.0
Modifying factors				
Demographic Characteristics				
Age		42-79	62.6	8.4
Education		4-20	9.6	3.4
Time Since Surgery		5-13	8.4	2.4
Interpersonal Influences				
Perceived Support	5-20	11-20	17.3	2.3
No. people in Household		1-6	2.5	1.0
Previous Health Behaviours	12-48	18-46	32.0	6.7

overall health on a scale ranging from poor to excellent. Perceived health status scores ranged from 2 to 6 out of a possible range of 1 to 6. The mean was 4.7 and the standard deviation was 1.0. Higher scores indicate perceptions of good to excellent health.

Modifying Factors

Demographic characteristics. The demographic characteristics (Table 4), examined as modifying factors in the study, included age, gender, marital status, and time since surgery. A significant relationship was found between time since surgery and health behaviours ($r = -.33$, $p < .01$) and reflects an inverse relationship. No other significant relationships between demographic variables and health behaviours were identified.

Interpersonal Influences. Interpersonal influences (Table 4), included three measurements: (1) marital status (2) the number of people in the household, and (3) perceived support.

The majority (84%) of respondents were married. The average number of people in the household was 2.5. The mean for perceived support was 17.3 with a standard deviation of 2.3 and a range of 11 to 20 out of a possible range of 5 to 20. Higher scores indicated a higher level of perceived support. The alpha coefficient for the scale was .59.

Correlations Between Current Health Behaviours and Cognitive-Perceptual and Modifying Factors

Correlation analysis, using Pearson's r, and regression analysis were carried out to examine the relationships between current health behaviours and other variables. Although tests of significance were done, the results should be reviewed with caution due to the nature of the sample.

There was no significant relationship between current health behaviours and the cognitive/perceptual variables, definition of health, perceived health status, and perceived self-efficacy. Significant correlations were found between current health behaviours and the modifying variables, perceived support ($r = .56$, $p < .01$) and previous health behaviours ($r = .64$, $p < .01$). In addition, a significant inverse relationship was found between current health behaviours and time since surgery ($r = -.33$, $p < .01$).

Intercorrelations among cognitive-perceptual and modifying variables (Table 5), show significant correlations between perceived support and previous health behaviours ($r = .43$, $p < .01$) . Significant correlations were also found between definition of health and health status ($r = .39$, $p < .01$), definition of health and self-efficacy ($r = .32$, $p < .01$), and between self-efficacy and health status ($r = .36$, $p < .01$). In addition, a significant inverse relationship

Table 5.

Intercorrelations Among Current Lifestyle Behaviours and Cognitive/Perceptual and Modifying Factors

	HC	SE	HS	Age	TSS	Educ	PS	PHB
CHB	-.03	.01	.12	.01	-.33**	.25	.56**	.64**
HC	--	.32*	.39**	.16	.11	-.09	-.12	-.31*
SE	--	--	.36**	-.04	.04	-.03	.19	.04
HS	--	--	--	.04	.21	.09	.02	.02
Age	--	--	--	--	.19	-.34**	.05	.13
TSS	--	--	--	--	--	-.08	-.13	-.21
Educ	--	--	--	--	--	--	.08	.24
PS	--	--	--	--	--	--	--	.43**

Note. CHB = Current Health Behaviours; HC = Health Conception (Definition of Health); SE = Perceived Self-Efficacy; HS = Perceived Health Status; AGE = Age in months; TSS Time Since Surgery; Educ = Years of Schooling; PS = Perceived Support.

*p < .05; **p < .01

Table 6.

Stepwise Multiple Regression for Two Independent Variables on Current Health Behaviours.

Variable	Multiple r	Adjusted r^2	r^2 change	Beta	F Value
PHB	.64390	.40335	.40335	.643898	36.82879
CHB	.71028	.48506	.08171	.331231	25.96244

$p < .0000$

was found between previous health behaviour and health conception ($r = -.31$, $p < .05$)(Table 5).

There was no correlation between the demographic factors (age, time since surgery, and education) and health conception, perceived health status, or self-efficacy. Negative correlations were found between time since surgery and current health behaviour ($r = -.33$, $p < .01$) and between education and age ($r = -.34$, $p < .01$).

Stepwise Multiple Regression

Stepwise multiple regression (Table 6) was used to examine the combination of variables that would best predict current health behaviours. Only those variables correlated with CHB were entered in the equation. The three variables

were previous health behaviours (PHB), perceived support (PS), and time since surgery (TSS). At step one PHB entered the equation, accounting for 40% of the variance in current behaviours (CHB). Perceived support entered the equation on step two, accounting for 8% of the score on health behaviours. Time since surgery was dropped from the equation. Using the two variables, 48% of the variance in current health behaviours (CHB) were explained by previous health behaviours and perceived support.

