

A PRELIMINARY EVALUATION OF THE
HEART SMART COOKING COURSE

BY

HELENE R. BEAUCHEMIN R.D.

SUBMITTED AS A PARTIAL REQUIREMENT FOR COMPLETION OF A
MASTER'S DEGREE IN HEALTH EDUCATION

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A PRELIMINARY EVALUATION OF THE HEART SMART COOKING COURSE

BY

HELEN R. BEAUCHEMIN

A Thesis submitted to the Faculty of Graduate Studies of the University of Manitoba in partial fulfillment of the requirements for the degree of

MASTER OF EDUCATION

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ABSTRACT

A quasi-experimental designed study was conducted to evaluate the impact of the Heart Smart Cooking Program, a public education program of the Heart and Stroke Foundation of Canada. Changes in attitude, knowledge and behavior were measured by use of a pre-test, post test, one month follow up format. Data were collected from a study group size of 58 respondents by questionnaires administered at the Heart Smart Cooking Program locations. Prior to distribution, questionnaires were tested at the University of Waterloo, Ontario, for content validity and pilot tested in the Faculty of Education at the University of Manitoba by a panel of experts and at two program sites, one being rural and one urban. The respondents in the study group were divided into subgroups according to age, gender, level of education, occupation, income, smoking incidence, incidence of heart disease and change in eating habits. The 30-49 year olds accounted for 60% of the sample with women making up 75.9% of the sample. Education was at a high level with 29.31% of the group completing university or technical training. Income levels were high in that 51.66% reported incomes of \$31,000 or greater. This was a highly motivated group in that 44.5% of participants had quit smoking, 60.34% of the group exercised regularly and 77.59% of the group had tried to change their eating habits in the last year. Personal health status was rated good/very good by 58.62% of the group. 63.8% of the group reported a somewhat/not very serious risk of heart disease with 18.97% reporting no risk of CVD. Only 6.89% of the group reported having heart disease. Overall results for all three variables, attitude, knowledge and behavior indicated a positive effect from the Heart Smart Cooking Program in that mean scores for the variables increased from pre-test to post test and one month follow up. Several implications for health education programming were inferred from interpretation of the results, and may provide useful direction to health educators in cardiovascular care.

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CHAPTER 1

INTRODUCTION

Cardiovascular disease, (CVD), is by far the most common cause of death and disability in Canada today accounting for forty-one percent of all deaths in Canada in 1988 (Young et al. 1991). Twenty-five percent of all deaths in 1988 were related to ischemic heart disease and of these, over half could be attributed to acute myocardial infarction.

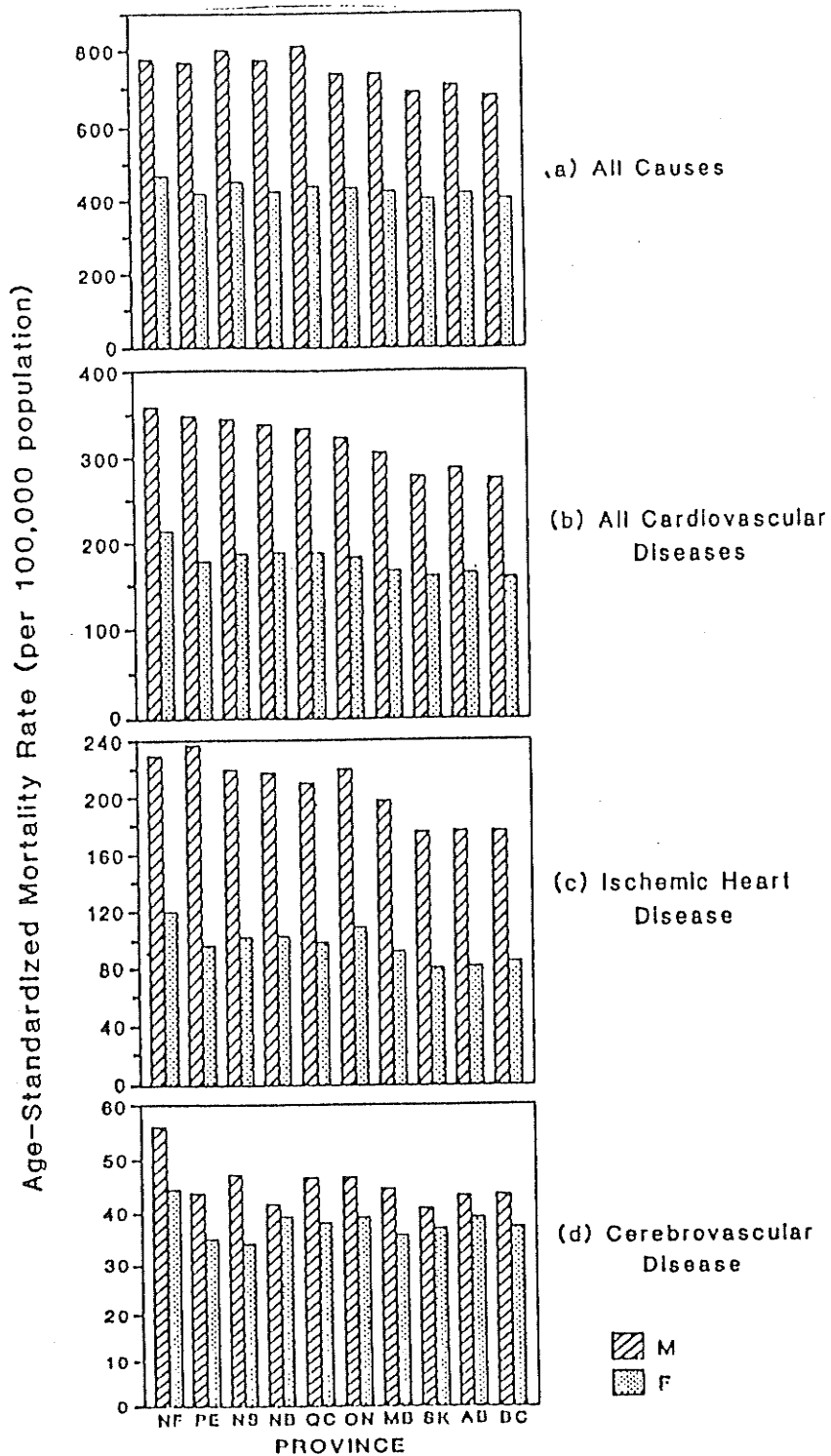
Cardiovascular disease is considered to be a collection of medical conditions, the major ones of which are ischemic heart disease and stroke. In the condition known as ischemic heart disease, a reduced blood supply to the heart causes damage to the heart muscle. In stroke, a sudden decrease in the blood supply causes damage to an area of the brain. There are other cardiovascular diseases which include disturbances of the heart rhythm, or arrhythmias, high blood pressure, valvular heart disease and vascular disease affecting the arteries and veins, known as peripheral vascular disease (Reeder, et al.1990).

Manitoba's rate of CVD is the highest of the four western provinces although it remains slightly lower than the national average as seen in Figure 1. Cardiovascular disease was found to be the leading cause of death in Manitobans in 1987 accounting for 31% of all deaths.

In 1987, 2682 Manitobans died from CVD, resulting in age-adjusted mortality rates for total CVD in Manitoba at 278 per 100,000 males and 158 per 100,000 females. The national rates were 295 per 100,000 males and 168 per 100,000 females (Young et al. 1991).

Figure 1

MANITOBA HEART HEALTH SURVEY



International Comparison of Age-Standardized Mortality Rates

(Source: based on data in Nair and Nicholls 1989)

Extent of the Problem

Cardiovascular disease remains the major cause of premature death and hospitalization in Manitoba as evidenced in Table 1 (Manitoba Health, 1989).

Table 1

LEADING CAUSES OF DEATH IN MANITOBA, 1986

CAUSES OF DEATHS	NO. OF DEATHS	% OF ALL DEATHS
Ischemic Heart Disease	2,144	24.3
Cerebrovascular Disease	725	8.2
Lung Cancer	540	6.1
Pneumonia and Influenza	379	4.3
Chronic Obstructive Lung	314	3.6
Colon Rectal Cancer	240	2.7
Diabetes Mellitus	179	2.0
Motor Vehicle Accidents	161	1.9
Other Causes	3,130	44.3
TOTAL	*8,816	*100.00

(Manitoba Health, 1989)

*(The number in the total is as per original document)

Roughly two-thirds of heart attacks resulted in sudden death and one fifth of first time events lead to death without warning or previous symptoms.

Premature death from CVD had a high annual cost in terms of potential years of life lost (PYLL) as seen in Table 2. CVD accounted for 10.2% of the total potential years of life lost to age 70.

Table 2
 POTENTIAL YEARS OF LIFE LOST TO AGE 70
 BY MAJOR CAUSES IN MANITOBA

CAUSE	PYLL*	% OF TOTAL (PYLL)
Ischemic Heart Disease	5,751	10.2
Motor Vehicle Accidents	5,360	9.5
Suicide	4,110	7.3
Congenital Anomalies	3,938	7.0
Perinatal Causes	3,319	5.9
Lung Cancer	2,858	5.0
Stroke	1,463	2.6
Liver Cirrhosis	956	1.7
Pneumonia and Infleunza	900	1.6
Diabetes Mellitus	730	1.3
Chronic Obstructive Lung	393	0.7
Other	24,980	44.4

*PYLL=Potential Years of Life Lost

A discussion of the implications of cardiovascular disease on the Canadian populace would be incomplete if the impact of CVD beyond death and hospitalizations was not addressed.

It has long been recognized that CVD often leads to disability.

In fact, the Canadian Health and Disability Survey of 1983-84 reported that 21% of disabled Canadians stated that their disability stemmed from CVD. Of those who stated that CVD was the cause of their disabling condition, 74% reported a residual problem of impaired mobility (Statistics Canada, 1986).

Cardiovascular disease presents a significant economic burden to Canada with substantial financial implications for the health care system. The direct and indirect costs of this health problem to Canada have been estimated at \$6 billion yearly (Seccombe et al. 1988).

Cardiovascular disease is a serious and widespread condition. Strategies are needed to reduce the prevalence of CVD among the Canadian and Manitoban populations by focusing attention on the risk factors for CVD. The reduction of risk factors in a population by a primary prevention program may influence the outcome or future outcome of the disease (Maccoby, 1977; Bender, 1989; MRFIT Research Group, 1982).

Risk Factors for Cardiovascular Disease

The Working Group on the Prevention and Control of Cardiovascular Disease (1987) has stated that some of the burden of CVD can be prevented. This can be accomplished by:

- 1) modifying risk factors to cardiovascular disease through a primary prevention program;

- 2) by early identification and management of disease or secondary prevention; and
- 3) by tertiary prevention through rehabilitation from cardiovascular disease.

It is crucial that primary, secondary and tertiary prevention be considered in the prevention of CVD by means of lifestyle change, modification of social and physical environments and appropriate medical management of the disease.

It has been estimated that 54% of the decline in CVD in North America may be attributed to change in health behavior with the remainder being attributed to changes in medical intervention and unexplained causes (Goldman, 1984; White et al., 1986). The decrease in cardiac risk associated with a change in health behavior has been shown to lead to sharp reductions in medical care costs and a considerable increase in the life-span of many individuals (Maccoby et al., 1977; Blackburn, 1985).

In considering the prevalence of CVD risk factors, various Canadian and American studies estimate that 30% of CVD is attributed to an increase in blood pressure and 15% to elevated cholesterol both modifiable through primary prevention health education programs (White et al., 1986).

In addition, in a summary of overall prevalence of cardiovascular risk factors for Canada prepared by Reeder et al. 1990, 18% of respondents reported having high blood

pressure, 45% elevated blood cholesterol, 34% being overweight and 58% being physically inactive as seen in Table 3. Sixty-five percent (65%) reported having one or more risk factors.

Table 3

OVERALL PREVALENCE OF CARDIOVASCULAR RISK FACTORS, CANADA

RISK FACTORS	PERCENTAGE
Smoking	28
High Blood Pressure	18
Elevated Blood Cholesterol	45
Overweight	34
Physically Inactive	58
Diabetes Mellitus	5
One or More Major Risk Factors	65

(Source: Adapted from Reeder et al. 1990. p.19.)

Dietary intake affects blood pressure, blood cholesterol levels, and weight, three major risk factors for CVD (Jeffery, 1988; Fraser, 1986; Gotto, 1983). Primary prevention of CVD may be dependant upon health education programs designed to enable dietary behavioral change.

Skills Development-Public Education

Coupled with the direct and indirect costs of cardiac disease is the growing recognition over the last few years that Canadians desire more knowledge about basic nutrition in addition to more motivation and support to improve their eating habits (Canadian Heart Foundation, 1988). Manitobans are recognizing that effective health services must aim towards more prevention and health promotion (Manitoba Health, 1989).

The question arises then, "Can lifestyle change programs actually change people's behavior to improve their dietary habits and therefore, reduce their risk of CVD?"

There have been several lifestyle change programs of the multi-intervention type many of which have demonstrated some degree of success in changing dietary behavior (Hjermann et al, 1981; Cambien et al, 1981; Menotti, 1983; Cagguila, 1981; Maccoby, 1977; Puska et al, 1983). These programs consisted of individual or group specific diet instruction with little in the way of "hands on" experience.

To date, research findings about experiential or 'hands on' programs are scanty. However, the research findings are consistent and conclusive that decreasing saturated fat and total fat intake in addition to modest weight loss decreases susceptibility to CVD. There exists therefore a need for hypothesis generation as to whether an experiential program such as the Heart Smart Cooking Program can in fact influence participants' knowledge, attitude and behavior towards dietary behavior.

Heart Smart Cooking Program

The Heart Smart Cooking Program is a nutrition education/lifeskills course focusing on reducing several key risk factors of cardiovascular disease.

One area which the program addresses is the relationship between excessive salt intake and high blood pressure, a risk factor in cardiovascular disease. Not only is the consumption due to salt added to food at the table, (Morgan et al., 1978; Freis, 1976) but also due to the heavy salt content of prepared meats such as ham, bacon and canned foods (Kagen et al., 1981).

Another area included in the Heart Smart Cooking Program is dietary behavior contributing to total serum cholesterol, one of the risk factors for cardiovascular disease (Fraser, 1986) (Gotto, 1983).

The Heart Smart Cooking Course also deals with the topic of obesity which is associated with atherosclerosis (Kannel,1984). It has been shown that obesity contributes to twice as much cardiac failure as persons of ideal body weight (Gordon et al., 1976).

Regular sustained physical activity has been shown to reduce cardiovascular mortality and lower rates of fatal coronary attacks (Paffenbarger et., 1975). This area is discussed in the Heart Smart Cooking Course as part of a comprehensive risk reduction program.

Statement of the Problem for Study

The purpose of this study was to conduct an evaluation of the Heart Smart Cooking program, a public education program of the Heart and Stroke Foundation of Canada.

Evaluation can be defined as the comparison of an object of interest against a standard of acceptability (Green et al. 1980). In this study, the objects of interest to be measured include the knowledge, attitude and behavior of course participants specific to the Heart Smart Cooking Program from the beginning of the course and beyond.

By performing an impact evaluation, it can be determined whether:

- 1) the short term goals of the Heart Smart Cooking program have been met; and
- 2) there is an increase in health enhancing behaviors such as the appropriate purchase, selection and preparation of food

The Heart Smart Cooking Course was designed to promote healthy eating habits among participants including the appropriate purchase, selection and preparation of food (Canadian Heart Foundation, 1988).

Hypotheses for Investigation

The research hypotheses were generated from recent literature regarding the influence of various programs upon health-related behaviors. It has been shown that there are differences exhibited prior to and after participation in community based health education programs regarding attitudes, knowledge and behavior (Hjermeran et al.,1988; Menotti, 1983; Maccoby, 1977; Puska et al., 1983).

The five research hypotheses formulated for this evaluation were:

HYPOTHESIS I

There will be change in attitude to the importance of selection and preparation of food according to the Heart Smart Cooking Course recommendations as evidenced by pre, post and one month follow up tests.

HYPOTHESIS II

Participants of the Heart Smart Cooking Course will demonstrate an increase in accurate nutrition knowledge as evidenced by pre-program, post program and one month follow up tests.

HYPOTHESIS III

Participants will report increased positive behavior in food selection and cooking habits after participating in the Heart Smart Cooking Course from pre-program to post program and one month intervals.

HYPOTHESIS IV

A higher proportion of people who consider themselves at risk of cardiovascular disease than those who consider themselves at low risk will make behavioral changes to their cooking habits.

HYPOTHESIS V

People who believe that members of one's reference group encourage health-enhancing behaviors will show an increased and sustained change in food selection behaviors.

Limitations of the Study

Limitations inherent in this study will be similar to other studies which utilize a self-administered questionnaire for data collection. Some of these include:

- o All questionnaires used are designed with a fixed number of responses offering participants a variety of choices. Bias may be introduced in that there may not be sufficient choice available for each individual participant. Where possible, the category of 'other' has been included for participants to add additional comments.
- o Data analysis will be dependant on which respondents return their questionnaires. If for example responses are only received by participants using the Heart Smart suggestions, data analysis will be skewed. This would then create a bias in the overall results and recommendations.
- o The use of behavioral self-reports carries an inherent problem in that reports may not portray true behavior. Investigators have no alternative but to assume that most responses will be the truth (Polit et al,1987).

- o The measuring tools being utilized may not be sensitive enough to detect changes in attitude, knowledge and/or behavior. Unstated motivational factors may have a more definite effect on behavior change than variables which have been identified.
- o Some of the participants may not be sufficiently literate in English to complete the survey. This will perhaps necessitate reading/explaining the questions to some participants leading to an unequal measurement bias.
- o Self-reports of behavior are usually retrospective and dependent of the reporters' recall and/or opportunity to take note of behaviors leading to unintentional bias.

Other possible limitations include the following:

- o The mass media system currently provides the general public with much information about cardiovascular disease and dietary intervention. Spill-over of this information may have an influence on participants' responses to the questionnaires.

- o Though the target group should be the general population, participants are self-selected which may lead to an unintentional bias in that pre-test knowledge may already be high and attitudes towards healthy eating already positive. The impact of the program may not be as significant as it might be in the general population causing a decrease in perception of benefits and effectiveness of the program.
- o The qualifications of the instructors may serve as an unintentional bias in that instructors have varying professional backgrounds. This may lead to possible differences in course material instruction influencing the impact of the program. The inservicing/training of educators attempts to control for this limitation.

A review of the literature with respect to the theoretical perspectives in designing health education programs and the literature relevant to the study's data collection will take place in Chapter 2.

CHAPTER 2

LITERATURE REVIEW

This chapter will review the literature pertaining to two areas:

- 1) theoretical perspectives in designing health education programs; and
- 2) literature relevant to the study's data collection.

This will be followed by a conceptual comparison to measure the impact of the Heart Smart Cooking Program.

Theoretical Perspectives in Designing Health Education Programs

The evaluation of a health education program must take into consideration the theoretical perspectives involved in the planning of health education programs.

Three theoretical models for program planning will be considered and combined to form the conceptual framework for this evaluation study. As well, several theorists will be cited in their contribution to these theoretical models.

Watson (1979) discusses four successive stages in adult learning presented as follows:

- 1) The first stage is knowing-about, a level of learning reached when the learner is aware of a concept's existence but is not in a state of readiness to use the new skill.
- 2) The second stage is understanding, the range on the scale where knowing-about ends through the mastery of concept. The instructor at this level must specify the type and quantity of understanding necessary.
- 3) The third stage is acceptance where beliefs change, at this point likened to affective learning. This is a very crucial level of learning to behavior change because many people must fully understand the underlying logic and benefits before accepting new ideas and forms of behavior. Concepts will not be applied if they are not accepted (Watson, 1979).
- 4) The last stage of learning, that of the ability to apply, allows the individual to diagnose situations they encounter and identify the appropriate solutions thus carrying affective learning one step further. This stage of learning will see the individuals applying their knowledge in a variety of situations with a great deal of consistency.

Farquhar et al. (1984) developed six steps in program planning. These steps were intended to develop a clearer picture of how to devise a course of action which people experience as they gradually adopt the advocated behavior. The six steps are as follows:

- 1) Become aware (gain attention). Gain the public's attention and focus it on the existence of the problem and potential solutions. Mass media plays an integral role in this step.
- 2) Increase knowledge (provide information). Present information in simple layman's terms so that the issue will become personally meaningful and will predispose the person to change behavior.
- 3) Increase motivation (provide incentives). Appropriate communication can facilitate people to perceive the personal and social benefits to change.
- 4) Learn skill (provide training). As changes in complex habits of daily living are being promoted, it is necessary to provide skills training through step-by-step instruction on how to make the necessary changes.

- 5) Take action (model). Educational messages should act as cues to specific actions to stimulate the trial adoption of new behaviors.

- 6) Maintain (provide support). Inputs at this stage are necessary to promote self management and to provide reminders of personal and social benefits of behavior change (Farquhar et al. 1984). Green (1980) designed the PRECEDE model for program planning and design which includes three basic steps, predisposing, enabling and reinforcing factors. The model requires that the planner identify the causes of the desired outcome and then identify the means to intervene in such a way as to maintain positive health behavior or to interrupt a behavior pattern that is linked to increased risks for illness.

Three classes of factors have the potential for affecting the conditions that leave people at risk for disease (Green, 1980). These include:

- 1) predisposing factors: such as a person's knowledge, beliefs, attitudes, values and perceptions that facilitate or hinder personal motivation to change

- 2) enabling factors: such as available resources, policies and skills; and
- 3) reinforcing factors: related to feedback, behavior of health personnel, peers, parents.

These three models can be combined to form a composite comparison for the design of the survey utilized for data collection for this study.

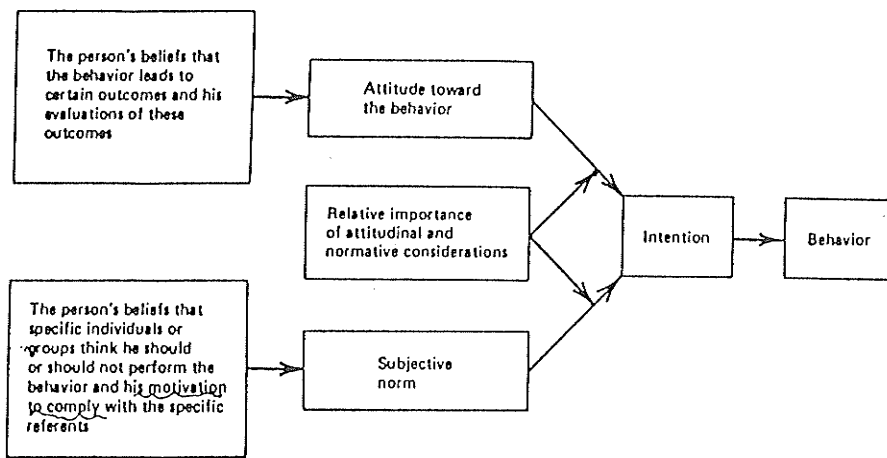
When considering the predisposing factors of Green's framework such as a person's awareness, knowledge, beliefs, attitudes, values and perceptions, these relate to Farquhar's step one of awareness and step two of knowledge. These then correspond with Watson's stage one of awareness of a concept's existence, second stage of understanding and third stage of acceptance where beliefs change.

These predisposing factors represent a very crucial level of learning to behavior change because many people must fully understand logic and benefits to change before accepting new ideas and forms of behavior. Concepts will not be applied if they are not accepted (Watson, 1979).

Ajzen and Fishbein (1980) recommend that a population's salient beliefs regarding health behavior and its possible outcomes be taken into consideration when designing behavior change programs. Figure 2 summarizes the factors that Ajzen and Fishbein consider to be important in determining behavior.

Figure 2

FACTORS DETERMINING A PERSON'S BEHAVIOR



Note: Arrows indicate the direction of influence.

(Ajzen and Fishbein, Understanding Attitudes and Predicting Social Behaviour. 1980)

Beliefs must be combined with the individual's perception of that person's social norms so that social behavior can be predicted and comprehended.

According to the "Theory of Reasoned Action" an individual's subjective probability that he will engage in a particular behavior defines a behavioral intention (Ajzen and Fishbein, 1980). An intention results from subjective norms about that behavior, the person's beliefs that members of

one's reference group are encouraging the behavior to occur. An intention also results from attitudes toward a behavior influenced by beliefs and expectations. A person's intention then is based on behavior beliefs which underlie a person's attitude toward the behavior in addition to their subjective norm influence.

The Health Belief Model presented by Hochbaum (1959) brought forward several important issues for designing health promotion programs and proved to be a good predictor of people's health-related behavior. The model suggests that in order for change and learning to take place, one has to be aware that there is a problem in existence, that health is a salient issue and that performing a certain behavior will decrease the perceived threat to that person. Four factors are important in the Health Belief Model paradigm:

- 1) One has to see the benefits of one's action which depend upon beliefs regarding the effectiveness of the various actions available in reducing the disease threat;
- 2) There should be a perception of susceptibility regarding one's subjective perception of the risk of contracting a condition;

- 3) There should be a perceived severity concerning seriousness of contracting an illness which includes evaluations of both medical and clinical consequences and possible social consequences; and
- 4) Perceived barriers should be taken into consideration, the negative aspects of a health action which act as an impediment to undertaking the recommended behavior. Here the person performs a cost benefit analysis weighing the action's perceived effectiveness against perceptions that it may be expensive/dangerous/inconvenient/time-consuming.

Susceptibility and seriousness of condition lead to an important factor in the area of dietary behavior change that which involves the perception that one has of the risk of acquiring a disease. Behavioral scientists increasingly apply psychological theory to the study of health-related behavior. The findings leading to the development of the Health Belief Model considered the beliefs that people held about their health and how these health beliefs affect their health behaviors. Beliefs about the threat of the disease or whether a person perceives they are at risk of developing the disease can be incentives for the recommended behavior change (Hochbaum, 1979).

Green's (1980) second level of change, the enabling factors which facilitate personal behavior change, can be likened to Farquhar's steps 3,4 and 5 where skill, motivation and action are represented. Watson's (1979) last step to learning, that of the ability to apply information, compliments Green and Farquhar's steps thus allowing the individual to diagnose situations they encounter and identify the appropriate solutions.

Social Learning Theory (SLT) (Bandura, 1977), indicates that before behavior change can occur, one must be able to see a personalization of the consequences, have an expectation of outcome, have emotional control and perceptions of self-efficacy, all of which are part of appeals to motives. Self-efficacy refers to a person's beliefs about capability to accomplish certain tasks. Expectations of efficacy then influence people's choices of activities, how hard they will strive to accomplish a task and the duration of their persistence at the task. With these in mind, mastery learning can take place along with an increase in self-efficacy.

Green's final level of behavior change that of the reinforcing factors follow closely with Farquhar's step six , the support stage. Watson's last step also refers to this level of learning in that the person becomes adept at analyzing the situation and finding solutions to the problems.

Reinforcing factors are those related to feedback and reinforcement of the new behavior. Included in this step is the reminder of personal and social benefits to changing behavior. Social norm influence and the utilization of action structures are two such examples of reinforcing factors.

Social factors must be considered when discussing reinforcing factors to behavior change since social support affects behavior. Social support groups are seen to be important in facilitating behavior change because of the assistance that these groups lend to 1) helping one to see the expected outcomes of a behavior, 2) helping one to look at alternative problem-solving strategies and 3) helping one to increase one's self-efficacy by helping the person to recall past behavior of a successful nature (Israel, 1985).

Data from Canada's Health Promotion Survey (HPS) (Health and Welfare Canada, 1985) provides an important examination of the importance of perceived social network behavior in predicting self-reported health enhancing behaviors such as dietary habit change (Norman, 1988).

Mechanic and Cleary (1980) refer to improved socialization practices relevant to health and the modification of social environments and social networks leading to positive health behavior. The sense of coherence (SOC) paradigm (Antonovsky, 1979) also demonstrates that an individual with a strong SOC will have strong social support which buffers and lessens the effects of stressors and

encourages positive behavior change.

The Theory of Reasoned Action as already discussed, also supports the idea of social networks influencing health enhancing behavior. (Fishbein, 1980).

This model suggests that in order to predict behavior, there must be an assessment of the expectations of people in the individual's social network concerning the behavior and the motivation to comply with these expectations.

Miller (1984) discussed the merits of discovering and using immediate reinforcements to promote the learning and maintenance of health-enhancing behaviors. The benefits of demonstration as a teaching technique were discussed in that a sequence of steps that skilled health professionals may find simple may seem confusing and complex to the person who has not already learned the basic skills that are involved. The preparation of food products in a classroom setting acts as an immediate reward in the creation of new habits. Miller (1984) states that many healthy habits renounce gravitation now to avoid a worse punishment in the remote future. Efforts to promote the learning and maintenance of health-enhancing habits should concentrate on discovering and using immediate reinforcements.

Research in the area of dietary behavior change focuses on many health promotion programs which have attempted to reduce unhealthy behaviors, improve preventive services and create improved social and physical environments thereby

decreasing one's cardiac disease risk (Maccoby et al., 1977).

The next section will review the literature pertaining to multi-intervention type programs of which dietary behavior change is a component and secondly pertaining to programs which discuss in detail the evaluation of nutrition education programs.

Literature Relevant to the Study's Data Collection

The most notable lifestyle change programs have been of the multi-intervention type where dietary behavior has been one component of the program. Many of these health promotion campaigns have attempted to create better social and physical environments, reduce unhealthy behaviors and improve upon preventive service. The Oslo study (Hjermann et al., 1988), the Stanford Heart Disease Prevention Program (Maccoby, 1977), the Stanford Five City Project (Farquhar et al., 1984), the North Karelia Project (Puska et al., 1983) (Tuomilehto et al., 1984), the Multiple Risk Factor Intervention Trial (MRFIT) (Coggula, 1981) and the Pawtucket Heart Health Project (PHHP) (Lasater et al., 1985) are examples of such programs, all to some degree successful in positively changing dietary behavior and nutrition-related knowledge.

The Oslo Study did report that a positive effect was seen from the dietary and smoking interventions on the incidence of cardiovascular disease. It was found that the intervention group had a 13% lower serum cholesterol values than the control group. In addition, at the end of the five year trial period, the incidence of myocardial infarction was 47% lower in the intervention group. The intervention group was trained in methods such as 1) increasing awareness of the risk factors of CVD (predisposing factors), 2) skills training regarding

alteration of behaviors (enabling factors) and 3) peer and family support systems (reinforcing factors) (Hjerman et al., 1981).

The Stanford Heart Disease Prevention Program was designed to meet the needs of individuals identified to be at risk for CVD (Maccoby, 1977) (Meyer et al., 1980). By increasing knowledge of risk factors and modifying dietary, smoking and exercise behavior, it was proposed that the program would reduce some of the risks for CVD.