Summary

Exercise and diet related activities were the most frequently reported health behaviours by subjects in this sample. Stress management, as indicated by the frequency of avoiding upset, talking about problems with others and socializing with friends, was reported as less frequent behaviours by this group. Further, a significant difference in the frequency of health behaviours was indicated after surgery. The mean score for definition of health was significantly higher for women than for men in the sample. With the exception of definition of health, no significant gender differences were noted.

No significant relationship was found between the cognitive-perceptual variables and current health behaviours. However, several modifying factors including

previous health behaviours, perceived support and time since surgery, were significantly related to current health behaviours. The predictor variables included previous health behaviours and perceived support. Together, these two variables explained 48% of the variance in current health behaviours.

CHAPTER V

Discussion

The purpose of the study was to describe the health behaviours of patients six to twelve months after coronary artery bypass surgery, compare health behaviours before and after surgery, and to examine factors that influence health behaviours after surgery. Findings related to each research question are discussed under the following headings: health behaviours, change in health behaviours after surgery, and influencing factors. The select cognitive-perceptual and modifying variables will be discussed as related to the findings in this study and to the theoretical framework.

Health Behaviours

The health behaviours engaged in by this sample of patients post CABS include regular exercise, nutritious eating habits, smoking cessation, and health management activities such as having blood pressure checked and socializing with friends (Table 3). Respondents have also identified these behaviours as being the most important things they do to maintain health (Table 2).

Both the qualitative and quantitative data suggest that this group of patients engage in health behaviours after surgery. Although comparison with the results of other studies cannot be made, there are a number of reasons that might explain these responses. First, respondents'

familiarity with expected behaviours after cardiac surgery may have cued responses to the CHB scale. Since all subjects had undergone surgery at the same hospital, they all received similar information concerning aspects of life-style change as part of discharge teaching. Follow-up contact with the surgeon and other health care professionals during the weeks and months post surgery further increases the opportunity for reinforcement of needed behaviour change. While this study did not attempt to evaluate subjects' functional ability or frequency and type of contact with healthcare professionals during the post operative period, these factors may have influenced people's health behaviours during this time. In addition, because of familiarity with expected behaviour choice after surgery, these subjects may have responded in a manner that was socially desirable rather than reveal their actual health behaviours at that time (Polit & Hungler, 1991). Subjects' qualitative descriptions of the most important activities they do to maintain health may have also been cued by the items on the CHB scale.

A difference between participants' and non-participants' motivation to change may also explain the high scores for health behaviours. Voluntary participation in the study at six to 13 months after surgery may indicate that respondents may have been more highly motivated to change

and maintain behaviours than those who did not agree to participate. Motivation, as a variable, was not explored in this study as Pender (1987) considers it to be an assumption of the model. Further, motivation for continued health-promoting behaviours is thought to result from a desire for improved quality of life as opposed to motivation for preventing illness. However, among older adults who have experienced illness such as heart disease, the motivation for reducing disease risk may be synonymous with maintaining health.

Change in Health Behaviours after Surgery

The respondents in this study reported more health behaviours after surgery than before surgery (Table 3). Specifically, differences were reported in exercise, walking, smoking, diet and having blood pressure checked regularly, although it was also found that health behaviours decreased over time. The continued engagement in these health behaviours may indicate that the behaviours have become habitual. Conversely, it must also be acknowledged that the responses may reflect the behaviours that are recommended to patients after cardiac surgery. In this study, subjects were asked to recall their behaviours prior to surgery. Thus, the responses are subject to bias such as forgetting prior behaviours or inaccurate memories of prior

behaviours.

Subjects also reported increased frequency in having their blood pressure checked in the absence of problems. This health behaviour may have been regulated by the prescribed medical follow-up after surgery rather than conscious choice by respondents to maintain health. In contrast, such differences did not occur for psychosocial behaviours such as avoiding upset and socializing with friends before and after surgery.

The reasons for the difference in scores for stress management and ability to socialize are unclear but could be related to several factors. The low scores for stress management may indicate that this group of subjects do not perceive stressors in their life that need to be managed. Subjects' continued ability to socialize with friends after surgery, may help to neutralize potentially stressful situations. Also, the extended family concept, particularly in rural areas of the province, may play a key role in helping patients adapt to lifestyle changes after surgery.