The Stanford Program administered a mass media campaign to three groups, one of which also received face-to-face instruction and one of which served as a control. There was a significant increase in knowledge as measured by a 25 item knowledge test and in behavior change in all of the mass media groups. However, the group with media and face-to-face instruction demonstrated an increase in knowledge and behavior approximately double that of the other treatment groups. This type of media campaign was seen to provide the knowledge or predisposing factor and techniques or enabling factors to achieve the required behavior change. The reinforcing factors reinforcing the required behavior change presented themselves as the face-to-face instruction personalizing and individualizing the instruction.

Another example of a health education program which proposed changes in dietary lifestyle to decrease risk factors for CVD was the Stanford Five City Project (Farquhar et al.,

1984). A goal of this program was to change knowledge and skills of participants to stimulate and maintain lifestyle changes so that at least a 10% reduction in overall risk status is achieved after two years of intervention.

The objectives included sections about knowledge, attitude and behavior change which were then evaluated through a process of formative evaluation.

It was found that the majority of people were aware of the rationale for an exercise program however were faced with barriers to starting a program. An educational strategy would therefore be to motivate people rather than increase knowledge.

The North Karelia Cardiovascular Disease Prevention Project evaluation was designed to assess the feasibility, costs, process and outcome of the program from 1971 to 1977 (Tuomilehto et al., 1984). Using surveys of random, cross-sectional population samples at the beginning of the program and results in a five-year followup survey, it was shown that health enhancing behaviors increased with a corresponding decrease in risk factors in the five year period. There was an overall net reduction in risk factor levels of 11.5% for females and 17.4% for males (Tuomilehto et al., 1984). Three behaviors affecting risk factors for CVD included 1) smoking behavior which decreased by 9.8% for males and 8.0% for females, 2) systolic blood pressure which decreased by 3.6% and a diastolic blood pressure which decreased by 2.8% and 3)

nutrition habits which changed by 4.1% with a 1.2% reduction in serum cholesterol for male and female subjects.

The program consisted of a variety of techniques to promote behavior change such as information imparting in media promotion, persuasion, training, social support, environmental change and community organization (Tuomilehto et al., 1984).

The Minnesota Heart Health Program (MHHP) was designed as a nine year research and demonstration project in community health education to reduce risk of cardiovascular disease (Blackburn et al., 1984). Many years were spent in developing the program with incentive to developing it coming from the North Karelia Project (Tuomilehto et al., 1984) and the Stanford Three Community Study (Meyer et al., 1980).

The MHHP made use of multiple education strategies in a population-wide approach to cardiovascular disease prevention. The overall goals of the project were to measure the change in disease risk and behavioral characteristics of communities and relate these changes to the effect of the program. The academic goals were to make contributions to 1) the design and organization of community research and demonstration programs 2) the evaluation of the educational process and 3) statistical analysis of time trends in population experiments and demonstrations. Using telephone interviews to evaluate exposure and effects of specific campaigns and events, community awareness, knowledge, behavior, norms and values

were being measured.

In the MHHP, behavioral goals were specified including 1) increasing vigorous activity 2) increasing average calorie expenditure per day, 3) decreasing smoking frequency and intensity 4) changing selection, preparation and consumption of specific foods and 5) the maintenance of controlled high blood pressure.

The Multiple Risk Factor Intervention Trial (MRFIT) project studied 12,847 men ages 53-57 years of age in 22 clinical centers in the United States (Cagguila et al., 1981). All participants at risk of CVD were monitored for six years to determine the impact of a multiple intervention program on the primary risk factors for CVD. Participants were divided into two groups, the usual care (UC) and the intervention group (IG).

The intervention was based on a behavioral model approach where the first phase was conducted in groups with men and wives over ten weeks. The second consisted of individual counselling. The MRFIT Guide was provided to each participant consisting of behavioral themes such as advice on shopping, eating out, and family dinners.

The MRFIT study did demonstrate successful dietary change in saturated fat and total calories for high risk men and individual intervention program with spouse involvement (Cagguila et al., 1981).

The multi-intervention programs presented indicate that cardiovascular health education programs can beneficially change dietary behaviors which have been shown to reduce three of the risks for cardiovascular disease: elevated serum cholesterol, elevated sodium intake and higher than ideal body weight.

Evaluation of Nutrition Education Programs:

The American Dietetic Association in a 1978 position paper regarding the scope and thrust of nutrition education, stated that evaluation must be a part of all nutrition programs. Learning objectives must be constructed so as to be measurable to determine the effectiveness of a program (Position Paper, 1978).

There is certainly agreement among educators that tools must be developed to assess program effectiveness in terms of the cognitive, affective and psychomotor domains of learning (Bloom, 1976; Schwartz et al., 1977; Bowering, 1978). Several studies which deal with an evaluation of all three variables will be reviewed first followed by a review of evaluation techniques cited for attitude and then lastly for techniques used to measure behavior change. The literature review did not reveal any program evaluation which dealt with evaluation of knowledge only.

In a study by Edwards et al., (1985) evaluating the American Red Cross Nutrition Course, four issues in the evaluation of nutrition education programs were addressed:

- 1) Can reliable and valid measures of nutrition knowledge, beliefs and behavior be developed enabling a more correct assessment of a program?
- 2) Can a program directed to an audience of varying learning styles, readiness to learn, varying risk, barriers and subjective norm influence be effective in terms of changing nutrition knowledge, beliefs and behavior?
- 3) Are positive changes sustained over time?
- 4) Is there a relationship between the three variables knowledge, beliefs and behavior?

This study demonstrated that nutrition behavior did improve after the course regardless of whether knowledge and beliefs changed.

Another study which measured all three variables, attitude, knowledge and behavior, was conducted to explore public awareness of diet and cardiovascular disease to determine interrelationships among nutrition attitudes, knowledge, practice and biodemographic characteristics of adult members of community centers (Sullivan et al., 1981). Data were collected by questionnaires including a 19 statement instrument to measure attitudes toward diet as a means of

promoting heart health, a 27 statement knowledge instrument to assess comprehension of basic topics of diet and heart disease and the intake of nutrients and energy.

The sample as a whole reported positive attitude towards the role of diet and cardiovascular disease but attitude was weakly correlated with actual nutrition practice. Knowledge was found to be about 50% of the possible score for the sample. Woolcott (1979) drew a similar conclusion in her study. She reported a weak relationship between nutrition knowledge and preventive nutrition behavior.

The "Skills for Lifestyle Change" Course (Foster et al., 1981) is an example of a health education program designed for people who are already motivated to change their health habits but who require assistance in learning the techniques to change and the maintenance of that change.

Change in attitude, knowledge and behavior was measured through physiologic testing and verbal reports of healthy behavior. Participants were considered to be successful "changers" if they exhibited:

- 1) a positive change in eating habits both in quantity and quality;
- 2) a positive change in physical activity resulting in decreased weight related to fat loss and increased predicted maximum oxygen uptake; and
- 3) a positive change in blood pressure with respect to improved stress management.

Of those participating, 60% reported success in their lifestyle change. Twenty-six percent had not maintained the changes over a one year period. This course encouraged and supported participants to take responsibility for their health lifestyle.

This last section will discuss the evaluation of behavior change as observed in several nutrition education studies.

The Heart Healthy Program (Coates et al., 1981) was designed to:

- 1) increase participants' consumption of complex carbohydrate;
- 2) decrease their consumption of saturated fat, cholesterol, sodium and sugar;
- 3) increase their level of habitual physical activity; and
- 4) generalize these changes to other family members.

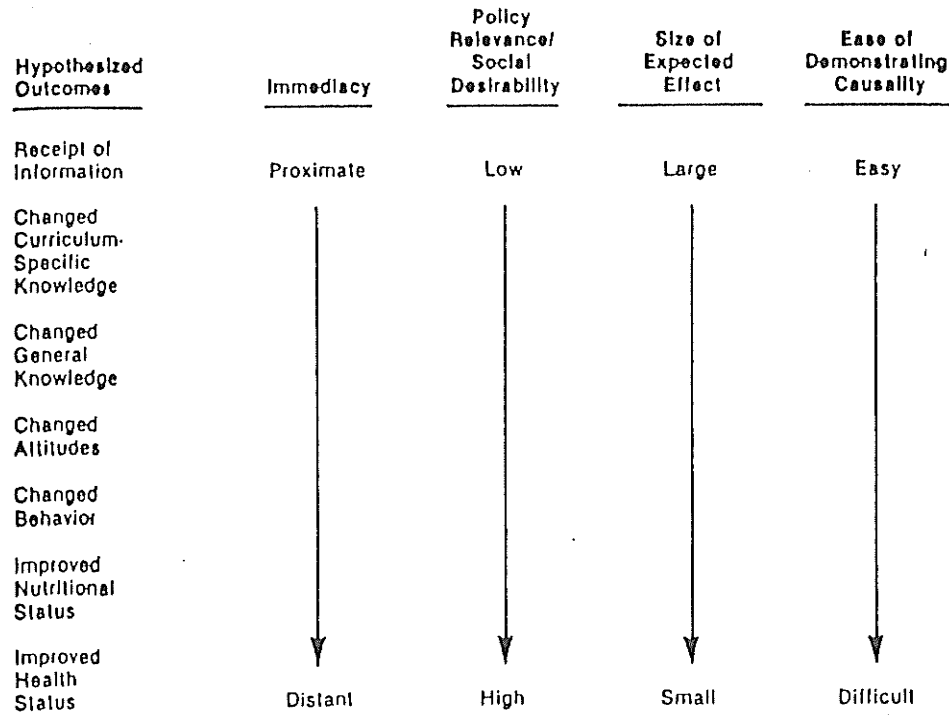
Evaluation was conducted through direct observation of activity and eating. The study found a substantial change in eating behavior at school and knowledge about heart health and food preference. Food habit changes persisted over a four month follow up.

In a discussion regarding nutrition education evaluation and the importance of specifying outcomes, St.Pierre (1982) stated that it is very important in the planning of an evaluation to order the outcomes of nutrition education program on the dimension of proximity, the degree to which outcomes are temporally and conceptually proximate to or distant from the treatment.

Many programs have been found to be ineffective however, not due to the fault of the program but because the measured outcomes were distant ones and not easily changed by a single intervention. Figure 3 demonstrates the ordering of several hypothesized outcomes of nutrition education programs on the dimension of proximity:

Figure 3

RELATIONSHIP AMONG SELECTED CHARACTERISTICS
OF
HYPOTHESIZED NUTRITION EDUCATION OUTCOMES



(Source: St.Pierre, 1982. p.10)

A conceptual comparison combining the theoretical perspectives in designing health education programs and the three models to behavior change is presented in Figure 4 and serves as the basis for guiding the design of the surveys utilized in the impact evaluation of the Heart Smart Cooking Course.

FIGURE 4
 CONCEPTUAL COMPARISON
 FOR
 IMPACT EVALUATION DATA COLLECTION

Steps in Pro-gramming MODEL to Adopt Behavior (Farquhar, 1984)	Successive Stages of Learning (Watson , 1979)	PRECEDE (Green, 1980)
Awareness	Knowing about a concept's existence	Predisposing Factors
Existence of a health problem		CVD is a serious disease relative to other diseases
Awareness of potential solutions to health care	Acceptance with belief changes	CVD may be prevented by decreasing risk factors (Working Group, 1987)
Awareness of one's personal risks	Understanding of the concept	Belief (Awareness) that individuals control their own physical health (Ajzen, 1980)
Knowledge		Understanding dietary concepts to heart healthy eating (Maccoby et al., 1977) (Blackburn, 1985)
CVD-causes, possible prevention strategies re dietary modification		
Motivation	Ability to apply information	Enabling Factors
Perceived personal benefits to positive change in food selection behavior		Awareness of the relationship between healthy eating and risk reduction

Reduction in personal and social barriers to change

Fewer perceived barriers to changing behavior

Skills required to modify eating habits

Self-efficacy can affect skills development (Bandura, 1977)

Preparation of food products act as immediate reward (Miller, 1984).

Action

New behavior will be stimulated by educational messages acting as cues

Health message through correct channels to motivate people to change behaviour as cues to action (McGuire, 1981).

Support

Individual can diagnose situations and identify appropriate solutions

Reinforcing Factors

The promotion of self-management

The belief that significant others support you in your change in lifestyle (Fishbein & Ajzen, 1980)

Reminders of social and personal benefit to change

Those personal feelings such as feeling good, feeling satisfied that I am reducing risk factors to CVD.

The use of action Structures (Cartwright 1949).

The methodology for survey design evaluating the attitude, knowledge, and behavior change of Heart Smart Cooking Course participants, the data collection and analysis of data will be discussed in Chapter 3.

CHAPTER 3

PROCEDURES

Methodology

The principal purpose of this study was to perform a preliminary impact evaluation of the Heart Smart Cooking program on the participants enrolled in the program in the province of Manitoba commencing September 1990 and concluding December 1990. Course participants were surveyed at three distinct points in time: prior to the beginning of the course, immediately after the course and approximately 4 weeks following completion of the course.

Study Design

This study design involved the evaluation of the Heart Smart Cooking Program on seven groups of participants registered for the course in Winnipeg, in Dauphin and in Selkirk, all in Manitoba. Participants received a minimum of four two hour sessions of the course with some groups receiving an optional fifth session. Each group of participants started and completed the program together. No additional participants were allowed to join after the entry date. Participants were invited to take part in the study by

a letter of invitation/explanation as shown in Appendix 1. At the first session, the researcher introduced the evaluation and explained the rationale for it.

Using a quasi-experimental design, changes in attitude, knowledge and behavior were measured by pre-test, (Appendix 2), post test (Appendix 3) and one month follow up (Appendix 4) questionnaires along with a demographics questionnaire (Appendix 5). The questionnaires were designed by the Heart and Stroke Foundation of Canada with modifications carried out by the investigator. Random selection was not possible in that participants self-selected by their self-registration in the program. In total, 58 subjects participated in the evaluation.

A pre-test of all subjects served as a control condition. A pre-test can serve as the control condition for the post test with the same subject providing data in both the control and post treatment conditions (Meyers, 1974).

Instrument Development

The questionnaires consisted of both closed and open-ended questions. All questionnaires were coded so that information would remain confidential yet allowing all four surveys to be matched in their responses. Data collection was carried out by the investigator or trained assistants attending and administering the pre-test to the first class of

the program, the participant information (demographics) at the second class , and the post test at the end of the fourth class. Those participants attending a fifth class were evaluated at the end of the fourth class to maintain consistency in the course curriculum content. The one month follow up questionnaire was mailed out with a stamped self-addressed envelope.

The four questionnaires will be described separately in the next section.

Participant Information (Appendix 5)

The Participant Information questionnaire consisted of 29 questions related to demographic data regarding:

- 1) participant age;
- 2) occupation status;
- 3) household income;
- 4) level of education;
- 5) smoking habit;
- 6) exercise habit;
- 7) cooking habits;
- 8) perception of physical health;
- 9) other people's influence on health habits;
- 10) incidence of heart disease;
- 11) perception of risk of heart disease;
- 12) barriers to behavior change;
- 13) effectiveness of the Heart Smart program promotion;
and
- 14) personal reason for enrolling in the program.

Pre and Post Tests (Appendices 2,3)

Both the pre and post tests consisted of 48 questions divided into three categories measuring pre program to post program changes in:

- 1) attitudes towards food (questions 1-12);
- 2) knowledge related to nutrition (questions 13-25); and
- 3) behavior related to food selection and preparation (questions 26-48).