Pender (1987) proposes that the likelihood of changing health behaviours is dependent on individual perceptions (cognitive-perceptual factors) and modifying factors such as demographic characteristics, interpersonal and behavioral factors. While lifestyle modifications after a cardiac event have been reported among post-MI patients (Laffrey, 1990;

Fleury, 1991; Attowe, 1993) and among MI and CABS patients (Hildingh et al., 1994), actual change in behaviour has not been well documented. Furthermore, although changes may be initiated after a cardiac event they are seldom maintained for prolonged periods (Hubbard et al., 1984; McSweeney, 1993).

The potential for health behaviour change and maintenance may be determined by a number of factors. The relationships between the select cognitive-perceptual and modifying factors examined in this study for their association with health behaviour choice and maintenance are discussed.

Health Behaviours and Associated Factors

The health behaviours of the respondents in this sample were not significantly influenced by the cognitive-perceptual variables examined. However, the modifying factors - previous health behaviours and perceived support - together explained 48% of the variance in current health behaviours after CABS. These results are discussed under the headings (a) cognitive-perceptual variables and (b) modifying variables.

Cognitive-Perceptual Variables

Definition of health. Definition of health, self-efficacy, and perceived health status have been empirically

supported as determinants of health-promoting behaviour when examined separately or as combined constructs (Laffrey & Crabtree, 1988; Frank-Stromborg et al., 1990; Pender et al., 1990; McAuley & Jacobson, 1991; Kelly et al., 1991; Stuifbergen & Becker, 1994). Although the findings in this study suggest that subjects in the sample have a broad conception of health, believe in their ability to carry out certain behaviours and report that they are in good to excellent health, no relationships were found between the three cognitive-perceptual variables and health behaviours.

Higher scores on the health conception scale (LHCS) indicate a broad conception of health that has been consistently associated with health behaviour choice (Pender et al., 1990; Frank-Stromborg et al., 1990). Findings in this study suggest that the health conceptions held by subjects in this sample are similar to the health conceptions reported in previously studied groups (Laffrey, 1986; Laffrey and Crabtree., 1988; Pender et al., 2990; Frank-Stromborg et al., 1990; Stuifbergen and Becker., 1994). However, unlike previous studies, high scores for these subjects were not significantly correlated with current health behaviours.

The mean score for definition of health for women were significantly higher than the mean score for men. The reason for this finding is unclear but may indicate that the women

in this sample hold a more complex view of health than do the men in this sample.

Perceived self-efficacy. The subjects in this study reported that they engaged in healthy behaviours at six months to one year after surgery. However, there was no significant correlation between self-efficacy and health behaviours as proposed in Pender's (1987) health promotion model and reported in previous studies (Gortner and Jenkins., 1990; McAuley & Jacobs, 1991; Alexy, 1991; Diono et al., 1992; Grembowski et al., 1993; Stuifbergen and Becker., 1994;). The finding in this study may be due to the small sample size.

According to Shuster, Wright, and Tomich (1995), the patients' ability to make appropriate lifestyle modifications after a coronary bypass, is the key to successful rehabilitation and promotion of health. In previous research by Ewart, Taylor, Reese, & Debusk (1983), it was found that an increase in exercise activity after MI not only influenced physical activity at home but also influenced self-efficacy for other activities. Alexy (1991) concluded that "success with one component of a desired outcome frequently leads to success in associated components" (p. 39). This is an important concept when considering lifestyle changes, particularly as related to the complex and multidimensional facets of heart disease.

For example, if Alexy's conclusions are valid, then one can assume that success in changing dietary habits can lead to success in changing exercise patterns or smoking behaviours.

Perceived health status. Although subjects in the sample rate their health status as good or excellent, there was no significant relationship between health status and current health behaviours. This finding may be due to the small sample size.

A positive perception of health status is generally associated with increased health-promoting behaviours (Pender et al., 1990; Stuifbergen & Becker, 1994). However, the presence of co-morbidities of those over 65 years of age may negatively influence the maintenance of health-promoting behaviour (Conn et al., 1991). From another perspective, Brown and McCreedy (1986) suggested that "health in old age represents the cumulative effects of past behaviour more than it reflects recent behaviour" (p.328) and that those with poorer health practices have already succumbed to the disease.

Continued health behaviours among older patients after surgery may also be influenced by physical disability. In a study of adults with disabilities by Stuifbergen and Becker (1994), it was found that people can experience chronic disability and still perceive themselves to be well. It is not surprising then, that subjects in this sample who

experience the chronicity of cardiovascular disease, also rate their health status in a positive manner.

Although no significant correlations were found between frequency of health behaviour and any of the cognitive-perceptual variables, the frequency distributions for each scale indicated high scores for all of these variables. The high scores reflected subjects' broad definition of health, high degree of self-efficacy and good to excellent health status.

The reason for lack of significant correlations between the cognitive-perceptual variables and current health behaviours is not an obvious one. Based on previous studies, one would expect the high scores on each variable to correlate with health behaviours. The high scores may be a result of group homogeneity (Gillett, 1988; Gillis & Perry, 1991). All subjects in this study had undergone bypass surgery within the past year and it can be presumed that all subjects had received similar discharge instructions related to expected health behaviours after surgery. The high scores on these measurements may also have been a result of both self-selection and self-reporting. Other factors may include the small sample size coupled with the measurement of multiple variables, a condition in which significant correlations are not easily found (Kramer,1987).

Modifying Factors

The modifying factors examined in this study are discussed under the following headings: demographic characteristics, perceived support and previous health behaviours.

Demographic characteristics. The demographic characteristics include education (years of schooling), gender, age and time since surgery. Neither education, gender, nor age were significantly correlated with health behaviours after CABS, possibly a function of small sample size. Although comparison of findings with those of other studies is limited because of the new instruments used to collect health behaviour data, several factors are of interest and warrant discussion.

Education is generally associated with the likelihood of participating in health promoting behaviours (Riffle, 1987; Duffy, 1988; Laffrey, 1990). Although, in the present study, education was correlated with health behaviours ($r = .25$) after surgery, the relationship was not statistically significant. In addition, an inverse relationship between age and education was found, indicating a better educated younger population. This finding is consistent with national statistics and is of particular importance when providing risk-related information to people after cardiac surgery.

The non-significant correlation between age and health

behaviours performed by this group, supports previous work by Duffy (1988) and others (Brown & McCreedy, 1986; Laffrey, 1990) who found that demographic variables had very little influence on participation in health behaviour.

The men and women in this sample reported similar health behaviours after surgery. Comparison of individual items on the health behaviours scale however, reveal that although non-significant, the mean frequency of exercise for women was lower than the mean frequency of exercise for men in both previous and current health behaviours. These findings support those of Vogt, Funk, and Rametz, (1994) and Penkofer and Holm (1990). Contrasting results suggest that women engage in overall health behaviour activity more than men (Brown & McCreedy, 1986; Segall & Wynd, 1989; Laffrey, 1990). In this sample, the difference in exercise mean scores for men and women may be partly a function of age rather than gender since 61% of the women in this sample are over 65 years as compared to 45% of the men. Also, the co-morbidities associated with aging are not gender specific and thus may exert some influence on the actual ability of women in this sample to participate in physical exercise (Conn, Taylor, & Abele, 1991). In addition, women's recovery is generally longer and more complicated (Flavell, 1994). Although there was no was no measurement of their physical recovery, there was no significant difference in the current

health behaviours of men and women in this study.

Gender differences were revealed in the definition of health scores with women showing a broader conception of health than did men. Although the reason for this difference is unclear, subjects' definition of health may be influenced by the life-span stage and varied individual life experiences of men and women (Hawthorne, 1993).

Finally, the negative relationship found between health behaviours and time since surgery, supports the findings of Hubbard, Muhlenkamp, & Brown (1984), Becker (1985), Fleury (1991), and McSweeney (1993) and may be explained in a number of ways. As people recuperate from surgery and are symptom free, the impetus to continue health-promoting behaviours may be diminished or lost. Others may believe that surgery is a cure and that the need to change or maintain health behaviours no longer exists. Those who have knowledge and understanding of the risk factors and their relatedness to heart disease, may not have the supports in place to maintain a healthy change in lifestyle. Moreover, because of the small sample size and one data collection period, the difference may not be an accurate indication of change in health behaviours over time.

Perceived support. A moderate correlation was found between perceived support and current health behaviours. indicating an external influence on the health behaviours of

the respondents in this sample. The extended family concept, especially prevalent in rural areas of the province, may be a key link in the support systems of these subjects. According to Yates (1995), the influence of support can vary depending on its source, its type and the time in which it is received. In this study the majority of respondents were married, lived with at least one other person and indicated that adequate support was available. Although results have been mixed as noted in the literature review, spousal support, as well as the support of friends, family and health professionals, are important influences of health behaviours found by others (Pender, 1987; Palank, 1991; Conn et al., 1991; McSweeney, 1993; Hildingh et al, 1994).

Previous health behaviours. Previous health behaviours were moderately correlated with current health behaviours, suggesting that past experience with health behaviour choice is associated with current health practices. This finding may indicate that health behaviours have become habitual and that the health status reported by these respondents is a result of those long-term health behaviours (Brown et al., 1986). Although the literature on previous health behaviour as an influencing factor is sparse, the findings in this study provide some support for the concept. Regression analysis revealed that previous health behaviours and perceived support, together, were the predictors of health

behaviours among this group of patients post CABS.