One Month Follow up (Appendix 4)

The one month follow up questionnaire consisted of 45 questions divided into three categories measuring the sustainability of change in:

- 1) attitudes toward food
(Questions used here were the same as those seen in the pre and post test situations. (questions 1-12);
- 2) knowledge related to nutrition
(Questions used here were the same as those seen in the pre and post test situations. (questions 13-25));
and

- 3) behavior related to food selection and preparation
(All questions used here were the same as seen in the pre and post test situations up to question 45 where two questions were then added referring to the recipes provided from the cooking program. (questions 26-45)).

Rationale for Methodology

Written questionnaires were utilized as set out by the Heart and Stroke Foundation of Canada with a few modifications. Questionnaires gather data quickly and simultaneously for a large group of people, intermittently over time and minimize interviewer bias (Henerson et al. 1987). The reliability of self-reporting of behaviors in all questionnaires is controversial though most recent studies have shown that self reports closely represent what the reporters usually do (Freeman et al. 1987).

Validation of the Instrument

The validity of the questionnaires must be determined to assess whether the instruments are an accurate measurement of the study's hypotheses. The content validity was tested at the University of Waterloo, prior to the commencement of this study. With additions and deletions performed by the

investigator, the revised versions were again pilot tested and evaluated by using a panel of experts in the Faculty of Education, University of Manitoba. In addition, one rural and one urban Heart Smart Cooking Course class totalling 15 participants completed the questionnaires and provided feedback to the investigator.

Pilot testing provided an opportunity for the investigator to gain feedback on possible ambiguity of items (Meyers, 1974; Henerson et al., 1987). Questionnaires from the pilot testing were returned to the investigator with recommendations incorporated into the final draft.

Survey Procedures

For those classes where the researcher was not able to attend, a kit containing all surveys and a letter of instruction (see Appendix 6) were sent to the instructors of the course asking their assistance in the data collection. Each instructor then received a phone call from the investigator for further training prior to commencement of the classes.

At the first class, all participants were provided with a letter of explanation discussing the purpose of the survey, the funding body of the research, and assurance of anonymity and confidentiality (Appendix 1). This letter included a tear-off consent form which participants were asked to sign. The pre-test form was completed at the first class.

The second class was attended by the investigator or assistant for completion of the participant information form for the collection of demographic data. It was decided that only one survey would be completed per class due to the time restrictions.

The post test was completed by participants during the fourth class. In most cases this class was attended by the investigator rather than an assistant to express gratitude to participants for their participation. In addition, it was hoped that the attendance by the researcher would foster commitment by participants to complete the follow up questionnaire that they would receive in the mail one month later.

The one month follow up questionnaire was mailed one month after the completion of each class with a cover letter (Appendix 7) reminding the participants of the terms of the consent form which they had previously signed. A post card reminder (Appendix 8) was mailed two weeks after the initial mailout. For those surveys not received by the researcher, participants were contacted by telephone and forms completed over the phone.

The one month follow up questionnaire was coded on the front page to ensure that follow up procedures were focussed on the non-respondents only (Dillman, 1978). Follow up activities are essential to a descriptive study utilizing a questionnaire since a return below seventy percent weakens validity.

Response Rate

There was an uneven number of respondents for each of the surveys related to the attendance at classes and uncertainty about the confidentiality of the study. There were 60 participants registered for the classes in all locations. Two persons did not consent to take part in the study while 58 respondents answered the participant information survey, 55 respondents the pre-test, 41 respondents the post test and 39 participants the one month follow up. This represents a response rate of 100% for participant information, 94.8% for pre-test, 70.6% for post test and 67.2% for one month follow up.

During the data collection, all questionnaires except one month follow up were administered in the classes. With respect to the one month followup form, 51% of all responses were received in the two week period following the first mailing. Thirty percent were then received two weeks after the post card mailout.

The final 19% of the responses were received by participants who failed to return the questionnaire in the specified period of time and therefore were contacted by telephone. The most common reasons for failing to return the surveys included participants vacationing, participants' forgetfulness over the Holiday season and questionnaires lost in the mail.

Editing and Data Processing

Prior to distribution to the participants, all questionnaires were coded with a participant number, both written and in shaded dot format appropriate to the University of Manitoba data scanner. Pre-coding took place to decrease the amount of time required by participants to complete the surveys and to decrease the possibility of error in the coding of the forms. Questionnaires not complete due to missing answers or inappropriate marking were not rejected. Instead, these questionnaires were treated as having missing values resulting in tables of data in Chapter 4 which have uneven numbers of responses. In addition, other tables were based on numbers of responses due to skip logic in the questionnaire, where for example only those participants who answered affirmatively to the first part of a question could move on to the second part of the question.

Measuring Techniques

Each question on the pre, post and one month follow up questionnaires (Appendices 2-4) reflected a major attitude, knowledge or behavior objective of the Heart Smart Cooking Course. Each of the three variables had its own scoring system as demonstrated below. All three surveys utilized the same scoring system up to and including question number 43. At this point in the questionnaires, the one month follow up survey deleted the last five questions seen in the pre-test and post test (questions 44-48) and included 2 additional questions. This overview of the scoring system will take these differences of questions and resulting responses into consideration. The scoring system for each of the three variables attitude, knowledge and behavior are seen below.

Attitude Scoring:

The attitude scale was measured in the pre-test (Appendix 2), the post test (Appendix 3) and the follow up survey (Appendix 4). This scale consisted of 12 likert scale statements (questions 1-12). Responses were coded so that a score of a very positive attitude towards that statement would receive a score of 6 while a very negative response would receive a score of 1. Answers varied from very strongly agree

to very strongly disagree. The total possible score for the attitude section was 72.

Knowledge Scoring:

The knowledge level was measured in the pre-test (Appendix 2), the post test (Appendix 3) and the follow up survey (Appendix 4). This scale consisted of 13 yes/no/don't know questions (questions 13-25). Responses were coded so that a score of correct knowledge received a score of 1 and an incorrect answer or "don't know" answer received a score of 0. The total possible score in the knowledge category was 13.

Behavior Scoring:

The behavior variable was measured in the pre-test (Appendix 2), the post test (Appendix 3) and the followup survey (Appendix 4). Nine questions (questions 26-34) were utilized to measure behaviors with responses ranging from always to never. Those responses measuring self-reported positive nutrition behavior received a score of 5 while a negative response received a score of 0 for a total possible score of 45.

Thirteen questions in the pre-test and post test (Appendices 2,3) reflected the frequency of dietary related behaviors.

Questions referring to eating out behavior patterns (questions 35-38) had responses ranging from less than once per month to more than 5 times per month with the less frequent behavior receiving the higher score for a total possible score of 20.

Questions referring to fat and fiber intake (questions 39-43) had responses ranging from less than once per week to more than 5 times per week. The less frequent response for fat intake behavior received the higher score. The more frequent response for fiber intake behavior received the higher score. The total possible score for these questions was 25.

The scoring system for the pre-test and post test (questions 44-47) referring to frequency of consumption of food according to Canada's Food Guide recommendations had responses ranging from less than once per day to more than 5 times per day with the most correct answer receiving the highest score. For example, with reference to the question about fruit intake, the answer "2-3 times per day" received the score of 5. The total possible score for these questions was 20.

The last question in the behavior category (question 48) in the pre-test and post test referring to the planning of meals for self and/or family had responses ranging from more than one week in advance to "I do not regularly plan meals". A score was not assigned to this question.

The scoring system for the one month follow up (question 44) which referred to the frequency of use of recipes from the Heart Smart Cooking program had responses ranging from less than once per week to more than 5 times per week with the greater use receiving the higher score. The last question (45), referring to the use of the information and tips from the cooking course, had responses ranging from less often to more often with the latter receiving the higher score. Each of these questions had a possible high score achievable of 10.

Each of the pre-test, post test and one month follow up questionnaires had a maximum achievable score of 195 where attitude totaled 72, knowledge totaled 13 and behavior totaled 110.

Analysis of Data

The data were analyzed for the group of respondents in its entirety and for a number of subgroups (age, gender, location, income, occupation, social norm influence, incidence of heart disease, risk of heart disease, smoking currently a habit, current exercise level, frequency and duration of exercise, personal health status, and eating habits changed over the last 12 months).

The data collected were analyzed in three separate steps including:

- 1) descriptive statistics to determine the mean scores for survey responses and the frequency distribution for each of the dependent variables;
- 2) cross-tabulations conducted between the independent variables identified in the research questions and the data collected on the dependent variables; and
- 3) The SAS (SAS Inst. Inc., N. Carolina) statistical package was used.

For all hypotheses, the analysis of variance (ANOVA) was utilized to determine whether the results of the pre-test, post test and one month follow up were different from each other.

The pre-determined level of confidence of $P=.05$ was chosen to compromise between the possibility of a Type I error and Type II errors (Spencer et al., 1976). More stringent levels ($p=.01$) to decrease the probability of a Type I error (rejecting a true hypothesis or saying that there is a difference between groups when there actually is no difference) could result in a type II error, failure to detect a false hypothesis.

Concluding that there is no difference between test scores when there actually is a difference (Type II error) could result in unnecessary cancellation of a program or to time and money being spent to make unnecessary changes to a program to increase its effectiveness.

Data were therefore analyzed to test the following hypotheses:

HYPOTHESIS I

There will be a change in attitude towards the importance of selection and preparation of food according to the Heart Smart Cooking Course recommendations as evidenced by pre, post and one month follow up tests.

(Appendices 2,3,4, Questions 1-12)

HYPOTHESIS II

Participants of the Heart Smart Cooking Course will demonstrate an increase in accurate nutrition knowledge as evidenced by pre-program, post program and one month follow up tests. (Appendices 2,3,4, Questions 13-25)

HYPOTHESIS III

Participants will report increased positive behavior in food selection and cooking habits after participating in the Heart Smart Cooking Course at pre-program to post program and one month intervals.

(Appendices 2,3, Questions 26-48 and Appendix 4, Questions 26-45)

HYPOTHESIS IV

A higher proportion of people who consider themselves at risk of cardiovascular disease than those who consider themselves at low risk will make changes to their cooking habits.

(Appendices 2,3, Questions 26-48; Appendix 4, Questions 26-45; Appendix 5, Question 20)

HYPOTHESIS V

People who believe that members of one's reference group encourage health-enhancing behaviors will show an increased and sustained change in cooking habits. (Appendices 2,3, Questions 26-48; Appendix 4, Questions 26-45; Appendix 5, Questions 17, 23, 24)

CHAPTER 4

RESULTS

This chapter will present the results of the study under four headings:

- a) description of the study group
- b) comparison of demographic variables and pre-test results
- c) results pertaining to the hypotheses presented
- d) comparisons of interest

DESCRIPTION OF THE STUDY GROUP

The analyses of this study were based on 58 respondents to the participant information survey, 55 to the pre-test, 41 to the post test and 39 to the one month follow up. This represents a response rate of 100% for participant information, 94.8% for pre-test, 70.6% for post test and 67.24% for the one month follow up.

The respondents were divided into subgroups according to the characteristics of interest to this study including educational level, gender, age, income, location, risk of cardiovascular disease, self perception about state of personal health, influence of other people in altering personal eating habits and barriers to behaviour change.

Table 4 indicates that the two age groups 30-39 years and 40-49 years are over represented making up 60% of the total group.

TABLE 4
Age Distribution of Participants

AGE	FREQUENCY	PERCENTAGE
20-29	2	3.6
30-39	12	21.8
40-49	21	38.2
50-59	8	14.5
60-69	6	10.9
70-79	6	10.9
80+	-	-
No response	3	1.0

In addition, females at 80% of the sample also are over-represented as indicated in Table 5.

TABLE 5

Gender Distribution

GENDER	FREQUENCY	PERCENTAGE
MALE	11	18.96
FEMALE	44	75.86
NO RESPONSE	3	5.18

These two over-representations must be noted in that the strength of the statistical relationships may be overestimated in the analysis of the groups which are under represented. This can be seen especially in analyses when the level of significance approaches $p=.05$.

The majority of respondents (37.9%) completed grades 7-9 while 15.5% completed grades 10-12 as seen in Table 6. The question of education level completed was not answered by 12.07% of the respondents.

TABLE 6

Level of Education Completed

LEVEL	FREQUENCY	PERCENTAGE
GRADE 1-6	3	5.17
GRADE 7-9	22	37.93
GRADE 10-12	9	15.52
TECHNICAL	7	12.07
SOME UNIVERSITY	8	13.79
UNDERGRADUATE	2	3.45
POSTGRADUATE	-	-
NO RESPONSE	7	12.07

In responding to the question about occupation, participants were allowed more than one response. There was a definite split in the group's reporting of occupation status as seen in Table 7 with 23.6% reporting retired as an occupation and 32.7% reporting an occupation of full-time wage earner. The third largest grouping was that of the housepersons who were not considered retired. Students and the unemployed were under represented in this self-selected group.

TABLE 7

Occupational Status

OCCUPATION	FREQUENCY	PERCENTAGE
STUDENT	1	1.8
HOUSEPERSON	10	18.1
RETIRED	13	23.6
UNEMPLOYED	1	1.8
SELF-EMPLOYED	6	10.9
PART-TIME	6	10.9
FULL-TIME	18	32.7
NO RESPONSE	3	5.17

With respect to income, 32.76% of the respondents reported household earnings of \$51,000 and greater with 18.96% reporting \$31,000-\$40,000 and 17.24% reporting \$21,000-\$30,000. (Table 8) More than 51% of the respondents reported household incomes greater than \$30,000 annually with almost 69% reporting household incomes greater than \$20,000 demonstrating an overrepresentation of income.

TABLE 8

Household Income for 1990 (\$1000's)

INCOME	FREQUENCY	PERCENTAGE
15 AND LESS	3	5.17
16-20	5	8.62
21-30	10	17.24
31-40	11	18.96
41-50	7	12.07
51 AND OVER	19	32.76
NO RESPONSE	3	5.17

Two risk factors for cardiovascular disease which have been identified in the literature are the incidence of smoking and the type and frequency of exercise.

Table 9 shows that the respondents, at the time of the survey, had a low rate of smoking incidence with 13.8% indicating that they currently smoke.

TABLE 9

Smoking Currently a Habit

	FREQUENCY	PERCENTAGE
YES	8	13.80
NO	47	81.03
NO RESPONSE	3	5.17

The majority of former smokers indicated that they have not smoked for the past one to three years (8.62%) while 22.4% indicated that they have not smoked for the past 3 or more years (Table 10).

TABLE 10

Duration of Smoking Cessation

LENGTH OF TIME	FREQUENCY	PERCENTAGE
LESS THAN 1 YEAR	2	3.45
1-3 YEARS	5	8.62
3 OR MORE YEARS	13	22.41
NO RESPONSE	38	65.52

This group of respondents exercises quite regularly with 60.34% of respondents reporting that they exercise one or more times per week as indicated in Table 11. Almost one third of the respondents (29.31%) reported exercising more than 3 times per week. However, a large number of respondents (34.48%) answered negative to the question regarding exercising on a regular basis.

TABLE 11

Frequency of Exercise

	FREQUENCY	PERCENTAGE
<1 PER WEEK	3	5.18
1-3 PER WEEK	18	31.03
>3 PER WEEK	17	29.31
NO RESPONSE	20	34.48

Self-perception of health status can influence one's intention to behaviour. In this group of respondents, fifty-eight percent (58.62%) rated their personal health status as good to very good, while twenty-seven percent (27.59%) rated their health status as fair to poor as indicated in Table 12.