Summary

The purpose of this study was to describe the health behaviours of patients after coronary artery bypass surgery, examine differences in health behaviours before and after surgery and examine factors that may influence health behaviour choice after coronary artery bypass surgery.

The data indicated that the subjects in this sample engage in healthy behaviours that are conducive to reducing cardiac disease risk. Among definition of health, perceived self-efficacy, perceived health status, and demographic variables and health behaviours, there were no significant relationships found. Previous health behaviours and perceived support, together, explained 48% of the variance in health behaviours after CABS.

Chapter VI

Limitations and Implications

This chapter will discuss the limitations of the study and the implications for nursing practice, education and research.

Limitations

Due to non-random sampling and small sample size, the findings from this study are not generalizable. Other limiting factors include self-reporting and the potential differences between participants and non-participants due to self-selection. The retrospective nature of the PHB scale may have led to recall bias. Also, respondents interactions with others and knowledge of expected health behaviours after CABS, may have introduced bias in their responses on the CHB scale.

Several untested instruments for the collection of health behaviour data were used. Although efforts were made to establish face and content validity, the results should be interpreted with caution.

Implications

The results of this study have implications for nursing practice, nursing education, and nursing research.

Nursing Practice

The nursing practice issues arising from the results of this study include (1) the potential influence of perceived support and previous health behaviours on health behaviour choice after CABS, (2) the potential for relapse to former behaviours within six months to one year after CABS, and (3) the presence of an older client group with minimal formal education in the target population.

In this study, previous health behaviours and perceived support were associated with positive health behaviours after surgery. These findings suggest that patients may benefit from a comprehensive assessment of their prior experiences with health behaviour change and of the type of support available to maintain health behaviours. Such an assessment can provide the basis for collaborative discharge planning with the patient and family.

Since cardiac surgery is performed only in major centres, and only one centre in Newfoundland, there is limited access to information and support outside the family unit, particularly for those who live in rural areas. Therefore, a community resources assessment may also be

necessary to determine the availability and accessibility of resources specific to this population. Based on the patient's needs and community resources assessment, nurses can make the appropriate referrals and facilitate and support self-help groups and other community-based programs.

The inverse relationship found between time since surgery and health behaviours in this study suggests that patients may relapse to former behaviours over time. This finding also has implications for nursing practice at the community level. Comprehensive, anticipatory planning followed by periodic assessment and counselling may be necessary to support behaviour change over the long-term.

Nurses play a vital role in program management, including in-patient discharge teaching and community-based programs that provide information and support to patients and families after surgery. Nurses should be aware that older patients may have fewer years of schooling than do younger patients and to be mindful of this phenomenon when assessing individual learning needs and preparing teaching materials. Such programs may help patients acquire the skills they need to modify or change health behaviours. Nurses may further facilitate and support individual participation in health behaviours by collaborating with other disciplines and by partnering with community groups to meet the needs of this population.

Nursing Education

Health behaviour change is an ongoing process and may be influenced by many factors. The findings from this study suggest that people need support to make and maintain lifestyle changes. In addition, peoples' health behaviour choice is not only influenced by previous health behaviours but is also subject to relapse over time. The low level of education found among this group of subjects further alerts nurses to the challenge of developing and implementing patient education programs that are appropriate for individual learning needs.

Knowledge of disease prevention alone, however, may not be sufficient to motivate maintenance of health behaviours in the long-term. The potential for relapse to former behaviours and the influence of perceived support on health behaviours found in this study, suggest that patients may benefit from nurses' ability to provide ongoing counselling and support. These findings further support the need for anticipatory planning of interventions to facilitate health behaviour activities in everyday living. In addition, knowledge of the potential influences on health behaviours may alert nurses to the multidimensional factors that impact on health behaviour choice and subsequent need for effective program management.

Nursing education then, enables nurses to develop the

skills and confidence needed to support patients' health behaviour choice. Assessment and counselling skills can be developed through role modelling and interactive computer programs. These skills can be reinforced through continuing education activities. The development of core curricular concepts related to health promotion and disease risk reduction can enhance nurses' knowledge and skills to facilitate patient education programs.

In summary, nursing education, both at the undergraduate and graduate levels, can foster the development of effective assessment, counselling and communication skills. Such skills are necessary to facilitate and support patients' health behaviour choice.

Nursing Research

Given the findings of this study, a number of recommendations are presented. First, a replication of the study using a longitudinal design and a larger sample would strengthen the study of health behaviour choice after CABS.