TABLE 12

Personal Health Status

	FREQUENCY	PERCENTAGE
EXCELLENT	5	8.62
VERY GOOD	12	20.69
GOOD	22	37.93
FAIR	14	24.14
POOR	2	3.45
NO RESPONSE	3	5.17

Perception of susceptibility to disease and seriousness of disease may influence behaviour change. This group of respondents had a very low incidence of heart disease as indicated in Table 13. Only 6.89% of respondents reported having heart disease at the time of the survey while 87.93% reported no incidence.

TABLE 13

Incidence of Heart Disease

	FREQUENCY	PERCENTAGE
YES	4	6.89
NO	51	87.93
NO RESPONSE	3	5.18

Consideration must be given to the participants' history of eating habits when assessing the effect of a program upon behaviour. Changes in eating habits which have occurred over the past 12 months may influence a program's effect on

behaviour. As indicated in Table 14, a little greater than three quarters (77.59%) of the respondents had tried to change their eating habits.

TABLE 14

Eating Habit Change Over the Last 12 Months

	FREQUENCY	PERCENTAGE
YES	45	77.59
NO	10	17.24
NO RESPONSE	3	5.17

Those habits which respondents tried to change related mostly to decreasing fat and/or cholesterol in the diet (50.0%), losing weight (32.76%) and decreasing table salt (32.76%) all related to heart healthy eating. (Table 15)

TABLE 15

Eating Habits Which Participants Tried To Change

HABITS	FREQUENCY	PERCENTAGE
LOSE WEIGHT	19	32.76
DECREASE TABLE SALT	19	32.76
DECREASE SALT IN COOKING	12	20.69
DECREASE FATTY FOODS	29	50.00
DECREASE FOODS HIGH IN CHOLESTEROL	29	50.00
OTHER	10	17.24
NO RESPONSE	-	-

Table 16 indicates that the group of participants in this study is a highly motivated group in that a large percentage (36.21%) were following some type of dietary regime at the time of the survey.

TABLE 16

Currently Following a Special Diet

	FREQUENCY	PERCENTAGE
YES	21	36.21
NO	34	58.62
NO RESPONSE	3	5.17

Of those participants who reported following some type of dietary regime, the majority of diets being adhered to could be classified as low salt 26.5%, low fat 44.1%, and weight loss 23.5% as demonstrated in Table 17.

TABLE 17

Special Diets Being Followed

DIET	FREQUENCY	PERCENTAGE
DIABETIC	1	2.9
LOW SALT	9	26.5
LOW FAT	15	44.1
WEIGHT LOSS	8	23.5
OTHER	1	2.9

COMPARISON OF DEMOGRAPHIC VARIABLES AND PRE-TEST RESULTS

An analysis of each of the demographic variables, attitude, knowledge and food selection in relation to pre-test scores will now be reported at a confidence level of alpha .05 using ANOVA as a statistical analysis tool. (Maximum score for each of the variables: attitude=72, knowledge=13, and food selection behaviour=110).

AGE

Of the four age group levels represented, ages 20-39, 40-49, 50-59, and 60-79, the 20-39 age group showed a significantly higher mean score for attitude on the pre-test than the 50-59 and 60-79 age groups as seen in Table 18. There was no significant difference demonstrated in mean scores for knowledge and eating behaviours however, the 40-49 age group had the highest mean score for knowledge while the two oldest age groups, 50-59 and 60-79 had higher mean scores for food selection.

TABLE 18

Age-related Attitude, Knowledge and Food Selection Behaviour
Scores on the Pre-test

AGE (YRS)	ATTITUDE MEAN SCORE	KNOWLEDGE MEAN SCORE	FOOD SELECTION MEAN SCORE
20-39	52.38	7.77	79.84
40-49	48.86	8.57	77.80
50-59	47.00*	7.50	83.38
60-79	46.25*	7.50	84.67

Indicates statistical significance at $p=.05$

GENDER

With reference to gender, there was a significant difference found for attitude between male and female respondents on the pre-test with female participants demonstrating a higher score in attitude towards food as indicated in Table 19. In addition, female participants also reported a more appropriate food selection as shown by a significantly different higher mean score for food selection behaviour.

TABLE 19

Gender-related Attitude, Knowledge, Food Selection BehaviourMean Scores on the Pre-test

GENDER	ATTITUDE MEAN SCORE	KNOWLEDGE MEAN SCORE	BEHAVIOUR MEAN SCORE
FEMALE (N=43)	49.51*	8.21	82.67*
MALE (N=11)	46.27	7.09	72.73

Indicates statistical significance at $p=.05$

AREA

Participants in the study were located in seven major areas. Participants from Selkirk and St. James showed significant differences in mean scores for attitude on the pre-test with Selkirk mean scores significantly lower than the other areas while St. James was significantly higher than other locations. The Health Sciences Centre and Selkirk areas demonstrated significant difference in their test results for food selection behaviour as indicated below in Table 20. The Health Sciences Centre had a significantly lower mean score than other locations with Selkirk having the second lowest score.

TABLE 20

Area-related Attitude, Knowledge, Food Selection Behaviour Mean Scores on the Pre-test

AREA	ATTITUDE MEAN SCORE	KNOWLEDGE MEAN SCORE	BEHAVIOUR MEAN SCORE
AGE & OPPORTUNITY	46.16	8.50	87.50
DAUPHIN	50.33	8.33	82.83
FT.ROUGE	50.33	9.83	78.50
HSC	49.00	7.25	73.25*
KELVIN	48.27	8.09	79.64
SELKIRK	43.50*	6.33	77.50*
ST.JAMES	52.31*	7.62	82.93

Indicates statistical significance at $p=.05$

OCCUPATION

Type of occupation was not significantly associated with any of attitude, knowledge and behavior variables on the pre-test as indicated in Table 21. Highest mean scores for attitude were demonstrated by the full/self employed respondents. This same group of respondents also had the highest mean score for knowledge. However, high mean scores in attitude and knowledge did not carry through to food selection. The highest mean score for food selection behaviour was demonstrated by the respondents identifying themselves as 'housepersons'.

TABLE 21

Occupation-related Attitude, Knowledge, Food SelectionBehaviour Mean On the Pre-test

OCCUPATION	ATTITUDE MEAN SCORE	KNOWLEDGE MEAN SCORE	BEHAVIOUR MEAN SCORE
FULL/SELF	49.69	8.48	79.26
HOUSEPERSON	49.40	8.00	83.00
OTHER	49.50	6.87	78.63
RETIRED	46.54	7.77	82.54

INCOME

There were five levels of household income represented by the respondents: less than 20,000, 21-30,000, 31-40,000, 41-50,000, 51,000 and greater. The group with an income level of 51,000 and greater had a significantly higher mean score for attitude on the pre-test. There was a significant difference in mean scores for food selection for incomes of 31,000 and greater as indicated in Table 22. The \$20,000 and less income level achieved a higher mean score for food selection behavior than other income levels. This was not at a significant level since this category was represented by only 14.0% of the sample making it difficult to achieve significance.

TABLE 22

Income-related Attitude, Knowledge, Food Selection BehaviourMean Scores on the Pre-test

INCOME LEVEL (\$)	ATTITUDE MEAN SCORE	KNOWLEDGE MEAN SCORE	BEHAVIOUR MEAN SCORE
<20,000	48.14	8.14	88.29
21-30,000	48.20	6.90	80.20
31-40,000	46.73	7.45	77.73*
41-50,000	46.14	7.86	76.71*
51,000	51.68*	8.84	81.21*

Indicates statistical significance at $p=.05$

EXERCISE LEVELS

There were three levels of exercise represented: greater than three times per week, no regular exercise and one to three times per week on the pre-test. Respondents who stated that they exercised 1-3 times per week showed a significantly higher mean score for attitude than other respondents reporting less or more exercise. Respondents reporting an exercise level of greater than 3 times per week had higher mean scores for knowledge and food selection though not significant as indicated in Table 23.

TABLE 23

Exercise-related Attitude, Knowledge, Food Selection Behaviour
Mean Scores on the Pre-test

EXERCISE LEVEL	ATTITUDE MEAN SCORE	KNOWLEDGE MEAN SCORE	BEHAVIOUR MEAN SCORE
>3/WEEK	49.67	8.33	82.40
NO REGULAR	46.95	7.86	78.52
1-3/WEEK	50.39*	7.83	81.67

Indicates statistical significance at $p=.05$

SMOKING

On the pre-test, four levels are represented by the sample: non-smoker, smoker, less than 3 years quit, and greater than 3 years quit. As shown in Table 24, those participants who had quit smoking for less than 3 years presented the highest mean score for attitude, knowledge and food selection behaviour. Though mean scores were not at a significant level, this group of respondents represented 25% of the sample. Respondents who had quit smoking for more than 3 years showed a significantly lower mean score for food selection as demonstrated in Table 24.

TABLE 24

Smoking-related Attitude, Knowledge, Food Selection BehaviourMean Scores on the Pre-test

SMOKING LEVEL	ATTITUDE MEAN SCORE	KNOWLEDGE MEAN SCORE	BEHAVIOUR MEAN SCORE
<3 YEARS QUIT	50.74	8.44	83.59
>3 YEARS QUIT	47.71	6.86	75.14*
NON-SMOKER	46.75	8.42	79.00
SMOKER	46.63	6.75	78.00

*Indicates statistical significance at $p=.05$

HEALTH STATUS

Participants were asked a question regarding their feelings about the state of their physical health. Three levels were presented: fair/poor, good and very good. Significant mean scores for attitude and food selection were found for respondents reporting health status to be good or very good on the pre-test as indicated in Table 25. Respondents reporting good health status had a statistically lower mean score for attitude than other health status. Respondents with a self-reported very good health status demonstrated a statistically higher mean score for attitude.

TABLE 25

Health Status-related Attitude, Knowledge, Food Selection
Behaviour Mean Scores on the Pre-test

HEALTH STATUS	ATTITUDE MEAN SCORE	KNOWLEDGE MEAN SCORE	BEHAVIOUR MEAN SCORE
FAIR/POOR	48.00	7.94	75.69
GOOD	47.18*	8.09	81.27*
VERY GOOD	52.00*	7.86	84.75*

Indicates statistical significance at $p=.05$

RISK OF CARDIOVASCULAR DISEASE

There were no significant differences found between mean scores for all three variables attitude, knowledge and food selection behaviour and perceived risk for CVD on the pre-test. However, those participants who self-reported having no risk of heart disease showed highest mean scores for attitude and food selection behaviour as demonstrated in Table 26. Those respondents self-reporting a serious risk of heart disease had the highest mean score for knowledge.

TABLE 26

Heart Disease-related Attitude, Knowledge, Food Selection
Behaviour Mean Scores on the Pre-test

RISK LEVEL	ATTITUDE MEAN SCORE	KNOWLEDGE MEAN SCORE	BEHAVIOUR MEAN SCORE
NO RISK	49.72	7.64	81.27
NOT VERY SERIOUS	49.20	7.47	80.00
SERIOUS RISK	48.00	8.42	80.38

FOLLOWING A DIET NOW

Participants following a dietary regime at the time of the pre-test survey had a higher mean score for attitude, knowledge and food selection behaviour as demonstrated in Table 27 however, not at significant levels.

TABLE 27

Dietary Regime-related Attitude, Knowledge, Food Selection
Behavior Mean Scores on the Pre-test

DIETARY REGIME	ATTITUDE MEAN SCORE	KNOWLEDGE MEAN SCORE	BEHAVIOUR MEAN SCORE
YES	51.68	8.71	83.14
NO	48.14	7.52	79.06

RESULTS PERTAINING TO THE HYPOTHESES PRESENTED

HYPOTHESIS I

There will be a change in attitude towards the importance of selection and preparation of food according to the Heart Smart Cooking Course recommendations as evidenced by pre, post and one month follow up tests.

The overall results from pre, post and one month scores indicate an increase in mean scores for attitude towards food as seen in Table 28. The post test mean score result was significantly higher than the pre test result. The one month mean score result was shown to be significantly higher than the pre test score. There was no significant difference between post test and one month follow up results. Hypothesis I was therefore upheld as supported by the data in Table 28.

TABLE 28

Attitude of Participants Towards Food

TESTING INTERVAL	ATTITUDE MEAN SCORE
PRE-TEST	48.41
POST TEST	49.97*
ONE MONTH TEST	51.97*

Indicates statistical significance at $p=.05$

A closer observation of the data on attitude with reference to the demographics will now be examined at a confidence level of alpha .05 using ANOVA as a statistical tool.

GENDER

Female respondents showed an increase in mean score for attitude from pre to post test intervals as indicated in Table 29 and a significant increase in mean score from pre to one month follow up intervals. Male respondents' mean scores increased from pre to post and to one month follow up though not at a significant level.

TABLE 29

Gender and Attitude Mean Scores Pre, Post and One Month
Follow up

TESTING INTERVAL	BEHAVIOUR MEAN SCORE (MALE)	BEHAVIOUR MEAN SCORE (FEMALE)
PRE-TEST	46.27	49.51
POST TEST	48.00	52.00
ONE MONTH	50.00	54.65*

Indicates statistical significance at $p=.05$

LOCATION

In comparing the seven Heart Smart Cooking locations, only Selkirk (N=6) and Dauphin (N=6), the two rural locations, had a significant difference in attitude mean score results from pre to post and one month follow up test intervals as shown in Table 30. Both Selkirk and Dauphin had significantly higher mean scores for attitude at the one month follow up with respect to the pre-test. Post test mean scores were higher than pre-test scores though not at a significant level. The other five locations did not demonstrate an increase in mean score for attitude from pre to post to 1 month follow up.

TABLE 30

Selkirk and Dauphin Participants' Attitude Mean Scores Pre,
Post and One Month Follow up

TESTING INTERVALS	SELKIRK ATTITUDE MEAN SCORE	DAUPHIN ATTITUDE MEAN SCORE
PRE-TEST	44.00	49.51
POST TEST	46.27	56.85
ONE MONTH	52.00*	54.65*

Indicates statistical significance at $p=.05$

SMOKING AS A FACTOR

Of the four levels of smoking represented by the sample, smokers who had quit for 3 years or less (N=21) demonstrated a significant increase in mean scores for attitude towards food from the pre-test to one month testing intervals as indicated in Table 31. Mean scores did not change significantly for the other three categories of smoking status. All mean scores increased except for the non-smoker respondents as indicated in Table 31. Non-smokers showed a slight decrease in mean score for attitude towards food at the one month testing interval though not at a significant level.

TABLE 31

Smoking Status and Attitude Mean Scores Pre, Post and One
Month Follow up

TESTING INTERVALS	SMOKERS	QUIT >3 YRS	QUIT <3 YRS	NONSMOKER
PRE-TEST	46.63	47.71	50.74	46.75
POST TEST	47.00	49.51	51.25	49.00
ONE MONTH	50.65	52.00	52.65*	48.50

Indicates statistical significance at $p=.05$

HEALTH STATUS

Mean scores for attitude towards food generally improved pre to post test for those respondents indicating their health status to be good/very good though not at a significant level. Those respondents reporting a good health status saw a significant improvement in attitude mean score from pre to one month as indicated in Table 32. Respondents with a self-reported health status of fair/poor experienced no change in mean score pre to post and a very small increase at the one month follow up.

TABLE 32

Health Status and Attitude Mean Scores Pre, Post and One Month Follow up

TESTING INTERVAL	HEALTH STATUS VERY GOOD	HEALTH STATUS GOOD	HEALTH STATUS FAIR/POOR
PRE-TEST	51.25	47.00	48.50
POST TEST	55.00	48.50	48.50
ONE MONTH	55.65	50.74*	49.25

Indicates statistical significance at $p=.05$

FOLLOWING A DIETARY REGIME

Participants following some type of dietary regime at the time of the survey showed significant increase in mean scores for attitude towards food from pre to one month intervals and a slight increase in mean score at the post test.

TABLE 33

Dietary Regime and Attitude Mean Scores Pre, Post and One
Month Follow up

TESTING INTERVAL	DIETARY REGIME	NO DIETARY REGIME
PRE-TEST	51.68	48.14
POST TEST	59.51	51.25
ONE MONTH	60.65*	51.80

Indicates statistical significance at $p=.05$

Those respondents following a dietary regime had higher mean scores at all testing intervals than respondents on diets.

HYPOTHESIS II

Participants of the Heart Smart Cooking Course will demonstrate an increase in accurate nutrition knowledge as evidenced by pre-program, post-program and one month follow up tests.

Overall results from pre-test to post test and to one month follow up scores indicate an increase in accurate nutrition knowledge as supported by the data seen in Table 34. The post test and one month results were significantly higher than the pre-test mean scores for knowledge. Hypothesis II was therefore upheld as supported by the data in Table 34.

TABLE 34

Nutrition Knowledge of Participants

TESTING INTERVAL	KNOWLEDGE MEAN SCORE
PRE-TEST	7.74
POST TEST	9.28*
ONE MONTH	9.74*

Indicates statistical significance at $p=.05$

An examination of the nutrition knowledge data with specific attention to demographics will now be examined at a confidence level of alpha .05 using ANOVA as the statistical tool.

GENDER

There was no significant difference found for men's knowledge pre to post test. However, one month follow up test results demonstrated a significant increase in mean scores for men from pre to one month follow up as indicated in Table 35. It should be noted that knowledge mean scores increased over the three testing periods.

TABLE 35

Gender and Knowledge Mean Scores Pre, Post and One MonthFollow up

TESTING INTERVAL	KNOWLEDGE MEAN SCORE (MALE)	KNOWLEDGE MEAN SCORE (FEMALE)
PRE-TEST	7.25	7.87
POST TEST	8.0	9.48*
ONE MONTH	9.38*	9.71*

Indicates statistical significance at $p=.05$

Female test results showed a significant increase in mean scores at the post and one month follow up over pre-test scores as indicated in Table 35. Female results indicate a higher mean score for knowledge than males on each of the pre to post and one month follow up tests. As noted with males, female knowledge mean scores increased over the three testing periods.

LOCATION

Location did not appear to influence knowledge mean scores to any great extent. Of the seven locations represented, only St. James (N=11), in Winnipeg demonstrated a significant difference in mean score test results from pre to post and pre to one month follow up tests as indicated in the Table 36.

TABLE 36

Location and Knowledge Mean Scores Pre, Post and One Month
Follow up

LOCATION	PRE-TEST MEAN SCORE	POST TEST MEAN SCORE	ONE MONTH MEAN SCORE
AGE & OPPORT.	7.75	9.33	9.50
DAUPHIN	8.33	9.83	9.33
FORT ROUGE	10.25	11.67	10.50
HSC	7.71	7.86	8.57
KELVIN HIGH	8.33	7.6	10.00
SELKIRK	6.33	8.50	10.33
ST.JAMES	7.1	9.81*	9.70*

Indicates statistical significance at $p=.05$

Generally speaking, mean scores for knowledge were high at pre-testing making it difficult to see a significant effect from the program on knowledge levels at post and one month follow up testing intervals. There was an increasing trend in mean scores for knowledge at all locations, the exception being Kelvin High School which showed a decrease in mean scores at the post test however an increase at the one month follow up interval.

SMOKING AS A FACTOR

Respondents who indicated that they were non smokers and those who had given up the smoking habit for 3 years or less showed significantly higher mean scores for knowledge pre to one month follow up as indicated in Table 37. All mean scores did increase from pre to post testing intervals and from post to one month with the exception of the non smokers who experienced a small decrease in mean scores at the one month testing interval though not significant.

TABLE 37

Smoking Status and Knowledge Mean Scores Pre, Post and One Month Follow up

TESTING INTERVAL	SMOKER MEAN SCORE	QUIT > 3 YRS MEAN SCORE	QUIT < 3 YRS MEAN SCORE	NON SMOKER MEAN SCORE
PRE-TEST	5.4	7.4	8.24	8.42
POST TEST	7.25	9.00	9.58	9.58*
ONE MONTH	10.00	10.00	9.67*	9.48*

Indicates statistical significance at p=.05

The non-smokers paralleled the smokers who had quit for 3 years or less in that a significant difference was evident for the knowledge variable and mean scores for this group were somewhat higher at the three intervals of testing as indicated in Table 37.

HEALTH STATUS

In comparing self-perception of health status, three categories are represented, very good health status (N=11), good health status (N=18) and fair/poor health status (N=18). Respondents self-reporting very good health status had higher mean scores at the post and one month follow up intervals as indicated in Table 38. Mean score for knowledge continued to increase to a significantly higher level than pre-test score for the very good health status category.

TABLE 38

Health Status and Knowledge Mean Scores for Pre, Post, One Month Follow up

TESTING INTERVAL	VERY GOOD HEALTH STATUS	GOOD HEALTH STATUS	FAIR/POOR HEALTH STATUS
PRE-TEST	7.45	7.90	8.17
POST TEST	10.22	9.16*	8.75
ONE MONTH	9.55*	9.75*	9.58

Indicates statistical significance at p=.05

Respondents reporting good health status had higher mean scores at the post and one month follow up intervals from pre-test mean scores. The one month mean score was seen to continue to increase from the post test score to a significantly higher level than the pre-test score. The respondents with a fair/poor health status had the highest

pre-test mean scores for knowledge.

FOLLOWING A DIET AT TIME OF SURVEY

Participants following some type of dietary regime at the time of the survey (N=15) saw an increase in mean score for knowledge pre to post-test though not at a significant level. Knowledge mean scores for these respondents continued to increase at the one month testing interval to a significantly higher level than the pre-test mean score as indicated in Table 39.

TABLE 39

Dietary Regime and Knowledge Mean Scores Pre, Post and One Month Follow up

TESTING INTERVAL	DIETARY REGIME	NO DIETARY REGIME
PRE-TEST	8.71	7.52
POST TEST	9.15	9.14*
ONE MONTH	9.87*	9.53*

Indicates statistical significance at $p=.05$

Participants not following a dietary regime at the time of the survey (N=28) demonstrated an increase in mean score results at all testing intervals. Mean score results for post test and one month follow up were significantly higher than pre-test mean scores for these respondents not following a dietary regime at the time of the survey.

HYPOTHESIS III

Participants will report increased positive behaviour in food selection and cooking habits after participating in the Heart Smart Cooking Course from pre-program to post-program and one month intervals.

The overall results from the pre, post and one month followup surveys indicate a positive change in food selection and cooking behaviour as supported by the following data in Table 40. This hypothesis is therefore upheld and supported by the data presented.

TABLE 40

Food Selection Behaviour Mean Scores Pre, Post and One Month Follow up

TESTING INTERVAL	FOOD SELECTION BEHAVIOUR MEAN SCORE
PRE-TEST	62.61
POST TEST	67.79*
ONE MONTH	68.00*

Indicates statistical significance at $p=.05$

Mean scores for food selection behaviour at the post test and one month follow up testing intervals were significantly higher than the pre-test mean score. Data show little recidivism from post test to one month follow up with a slight increase in mean score.

A closer observation of the data with respect to the demographics presented will now be examined at a confidence level of alpha .05 using ANOVA as a statistical tool.

GENDER

Male participants' food selection behaviour mean scores changed significantly from pre to post and one month follow up intervals as demonstrated in Table 41.

TABLE 41
Gender and Food Selection Behaviour Mean Scores Pre, Post and One Month Follow up

TESTING INTERVAL	FOOD SELECTION BEHAVIOUR MEAN SCORE (MALE)	FOOD SELECTION BEHAVIOUR MEAN SCORE (FEMALE)
PRE-TEST	73.60	81.64
POST TEST	80.10*	87.67*
ONE MONTH	74.50*	87.67*

Indicates statistical significance at p=.05

Female participants also demonstrated a significant increase in food selection behaviour mean scores from pre to post and one month follow up intervals as indicated in Table 41. Female respondents showed higher mean scores than male respondents. There was no significant difference found between post test and one month follow up indicating little recidivism between these testing intervals.

LOCATION

In comparing locations where the course was held, there was an increase in mean score at a significant level for several of the locations. Dauphin (N=6), Kelvin (N=5) and Health Sciences Centre (N=7) all showed a significant increase in mean scores for food selection behavior from pre-test to one month follow up testing intervals as seen in Table 42. There was an increase in mean scores for all three locations from pre-test to post test though not at a significant level.

TABLE 42

Dauphin, Kelvin High School and Health Sciences Centre Food Selection Behaviour Mean Scores Pre, Post and One Month Follow up

TESTING INTERVAL	FOOD SELECTION MEAN SCORES (DAUPHIN)	FOOD SELECTION MEAN SCORES (KELVIN HIGH)	FOOD SELECTION MEAN SCORES (HSC)
PRE-TEST	64.83	62.00	56.71
POST TEST	69.50	65.80	58.00
ONE MONTH	70.33	68.50*	62.29*

Indicates statistical significance at p=.05

SMOKING AS A FACTOR

Were there any significant changes in behaviour of the smokers or past smokers? Respondents who indicated that they had given up the habit for 3 years or less demonstrated a significant increase in mean scores for food selection

behaviour from pre-test to one month follow up testing intervals as indicated in Table 43. In addition, this group had pre-test mean scores higher than the non-smoker group.

TABLE 43

Smoking Status and Food Selection Behaviour Mean Scores
Pre, Post and One Month Follow up

TESTING INTERVAL	SMOKERS MEAN SCORE	QUIT >3 YRS MEAN SCORE	QUIT <3 YRS MEAN SCORE	NONSMOKER MEAN SCORE
PRE-TEST	60.80	61.80	64.19	62.08
POST TEST	65.00	66.75	69.16	66.58
ONE MONTH	68.40	65.20	69.05*	66.83*

Indicates statistical significance at $p=.05$

Respondents who reported being nonsmokers had significantly higher mean scores for food selection behaviour change from pre-test to one month follow up tests. There was an increasing trend from all pre-test to post test intervals though not at a significant level. There was no significant difference found between post test and one month follow up mean scores though a slight drop in mean scores occurred for those respondents who reported having quit smoking for longer than 3 years.

Non-smokers paralleled very closely those smokers who had quit for 3 years or less in achieving mean score differences at a significant level. Non-smokers exhibited lower positive food selection behaviour than smokers who had quit for 3 years or less.

HEALTH STATUS

Mean scores for food selection behaviour were all in an increasing direction from pre to post test for all categories of self-reported health status though not at significant levels as indicated in Table 44.

Participants who reported a very good health status (N=12) showed an increase in mean scores from pre to post tests as seen in Table 44.

TABLE 44

Health Status and Food Selection Behaviour Mean Scores Pre, Post And One Month Follow up

TESTING INTERVAL	VERY GOOD HEALTH STATUS MEAN SCORE	GOOD HEALTH STATUS MEAN SCORE	FAIR/POOR HEALTH STATUS MEAN SCORE
PRE-TEST	65.27	63.50	59.83
POST TEST	71.33	68.17	64.25
ONE MONTH	67.64	68.60*	67.00#

Indicates statistical significance at $p=.05$

Respondents who reported a very good health status had the highest pre-test mean scores for food selection behaviour though did not experience an increase in mean scores at a significant level. Respondents who reported good health status showed a significant increase in mean scores for food selection behaviour from pre-test to one month follow up. Respondents who reported fair/poor health status did not see

a significant increase from pre-test to post test but did have a significant increase from post test to one month follow up testing intervals.

DIETARY REGIME AT TIME OF THE SURVEY

Participants following some type of dietary regime (N=21) at the time of the survey demonstrated a significant increase in mean scores in food selection behaviour as indicated in Table 45. As was seen in the behaviour change of the participants who had quit smoking, participants on a dietary regime would have already experienced changes in lifestyle and may therefore accept an additional change more easily.

TABLE 45

Dietary Regime and Food Selection Behaviour Mean Scores

Pre, Post and One Month Follow up

TESTING INTERVAL	DIETARY REGIME MEAN SCORE	NO DIETARY REGIME MEAN SCORE
PRE-TEST	83.14	79.06
POST TEST	89.62	83.00
ONE MONTH	88.67*	83.50

Indicates statistical significance at p=.05

COMPARISONS OF INTEREST

Two areas of interest which follow the behaviour change content of hypothesis III will have data presented in this next section. The areas of interest include the risk of heart disease and its effect on food selection behaviour and the influence of social norm influence upon respondents' food selection behaviour.

For each of the areas of interest the results will be presented according to:

- 1) a description of the sample; and
- 2) the hypotheses presented.

HYPOTHESIS IV

A higher proportion of people who consider themselves to be at risk of cardiovascular disease than those who consider themselves at low risk will make behavioral changes to their cooking habits.

DESCRIPTION OF THE SAMPLE

Respondents who answered the question "do you consider yourself to be at risk of having heart disease?" indicated a wide range of responses to their self-perception of risk as reported in Table 46.

TABLE 46

Risk of Heart Disease

REPORTED RISK	FREQUENCY	PERCENTAGE
VERY SERIOUS	2	3.45
SERIOUS	1	1.72
SOMEWHAT SERIOUS	21	36.21
NOT VERY SERIOUS	16	27.59
NO RISK AT ALL	11	18.97
NO RESPONSE	7	12.06

After clustering the data, three levels of risk were represented by the group of respondents. The largest portion of the group, 63.80% self-reported having a somewhat/not very serious risk of heart disease, with the next largest group, 18.97% having no risk at all. The smallest portion of the

group, 5.17% reported having a very serious/serious risk of heart disease. Of the 12.06% who did not respond to the question, little reference can be made.

Perception that the risk of CVD is not very serious (27.59%) and at no risk at all (18.97%) presents an interesting observation into this group of respondents when one considers that 63% of Manitobans have at least one of the three major risk factors for CVD (high blood pressure, smoking and high blood cholesterol. (Young et al. 1991)

The question posed is probably not an adequate measurement of risk since according to the Manitoba Heart Health survey, less than one in five respondents knew of the association between high blood pressure and heart disease. Twenty-five percent of the respondents in this survey were aware of the association between high blood pressure and heart disease. With this lack of knowledge about risk factors it would be difficult for participants to have any perception about their risk of heart disease.

RESULTS PERTAINING TO THE HYPOTHESIS PRESENTED

Those respondents with the highest self-reported risk of heart disease had the highest mean score for food selection behaviour at the pre-test interval as indicated in Table 47. Though this group of respondents did not achieve a significantly higher score at the post-test nor at the one month follow up, scores at the one month follow up testing

interval were higher than at the pre-test and highest of all categories of self-reported risk.

Respondents self-reporting a somewhat serious risk and a not very serious risk of heart disease experienced a significant increase in mean scores for food selection behaviour from pre-test to post test and one month follow up intervals. This hypothesis was not upheld based upon the data presented.

TABLE 47

Risk of Heart Disease and Food Selection Behaviour Mean Scores
for Pre, Post and One Month Follow up

TESTING INTERVAL	SERIOUS RISK	SOMEWHAT SERIOUS RISK	NOT VERY SERIOUS RISK	NO RISK
PRE-TEST	67.33	63.39	61.58	62.40
POST TEST	67.20	67.83*	69.44*	62.14
ONE MONTH	70.38	67.83*	66.92*	68.50

Indicates statistical significance at $p=.05$

HYPOTHESIS V

People who believe that members of one's reference group encourage health enhancing behaviours will show an increased and sustained change in food selection habits.