Future research could also include examination of (1) change in health behaviours over time, (2) differences in support needs over time and of behaviours that are most likely to become habit forming (3) the influence of motivation on health behaviour choice and (4) gender differences in health behaviours.

Further development and testing of measures of health behaviours and their influencing factors, the meaning of health for the individual, factors associated with the prevention of relapse and the role of support in choosing and maintaining health behaviours after CABS are needed.

Finally, further clarification of the wellness and clinical subscales of the LHCS is warranted to differentiate between the two concepts as influences of health behaviours.

Summary

The results of this study suggest that patient's past experiences with health behaviours and their perceptions of support after surgery may influence their choice of health behaviour. In addition, it was also found that these subjects are likely to relapse to former activities over time. Although the findings cannot be generalized, they provide meaningful information that can alert nurses to the ongoing and complex process of health behaviour change. Knowledge of patient's prior health behaviours, their support needs after surgery and their potential for relapse to former behaviours over the long-term, are fundamental issues in planning nursing interventions to facilitate and support behaviour change and maintenance after CABS.

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Appendix A

Memorial
University of Newfoundland

School of Nursing

Dear Participant:

Thank-you for agreeing to participate in this study. In addition to completing the enclosed questionnaire, would you please read and sign the **Consent To Participate In Nursing Research** form and return it with the questionnaire in the self-addressed, stamped envelope.

The information you provide may be used to assist others in similar situations. Please be assured that your responses will be treated confidentially.

If you have any questions about the study you may contact me at 834 8773. Out of town callers please call collect.

Yours truly,

Faith Sellars, RN
MN Candidate

Appendix B

MEMORIAL UNIVERSITY OF NEWFOUNDLAND
ST. JOHN'S, NEWFOUNDLAND A1B 3V6

CONSENT TO PARTICIPATE IN NURSING RESEARCH

TITLE: Health-Promoting Behaviors of Recovering Cardiac Patients: Influencing Factors

INVESTIGATOR: Faith Sellars

You have been asked to participate in a research study. Participation in this study is entirely voluntary. You may decide not to participate or may withdraw from the study at any time without affecting your normal treatment.

Confidentiality of information concerning participants will be maintained by the investigator. The investigator will be available during the study at all times should you have any problems or questions about the study.

The purpose of this study is to look at the things you do to keep healthy since your heart surgery and also to look at things that may help or hinder you.

Participation in this study will involve completing a questionnaire which will be mailed to you. The questionnaire will ask you to indicate your agreement or disagreement with statements describing the meaning of health; to rate your overall health at this time; to indicate your agreement or disagreement with statements that describe how you deal with day to day life; and lastly to identify specific things that you do to keep healthy. Your name will not appear on the questionnaire form. The forms will be stored in a locked file and only the investigator will have access to them. When the study is completed all forms will be destroyed.

You are being asked to complete the questionnaire which is being mailed to you. It is anticipated that it will take approximately 30 minutes to complete this questionnaire. If for some reason the questionnaire is not received within 2 weeks, a second one will be sent to you in case you did not receive the first one.

There are no expected risks involved in completing this questionnaire. However, you may refuse to respond to any question on the form that makes you feel uncomfortable.

There may not be any direct bebefit to you from this study. However, if you agree to participate, the information that you provide may help nurses to assist people when they return home after cardiac surgery.

Participation in this study is voluntary and you may decide to withdraw at any time.
If you have any questions or concerns, please contact the investigator by phoning 834-8773 (out of town people please call collect). Findings will be available to you and health care professionals upon request. Findings of this study may be published but you will not be identified.

I,_____, the undersigned, agree to my participation

in the research study described.

Any questions have been answered and I understand what is involved in the study. I realise that participation is voluntary and that there is no guarantee that I will benefit from my involvement. I acknowledge that a copy of this form has been offered to me.

_____ _____

(Signature of Participant) (Date)

To be signed by investigator:

To the best of my ability I have fully explained to the subject the nature of this research study. I have invited questions and provided answers. I believe that the subject fully understands the implications and voluntary nature of the study.

_____ _____

(Signature of Investigator) (Date)

Phone Number 834 8773

Appendix C

CODE # _____

HEALTH-PROMOTING BEHAVIORS OF RECOVERING CARDIAC PATIENTS: INFLUENCING FACTORS

QUESTIONNAIRE

This questionnaire is designed to learn about the lifestyle behaviors of cardiac patients, and the things that may influence these behaviors after cardiac surgery. The information you provide may be used to assist others in similar situations. All information will be treated confidentially.