DESCRIPTION OF SAMPLE

When determining the factors which influence behaviour change one area which must be given consideration is that of social norm influence, the effect that one's reference group has on behaviours of respondents. These respondents demonstrated a very weak social norm influence in that thirty-two percent (32.00%) reported that they themselves were the reason that they had changed behaviour and that nineteen percent (19.16%) reported that no one had influenced their behaviour change as indicated in Table 48.

TABLE 48

Social Norm Influence

INFLUENCE	FREQUENCY	PERCENTAGE
SELF	32	43.84
SPOUSE	17	23.29
FAMILY	7	9.59
CO-WORKERS	3	4.12
BOSS	0	-
NO ONE	14	19.16

Data therefore indicate that 37% of the respondents were influenced by some other person or group. None of the respondents listed a "boss" as having an influence on their behaviour.

RESULTS PERTAINING TO THE HYPOTHESIS PRESENTED

For those participants with evidence of a strong social norm influence (N=27), mean scores for food selection behaviour increased significantly at the post and one month testing intervals from the pre-test as indicated in Table 49. Not only did mean scores increase but mean scores of this group were generally higher than the group with weak social norm influence.

TABLE 49

Social Norm Influence and Food Selection Behaviour Mean Scores
Pre, Post and One Month Follow up

TESTING INTERVAL	STRONG SOCIAL NORM INFLUENCE	WEAK SOCIAL NORM INFLUENCE
PRE-TEST	76.10	63.62
POST TEST	81.00*	64.50
ONE MONTH	66.00*	69.21*

Indicates statistical significance at $p=.05$

Respondents reporting weak social norm influence (they were not influenced by members of their reference group to any extent), did not see a significant increase in mean scores at the post test interval for food selection behaviour. There was a significant increase in food selection behaviour mean scores at the one month follow up interval. This hypothesis was not upheld in that respondents with a weak social norm influence had a higher mean score for food selection behaviour at the one month follow up than respondents with a strong

social norm influence. In addition, mean scores for food selection behaviour increased but were not sustained one month following cessation of the Heart Smart Cooking Course.

CHAPTER 5

DISCUSSION

This chapter will summarize and discuss the survey results of the preliminary evaluation of the Heart Smart Cooking Course regarding changes in attitude, knowledge and behavior.

The data were collected by the use of pre-test, post test, demographics and one month follow up questionnaires. The pre-test, post test and demographics surveys were administered at the class location while the one month follow up was mailed out. There was a 100% response rate for the demographics survey, a 94.8% for the pre-test, 70.6% for the post test and 67.24% for the one month follow up.

The data were analyzed to test five hypotheses regarding the influence of a health education program upon health-related behaviors.

- 1) attitude to the importance of selection and preparation of food;
- 2) nutrition knowledge;
- 3) positive behavior in food selection and cooking habits;
- 4) risk of cardiovascular disease with respect to behavioral; and

- 5) effect of one's reference group on health-enhancing behaviors.

This chapter will present information in the following format:

- A) Descriptive summary of the study group
- B) Summary of results for each hypothesis
- C) Implications
- D) Recommendations
- E) Conclusions

Descriptive Summary of the Study Group

The respondents in the study group were categorized into subgroups according to age, gender, level of education, occupation, income, smoking incidence, incidence of heart disease, and change in eating habits.

Two age groups, ages 30-39 years and 40-49 years represented 60% of the total group. Thirty-six percent of the study group was 50 years old or greater. Females made up 75.9% of the sample. These two over-representations must be noted since the strength of the statistical relationships may be overestimated in the analysis of the groups which are under represented.

This study group was a fairly educated group with 37.9% of the group having completed grades 7-9, 15.5% having completed grades 10-12 and 29.31% having completed technical or some university training.

With respect to occupation, 23.6% of the group reported being retired while 32.7% of the participants reported an occupation of full-time wage earner. Students and the unemployed were under represented in this self-selected group.

Nearly 73% of the respondents reported household incomes greater than \$20,000 annually, with 17.24% reporting household incomes \$21,000-30,000, 18.96% reporting household incomes of \$31-40,000 and 37.7% reporting household incomes of \$51,000 and greater.

This was a highly motivated self-selected group with respect to health-enhancing behaviors as seen from the data regarding smoking incidence, exercise habits and changes in eating habits implemented over the past year.

Smoking is cited in the literature as a risk factor for cardiovascular disease. This group of participants had a low rate of smoking incidence with 13.8% of the group indicating that they currently smoke. This group of participants indicated that they were able to change health-related behaviors with former smokers representing 44.5% of the sample.

With regards to exercise frequency, regular exercise having been cited in the literature as a CVD risk factor modifier, 60.34% of this group reported exercising regularly with 29.31% of the group reporting the inclusion of exercise in their day to day activities at a level of more than three times per week.

Several of the respondents tried to change their eating habits with approximately three quarters of the group, (77.59%) reporting so. Examination of those changes in food habits indicates that 50% related to decreasing fat and/or cholesterol in the diet, 32.76% related to losing weight and 32.76% related to decreasing table salt. At the time of the survey, 36.21% were following some type of dietary regime.

Self-perception of health status can influence one's intention to perform behavior as can self-perception of risk of a disease. In this study group, 58.62% of respondents rated their personal health status as good to very good. In addition, three levels of perceived risk of heart disease were represented by the group. A "somewhat/not very serious" risk of heart disease was reported by 63.8% of the group, with the next largest group, 18.97% reporting no risk of heart disease at all. A "very serious/serious" risk of heart disease was reported by 5.17% of the respondents. A substantial number of participants, namely 12.06%, did not respond to the question regarding perceived risk of heart disease.

Perception and susceptibility to disease and seriousness of disease may influence behavior change. This group of respondents had a very low incidence of heart disease. Only 6.89% of respondents reported having heart disease at the time of the survey while 87.93% reported no incidence.

Summary of Results for each Hypothesis

The results will be presented such that an overall reference will be made to the upholding of the hypothesis followed by an analysis of the data with reference to the demographic variables and the pre-test, post test and one month follow up mean scores.

HYPOTHESIS I

There will be a change in attitude to the importance of selection and preparation of food according to the Heart Smart Cooking Course recommendations as evidenced by pre, post and one month follow up tests.

The overall results for all respondents indicate an increase in mean scores for attitude towards food from the pre-test interval to the post test and one month follow up thus upholding the hypothesis. Post test mean scores were shown to be significantly higher than pre-test results as were one month mean scores higher than pre-test scores.

The age of participants was not related to mean scores for attitude except for the 20-39 year age group which had a significantly higher mean score for attitude than the other age groups on the pre-test. All mean scores for attitude moved in an upward trend for all age groups from pre-test to post test and one month follow up however not at significant levels.

Gender appeared to affect mean score results with female respondents demonstrating a significantly higher mean score for attitude on the pre-test. All mean scores for attitude increased from pre-test, to post test and one month followup however, only the female respondents had mean scores significantly higher from pre-test to one month follow up.

The instruction sites where respondents attended classes demonstrated little effect on mean score results for attitude. Of the participants located in the seven major areas, those respondents from Selkirk, Manitoba, a rural area, demonstrated significantly lower mean scores while St. James in Winnipeg, an urban location, scored significantly higher for attitude at the pre-test interval. Selkirk and Dauphin, Manitoba, another rural location demonstrated a significant increase in mean score for attitude from pre-test to one month follow up. The five other locations did not demonstrate any significant difference in mean scores.

Level of employment and income level demonstrated little difference in mean scores for attitude. Those respondents who reported being full/self-employed and at the highest income level demonstrated highest pre-test mean scores for attitude. There were no significant increases in mean scores at any of the employment levels nor income levels from pre-test to post test and one month follow up.

Consideration to exercise level indicated very little difference in mean scores. Respondents who stated that they

exercise 1-3 times per week showed a significantly higher pre-test mean score for attitude than other respondents reporting less exercise or more exercise. There were no significant increases in mean scores at any of the exercise levels from pre-test to post test to one month follow up.

Smoking level of participants demonstrated some association upon mean scores for attitude. Though not significantly different from any of the other levels of smoking, non-smokers had a lower mean score for attitude than former smokers at the pre-test. All mean scores, except for the non-smoking respondents, showed an increase in mean score over the pre to post and one month follow up periods though not at a significant level. Former smokers of 3 years or less duration demonstrated a significant increase in mean scores for attitude from pre-test to one month follow up intervals. Non-smokers showed a slight decrease in mean score for attitude towards food at the one month follow up.

Health status of participants appeared to have some effect on mean scores for attitude. At the pre-test interval, those respondents self-reporting good health status had a statistically significant lower mean score for attitude than other health status categories. Respondents with a very good health status had a significantly higher mean score for attitude at the pre-test. A comparison of the three testing intervals demonstrated that, of the three categories reported, all mean scores increased from pre-test to post test and one

month follow up except the very good health status category where a slight decrease in mean score was demonstrated at the one month interval. Respondents with a good health status did experience a significant increase in mean score from pre-test to one month follow up. There was very little change in mean score for attitude, whether at a significant level or not, for those respondents reporting fair/poor health status.

The adherence to a dietary regime at the time of the survey appeared to influence a change in attitude towards food. Those respondents following a diet at the time of the survey had the highest pre-test mean score for attitude towards food. In addition, those respondents following a dietary regime showed a significant increase in mean score from pre-test to one month testing intervals.

HYPOTHESIS II

Participants of the Heart Smart Cooking Course will demonstrate an increase in accurate nutrition knowledge as evidenced by pre-test, post test and one month follow up tests.

The overall results from all respondents indicate an increase in mean scores for accurate nutrition knowledge from pre-test to post test and one month follow up. Both post test mean scores for knowledge and one month follow up mean scores were significantly higher than pre-test scores.

The age of respondents appeared to have very little association with mean score test results for knowledge. The 40-49 year age group, 38.2% of the sample, had the highest mean score for knowledge at the pre-test interval. There were no significant changes in mean scores from the pre-test to post test and one month follow up intervals.

There was a small gender difference reported for nutrition knowledge mean scores with female mean scores higher than male respondents at all testing intervals. Mean scores for females increased significantly from pre-test to post test and from pre-test to one month follow up. Male mean scores also increased significantly from pre-test to one month follow up.

Smoking status and frequency did appear to have some association with mean scores for knowledge about food and

nutrition. Though smoking status and frequency did not influence pre-test mean scores for nutrition knowledge at a significant level, smokers had the lowest mean score for knowledge while former smokers of 3 years or less had almost identical mean scores to those of non-smokers. All mean scores increased from pre-test to post test intervals and from post test to one month for all four categories of smoking status. In addition, smoking status related to mean scores for knowledge in that non-smokers demonstrated a significant increase in mean score for knowledge pre-test to one month follow up.

There was some relationship between knowledge mean scores and the various categories of self-perception of health status. Health status reporting was not associated with knowledge pre-test mean scores to a significant level. However, respondents reporting good health status had the highest pre-test mean score for knowledge. Knowledge mean scores with respect to self-perception of health status increased for all three categories of very good, good and fair/poor health status. Two categories, the very good and good health status categories, demonstrated a significant increase in mean scores from pre-test to one month follow up.

The adherence to a dietary regime by respondents did appear to have some association with mean scores for knowledge. Those respondents following a dietary regime at the time of the survey had higher mean scores for knowledge on the

pre-test than the non-dietary regime group as seen in Table 39. The respondents adhering to a dietary regime had higher mean scores than the non-dietary group at all three testing intervals. Participants following a dietary regime showed a significant increase in mean scores for knowledge only at the one month interval and not the the post test.

At the post test, both groups had nearly even mean scores but the dietary regime group, at the one month follow up, demonstrated a greater mean score than the non dietary regime group. The two groups differed in that those participants not on a dietary regime had mean score increases at a significant level from pre-test to post test and pre-test to one month follow up.

HYPOTHESIS III

Participants will report increased positive behavior in food selection and cooking habits after participating in the Heart Smart Cooking Course from pre-program to post program and one month intervals.

The overall results for all respondents indicate an increase in mean scores for food selection behavior from the pre-test interval to the post test and one month follow up thus upholding the hypothesis. Post test mean scores and one month followup scores were both significantly higher than pre-test results.

The age of participants showed little effect upon mean scores for food selection behavior. The two eldest age groups, ages 50-59 years and 60-79 years had the highest mean scores for food selection at the pre-test interval. There were no significant changes in mean scores from the pre-test to post test and one month follow up intervals.

A gender difference was demonstrated for food selection behavior. Female respondents reported a significantly higher mean score for food selection behavior than males at the pre-test interval. This gender difference can be expected given the frequency with which women purchase and prepare foods and therefore utilize information regarding food in comparison to male respondents.

All mean scores for food selection behavior for both males and females increased from pre-test to post test. A gender difference presented itself in that mean scores for male respondents increased significantly from pre-test to post test however, decreased at the one month follow up. Female respondents also demonstrated a significant increase in mean scores for food selection from pre-test to post test however, the one month follow up mean score remained at the post test level.

Location of the class sites was related somewhat to mean score results for food selection behavior. Of note at the pre-test interval, the Health Sciences Center class scored significantly lower than all other class sites for food selection behavior. All sites demonstrated an increase in mean scores for food selection behavior from pre-test to post test and one month followup. Dauphin, a rural area, Kelvin High School and Health Sciences Center, both urban locations had an increase in mean scores for food selection from pre-test to post test, though not significant. All three sites demonstrated a significant increase in mean scores from pre-test to one month follow up.

Type of occupation and income level had little association with mean scores for food selection behavior. The highest mean score for food selection behavior at the pre-test interval was reported for the respondents identifying themselves as housepersons. The \$31,000 and greater income

level had a significantly higher mean score for food selection behavior. The \$20,000 income level achieved a higher mean score than other income levels for food selection behavior though not at a significantly different level. There were no significant increases in mean scores at any of the employment levels nor income levels from pre-test to post-test and one month follow up.

The exercise level of respondents was not significantly related to the mean scores for food selection behavior. Respondents who reported an exercise level of greater than 3 times per week had a higher mean score for food selection behavior at the pre-test interval though not significantly different to other exercise levels. Though all mean scores for food selection behavior increased, there were no significant increases in mean scores at any of the exercise levels from pre-test to post-test and to one month follow up.

Smoking level of respondents was related to the mean scores for food selection behavior. Former smokers of 3 years or less had the highest mean score for food selection behavior at the pre-test interval though not at a significantly different level. Former smokers of 3 years or greater had a significantly lower mean score for food selection behavior at the pre-test interval than all other smoking categories. All smoking categories demonstrated an increase in mean scores for food selection behavior from pre-test to post test and one month follow up. Two categories, the non-smokers of less than

3 years and the non-smokers demonstrated a significant increase in mean scores from pre-test to one month follow up. Non-smokers' mean scores were quite similar to former smokers who had quit for 3 years or less.

Health status of respondents was associated with the mean scores for food selection behavior. With respect to pre-test intervals, respondents self-reporting good/very good health status had significantly higher mean scores for food selection behavior than other categories. Mean scores for food selection behavior for all categories of self-reported health status were all in an increasing direction from pre-test to post test, the only exception being the very good health status category which saw a slight decrease in mean score at the one month follow up. Respondents with a good health status demonstrated a significant increase in mean score from pre-test to one month as did respondents with a fair/poor health status from pre-test to one month follow up.