The questionnaire has 4 parts:

Part I: Definition of Health and Rating of Overall Health

Part II: Beliefs About Health Practices

Part III: Lifestyle Profile

Part IV: Personal Profile Sheet

CODE # _____

Part I: Definition of Health

First I would like to ask you about your health. The following statements describe the meaning of "health" or "being healthy". Beside each statement is a scale which ranges from strongly disagree (1) to strongly agree (6). You may agree or disagree with these statements. There are no right or wrong answers.

For each item, please circle the number which best explains your beliefs about health.

"Health" or " Being Healthy" means:	Strongly Disagree					Strongly Agree
1. Feeling great - on top of the world.	1	2	3	4	5	6
2. Being able to adjust to changes in my surroundings.	1	2	3	4	5	6
3. Fulfilling my daily responsibilities.	1	2	3	4	5	6
4. Being free from symptoms of disease.	1	2	3	4	5	6
5. Being able to do those things I have to do.	1	2	3	4	5	6
6. Not requiring a doctor's service.	1	2	3	4	5	6
7. Creatively living life to the fullest.	1	2	3	4	5	6
8. Adjusting to life's changes.	1	2	3	4	5	6
9. Not requiring pills for illness or disease.	1	2	3	4	5	6
10. Being able to function as expected.	1	2	3	4	5	6
11. Not being under a doctor's care for illness.	1	2	3	4	5	6
12. Facing each day with zest and enthusiasm.	1	2	3	4	5	6
13. Being able to cope with stressful events.	1	2	3	4	5	6
14. Being able to changes and adjust to demands made by the environment.	1	2	3	4	5	6
15. Not being sick.	1	2	3	4	5	6
16. Actualizing my highest and best aspirations.	1	2	3	4	5	6
17. Adequately carrying out my daily responsibilities.	1	2	3	4	5	6

18.	Living at top level.	1	2	3	4	5	6
19.	Adapting to things as they really are, not as I'd like them to be.	1	2	3	4	5	6
20.	I do not require medications.	1	2	3	4	5	6
21.	Carrying on the normal functions of daily living.	1	2	3	4	5	6
22.	Coping with changes in my surrounding.	1	2	3	4	5	6
23.	Realizing my full potential.	1	2	3	4	5	6
24.	Fulfilling my responsibilities as a husband/wife/son/daughter/friend/worker, etc.	1	2	3	4	5	6
25.	Having no physical or mental incapacities.	1	2	3	4	5	6
26.	Performing at the expected level.	1	2	3	4	5	6
27.	Not collapsing under ordinary stress.	1	2	3	4	5	6
28.	My mind and body function at their highest level.	1	2	3	4	5	6

Next I would like you to rate your overall health. The scale ranges from poor to excellent. Please circle the number which best describes how healthy you believe you are at this time.

	Poor					Excellent
How would you rate your overall health at this time?	1	2	3	4	5	6

Part II: Beliefs About Performance

Next I would like to ask you about how you would deal with things as they occur. Depending on your personal beliefs you may agree or disagree with the following statements. Beside each statement is a scale which ranges from strongly disagree (1) to strongly agree (6). For each item please circle the number which best explains your agreement or disagreement. There are no right or wrong answers.

		Strongly Disagree					Strongly Agree
1.	When I make plans, I am certain I can make them work.	1	2	3	4	5	6
2.	One of my problems is that I cannot get down to work when I should.	1	2	3	4	5	6
3.	If I can't do a job the first time, I keep trying until I can.	1	2	3	4	5	6
4.	When I set important goals for myself, I rarely achieve them.	1	2	3	4	5	6
5.	I give up on things before completing them.	1	2	3	4	5	6
6.	I avoid facing difficulties.	1	2	3	4	5	6
7.	If something looks too complicated, I won't even bother to try it.	1	2	3	4	5	6
8.	When I have something unpleasant to do, I stick to it until I finish it.	1	2	3	4	5	6
9.	When I decide to do something, I go right to work on it.	1	2	3	4	5	6
10.	When trying to learn something new, I soon give up if I am not initially successful.	1	2	3	4	5	6
11.	When unexpected problems occur, I don't handle them well.	1	2	3	4	5	6
12.	I avoid trying to learn new things when they look too difficult for me.	1	2	3	4	5	6
13.	Failure just makes me try harder.	1	2	3	4	5	6
14.	I feel insecure about my ability to do things.	1	2	3	4	5	6
15.	I am a self-reliant person.	1	2	3	4	5	6
16.	I give up easily.	1	2	3	4	5	6
17.	I do not seem capable of dealing with most problems that come up in life.	1	2	3	4	5	6

Part III: Lifestyle Profile

Next I would like to ask you about your current lifestyle. Again, there are no right or wrong answers.

Beside each statement is a scale which ranges from never (N) to routinely (R). Please circle the letter which best indicates how often you practise each behaviour.

Currently, I:		N = Never S = Sometimes O = Often R = Routinely			
1.	Exercise at least three times a week.	N	S	O	R
2.	Take walks.	N	S	O	R
3.	Smoke cigarettes.	N	S	O	R
4.	Eat three regular meals a day.	N	S	O	R
5.	Eat whole grain foods.	N	S	O	R
6.	Eat raw vegetables and fruits.	N	S	O	R
7.	Eat low fat milk products.	N	S	O	R
8.	Read labels on packages and canned foods.	N	S	O	R
9.	Have my blood pressure checked when I don't have a problem.	N	S	O	R
10.	Avoid situations that usually upset me.	N	S	O	R
11.	Talk about problems/concerns with others.	N	S	O	R
12.	Spend time socializing with friends.	N	S	O	R

Next, I want to ask you about your lifestyle prior to surgery.

Before my surgery, I:		**N = Never S = Sometimes O = Often R = Routinely**			
1.	Exercised at least three times a week.	N	S	O	R
2.	Took walks.	N	S	O	R
3.	Smoked cigarettes.	N	S	O	R
4.	Ate three regular meals a day.	N	S	O	R
5.	Ate whole grain foods.	N	S	O	R
6.	Ate raw vegetables and fruits.	N	S	O	R
7.	Ate low fat milk products.	N	S	O	R
8.	Read labels on packages and canned foods.	N	S	O	R
9.	Had my blood pressure checked when I don't have a problem.	N	S	O	R
10.	Avoided situations that usually upset me.	N	S	O	R
11.	Talked about problems/concerns with others.	N	S	O	R
12.	Spent time socializing with friends.	N	S	O	R

What are the three most important things you do to keep healthy?

_____

_____

_____

Part IV: Personal Profile

Please complete information in the space provided.

1. Age in years _____

2. Gender: _____ Male _____ Female

3. Number of years of schooling _____

4. Marital status _____ married; _____ single;
_____ widowed; _____ other

5. Occupation _____

6. Have you, or will you be returning to work or former activity? _____ Yes _____ No

If no, please state the reason.

_____

_____

7. Time since surgery (in months) _____

8. Number of people living in household _____

For the next few questions, please circle the letter which best indicates how often people are available to help you.

	N = Never S = Sometimes O = Often R = Routinely			
9. Is there someone who expresses interest and concern in your well-being?	N	S	O	R
10. Is there someone available to listen when you want to talk?	N	S	O	R
11. Is there someone you can count on if you need help?	N	S	O	R
12. Do you talk to a health professional about your well being?	N	S	O	R
13. Is there someone you share daily activities with?	N	S	O	R

Thank you for participating in this study. The information you provide may be used to help others in similar situations. If you have any questions about the study you may contact me at 834-8773. Out of town callers please call collect.

Please return the completed questionnaire in the enclosed self-addressed stamped envelope to:

Faith Sellars
Memorial University of Newfoundland
School of Nursing
St. John's, NF
A1B 3V6

Appendix D

SCHOOL OF NURSING

THE UNIVERSITY OF TEXAS AT AUSTIN

1700 Red River • Austin, Texas 78701-1499 • (512) 471-7311 FAX (512) 471-4910

March 16, 1994

Faith Sellars
Box 2196, Manuels
Newfoundland, Canada
A1W 1E3

Dear Ms. Sellars:

Thank you for your interest in the Laffrey Health Conception Scale. Enclosed is a copy of the most recent form of the LHCS with scoring information. Initial support for content and construct validity and internal consistency are described in the enclosed "Overview of the LHCS." Work on validity and reliability establishment is continuing. To assist in this process, I would appreciate receiving the following from you should you use the instrument:

1. Ranges, means and standard deviations of the subscores and total LHCS scores for your population
2. Demographic information for your population (i.e. age, sex, race, ethnicity and description of population such as orthopedic, cardiovascular inpatients, etc.)
3. Any reliability estimates that you do as part of your study
4. A summary of your results

These data will assist in the further development of the validity and reliability of the LHCS and also contribute to the development of a normative data base. Data which you provide me will be used for this purpose only.

I hope you find the LHCS useful in your research. Please contact me with any questions or comments you have about the scale and its use in your research.

Sincerely,

Shirley Cloutier Laffrey, PhD, MPH, RN
Associate Professor and Division Chair,
Nursing Systems, Community Health,
& Mental Health Nursing

Enc.

SCL:sw