The adherence to a dietary regime at the time of the survey had a slight effect upon mean scores for food selection behavior. Those respondents following a diet at the time of the survey demonstrated a higher mean score for food selection at the pre-test interval than those participants not on a regime. All mean scores for food selection increased for both groups from pre-test to post test and decreased at the one month follow up with those participants following a dietary regime experiencing a greater drop in mean score. Subjects

following a regime however, despite the drop in mean score at the one month follow up continued to demonstrate a significant increase in mean score from pre-test to one month follow up.

Another interesting observation of the data for food selection behavior indicated that exercise level, smoking status, adherence to a dietary regime and perceived health status were closely associated. Respondents who were non-smokers also tended to adhere to a dietary regime and exercise with the greatest frequency. Respondents with a self-reported good/very good health status tended to be the respondents with a higher frequency of exercise and higher mean score for food selection behavior at the pre-test interval.

HYPOTHESIS IV

A higher proportion of people who consider themselves to be at risk of cardiovascular disease than those who consider themselves at low risk will make behavioral changes to their cooking habits.

The overall results for all respondents indicate a general increase in mean scores for food selection behavior thus upholding the hypothesis. Of note, at the pre-test interval, is that those respondents with the highest self-reported risk of heart disease demonstrated the highest mean score for food selection behavior. Mean scores for all categories of risk increased from the pre-test to the one

month follow up with only two of the categories, somewhat serious and not very serious risk also increasing in mean scores at the post test interval. Significantly higher mean scores for food selection were achieved in the categories of somewhat serious and not very serious risk in that both post test and one month follow up results were significantly higher than the pre-test mean scores. It should be noted that significance was difficult to achieve in the high risk category given the small percentage of respondents in this category.

HYPOTHESIS V

People who believe that members of one's reference group encourage health-enhancing behaviors will show an increased and sustained change in food selection behavior.

The overall results for all respondents indicate generally an increase in mean scores for food selection behaviors for both categories presented, strong social norm influence and weak social norm influence as seen in Table 49. In addition, the mean score for food selection behavior was not sustained at the one month follow up interval for the group with the strong social norm influence. For these two reasons, the hypothesis was not upheld. Mean scores increased at all testing intervals except for the category of strong social norm influence where the mean score at the one month follow up significantly decreased from the pre-test level mean score even though this category had demonstrated the highest mean score for food selection at the pre-test interval. The group with the weak social norm influence demonstrated a slight increase at post test but a significantly higher mean score at one month than pre-test scores.

Implications

It is widely known that cardiovascular disease (CVD) is a serious and widespread condition. By focusing on the risk factors for CVD, a primary prevention program such as the Heart Smart Cooking Program can reduce risk factors for CVD by focusing on lifestyle change. This program impact can then influence the outcome or future outcome of the disease.

This influence has been repeatedly demonstrated. It has been estimated that 54% of the decline of CVD in North America may be attributed to change in health behavior (Goldman, 1984, White et al. 1986). The decrease in cardiac risk associated with a change in health behavior has been shown to lead to sharp reductions in medical care costs and a considerable increase in life-span of many individuals (Maccoby et al., 1977; Blackburn, 1985).

Looking specifically at the risk factors which the Heart Smart Cooking Program refers to, various Canadian and American studies estimate that 30% of CVD is attributed to an increase in blood pressure, 15% to an increase in cholesterol levels and a major percentage associated with obesity.

In a summary of overall prevalence of CVD risk factors for Canada, (White et al., 1986), 18% of respondents reported having elevated blood pressure, 45% reported having elevated blood cholesterol, 34% reported being over their ideal body weight and 58% reported being physically inactive. The Heart

Health Survey performed in Manitoba, in 1991, indicates similar findings in that 17% of Manitobans had high blood pressure, 44% of the respondents had elevated blood cholesterol and 38% of respondents were overweight/obese.

It is well known that dietary intake affects blood pressure, blood cholesterol and weight, three major risk factors for CVD (Jeffery, 1988; Fraser, 1986; Gotto, 1983), and that these are modifiable through a primary prevention health education program such as the Heart Smart Cooking Program (White et al., 1986). The impact therefore, of a health education program such as the Heart Smart Cooking Program, upon the reduction of several risk factors for CVD, has enormous potential.

The impact of the Heart Smart Cooking Program was measured by the collection and data analysis of data regarding attitude, knowledge and food selection behavior. Each of these variables will be considered with respect to the data collected and the implications of this data based upon the forementioned impact potential of the program upon risk factors for CVD. Implications regarding various biodemographic data which apply to all three variables will then be discussed.

Considering first the variable of knowledge, a predisposition to behavior change, knowledge mean scores did change in that there was an overall increase in mean scores for knowledge from pre-test to post test and one month follow

up. The Heart Smart Cooking Program did demonstrate an impact upon knowledge of course participants. The program can therefore be instrumental in reducing the risks of CVD. The linking of knowledge change to behavior change is demonstrated by several learning theorists.

Knowledge about, or "knowing about" as Watson (1979) refers to it, is the first stage of learning reached when the learner is aware of a concept's existence but is not necessarily in a state of readiness to use a new skill. Information must be provided to the participant to become personally meaningful and predispose a person to change behavior (Farquhar, 1984). Green's (1980) PRECEDE model, at the first stage, discusses the predisposing factors such as a person's knowledge, beliefs and attitudes and how these facilitate personal motivation to change. While knowledge is not by itself a guarantee of behavior change, it is an important complement to enabling and maintaining behavior.

Considering the second variable attitude, which can lead, to a predisposition to behavior change, a change in attitude towards food did occur. There was an increase in mean scores for attitude from pre-test to post test and one month follow up. Attitude scores were generally high at the pre-test interval allowing little room for improvement. The Heart Smart Cooking Program did demonstrate an impact upon attitude of course participants. Like knowledge, attitude is an important complement to enabling and maintaining behavior. The

program can therefore be instrumental in reducing the risk factors for CVD. The linking of the change in attitude to the change in behavior is demonstrated by several learning theorists.

Watson's (1979) third stage of learning discusses belief changes, likened to affective learning in that concepts will not be applied very readily if they are not accepted. Farquhar's (1984) stage of learning refers to motivation and providing incentives relative to appropriate communication to facilitate people to perceive the personal and social benefits to change behavior. Green's (1980) predisposing factors represent a very critical level of learning to change behavior because many people must fully understand logic and benefits to change before accepting new ideas and forms of behavior.

Considering the third variable, food selection behavior, the Heart Smart Cooking Program did have a positive influence upon self-reported behavior with subjects overall experiencing a significant increase in mean scores from pre-test to one month follow up. The Heart Smart Cooking Program can therefore be instrumental in reducing risk factors for CVD.

Farquhar's (1984) stages of learning discusses learning a skill through training. As changes in complex habits of daily living are being promoted, it is necessary to provide skills training through step-by-step instruction on how to make the necessary changes. Green (1980) also discusses the importance of skills building in his enabling factors. There must be an opportunity provided to participants to practise their newly acquired skills.

The implications regarding the positive impact of the Heart Smart Cooking Program upon attitude towards food, knowledge about food and food selection behavior will now be considered with respect to the demographic data: age, gender, smoking status, health status, adherence to a dietary regime, risk of heart disease, exercise level and social norm influence.

The age-related results of this study suggest that health education programs be targetted at the 20-40 year old participants though age had little effect upon mean score changes for any of the three variables of knowledge, attitude and behavior. The 40-49 year old participants demonstrated the highest mean score for knowledge at the pre-test interval. However, it was the 50-59 and 60-79 year olds who had the highest mean score for food selection at the pre-test levels.

Gender-related results of this study suggest that males be the prime target for a nutrition education program. They are at the greater risk for CVD than females and their mean

scores for all three variables were lower than females at the pre-test. Knowledge mean scores for males increased significantly from pre-test to post test however decreased at the one month follow up.

The results related to the smoking status of respondents point towards health education programming for smokers. Although they represented a small contingent in this study group, smokers demonstrated the lowest mean score for knowledge at the pre-test and did not experience a significant increase in mean scores for knowledge, attitude, nor behavior. Interestingly, non-smokers demonstrated the lowest mean score for attitude at the pre-test but saw a significant increase in mean score for behavior from pre-test to one month follow up.

Those results related to the self-reported health status of respondents, suggest that participants be screened for health education programming such that respondents with poor/fair health status be targetted. This group of respondents demonstrated the lowest mean score for attitude at the pre-test and showed little change in attitude towards food. Respondents reporting a very good health status may require a particular length of program or emphasis upon the sustaining of health-enhancing behaviors. These respondents demonstrated the highest mean score for attitude, knowledge and behavior at the pre-test. However, mean scores for attitude and behavior dropped off at the one month followup for the respondents with very good health status.

The results from the study for respondents adhering to a dietary regime at the time of the study, suggest that health education programming examine their specific learning needs to accommodate the longer learning response and the recidivism at the one month follow up. Respondents following a dietary regime (36.21%) demonstrated the highest pre-test mean scores for attitude, knowledge and behavior. Mean scores for attitude and knowledge did not significantly increase until the one month followup suggesting that more time was required by these respondents to make these changes. All mean scores for behavior dropped at the one month interval with those participants on a diet experiencing a greater drop in mean score for behavior.

Heart disease risk-related results from the study suggest that programming in health education may be directed at those participants who have a somewhat or not very serious risk and still achieve significant decrease in CVD risk factors. These respondents, making up 63.8% of the group, demonstrated a significant increase in mean scores for food selection behavior. A large female portion of the study group did indicate that their 'raison d'etre' at the cooking program was to improve upon their food selection and cooking skills not only for themselves, but also for their families and in particular, their spouses.

The group self-reporting high risk of CVD and the group reporting no risk at all, that being 18.97% of the group, saw

mean scores increase for behavior though not at a level of significance.

The exercise-related results of the study indicate that there is little that can be implied from these results towards health education program planning. The respondents who followed a more moderate exercise routine, 1-3 times per week represented by 60.34% of the study group, demonstrated the highest pre-test score for attitude however did not experience a significant increase in mean score for attitude at the post-test and one month followup. Participants exercising greater than 3 times per week demonstrated the highest mean scores for knowledge and behavior at the pre-test, but again did not demonstrate a significant increase in mean scores at post test and one month follow up.

Those results relating to the influence of a participant's significant other, their social norm influence, indicate that participants should be encouraged to attend a health education program to fulfill their own goals rather than someone else's. Those participants with a strong social norm influence demonstrated the highest mean score for food selection behavior but experienced a significant decrease at the one month testing interval. Those respondents with a weak social norm influence experienced a significant increase in mean score for food selection behavior from pre-test, to post test and an additional increase at the one month follow up.

Recommendations

Several recommendations have evolved from the recent literature regarding the influence of various programs upon health-related behavior and from the data presented in this preliminary evaluation of the Heart Smart Cooking Course. Recommendations will be discussed with reference first to marketing of the program, instruction of the program and lastly with reference to the respondents themselves.

Marketing

The campaign should continue to include brochures distributed by community centers and local schools since 34.5% of the participants indicated that this medium had attracted them to program. The newsprint should also continue to be a medium for communication since 25.4% of the participants indicated this had been their recognized medium.

The data from this study and the literature review regarding the risk of heart disease indicate that participants with some degree of risk would be more likely to change attitude, knowledge and behavior. A recommendation would be to contact local hospital outpatient departments or clinical dietitians to promote the program for high risk participants, that is with serum cholesterol levels greater than a certain value, or blood pressure greater than a certain value.

Marketing of the program could be directed to the wives of high risk men. Marketing could then be directed to this group of individuals who require the skill development to complement their role as home economists. The data from this study demonstrated that these women were highly motivated with high mean scores for attitude and knowledge. The program could therefore devote more time and content to the skills development portion of the program. Several participants on their evaluation forms commented upon the lack of 'hands on' time in the program despite the program nomenclature.

Instruction of the Program

A brief discussion with each of the program instructors of the seven groups of participants indicated that instructors' qualifications varied despite all being home economists. The range of qualifications included administrative dietitians, a clinical dietitian, a clothing and textiles major, and a graduate student in zoology. Through observation and discussion with the instructors it became evident that the course outline was often used only as a loose guideline with sections added or deleted as the instructor deemed necessary. A recommendation therefore would be to plan a training program for instructors to review of the content of the manual, the resources available to the instructors, and model the presentations. Instructors should be encouraged to follow the lesson formats as closely as possible to ensure consistency from course site to course site.

Class Participants

The literature, and data presented by this study, both indicate the need for a screening of the participants to allow for a more homogeneous group of participants. This would allow the instructors to more closely follow the lesson format as opposed to deleting and adding sections according to the individuals' needs. When consideration is given to the

various pre-test scores for variables such as health status, risk of heart disease, and gender, a recommendation is put forward to group similar participants together by utilization of a pre-test and perhaps interview.

The results presented by former smokers lead to the next recommendation that this program might be offered in conjunction with a smoking cessation class in that former smokers who demonstrated a significant increase in mean score for attitude but had lower mean scores for knowledge and food selection behavior.

Consideration might be given to the recommendation to hold this class for participants following some type of dietary regime, in particular weight loss, as an adjunct to the information already available to those participants. From the data presented, those participants following a dietary regime at the time of the survey demonstrated a significant increase in attitude mean scores.

Conclusion

The purpose of this study was to conduct an evaluation of the Heart Smart Cooking Course program, a public education program of the Heart and Stroke Foundation of Canada. The evaluation was designed to determine whether the short term goals of the Heart Smart Cooking Program were met and whether there was an increase in health enhancing behaviors such as the appropriate purchase, selection and preparation of food.

With regards to the short term goals of the program, this program was designed to promote a basic understanding of nutrition, healthy eating and healthy meal preparation through experiential skill building (Canadian Heart Foundation, 1988).

It has been demonstrated through the various literature reviewed that lifestyle change programs can actually change people's behavior to improve their dietary habits and therefore reduce their risk of CVD.

The Heart Smart Cooking Program, according to the data presented, has shown itself to be that type of lifestyle change program in that attitude, knowledge and food selection behaviors all changed in a positive direction after completion of the Heart Smart Cooking Program thus meeting the short term goals of the program.

In conclusion, the Heart Smart Cooking Program according to the data collected and analyzed, demonstrates that attitude, knowledge and food selection behavior did improve after completion of the Heart Smart Cooking Course. This improvement in health-enhancing behaviors can lead to a decrease in risk factors for CVD such as those associated with blood pressure, blood cholesterol and weight.

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APPENDIX 1
LETTER OF CONSENT



THE UNIVERSITY OF MANITOBA

FACULTY OF EDUCATION
Department of Curriculum:
Mathematics and Natural Sciences

Winnipeg, Manitoba
Canada R3T 2N2

Fall, 1990

Dear Sir/Madam,

The subject of health is of concern to all of us. National health and medical groups are increasingly directing their attention to preventive programs, in order to raise the level of awareness among the general public about illnesses and the effects of lifestyle on our health.

The Heart and Stroke Foundation of Manitoba is among these groups developing health education programs such as the Heart Smart Cooking Course, to promote the control and prevention of cardiovascular disease.

I would like to invite you to participate in a study sponsored by the Heart and Stroke Foundation of Canada. The study will evaluate the effects of the Heart Smart Cooking Course on participants' attitudes, knowledge and behavior. I am a graduate student at the University of Manitoba and will be conducting this research project as partial fulfilment of the requirements for a Masters' of Education Degree.

Those of you who kindly decide to participate will be requested to complete three questionnaires each of which will take approximately 15 minutes to complete. In addition, one month after the program you will receive in the mail a followup questionnaire along with a stamped self-addressed envelope.

All survey research information is CONFIDENTIAL. Questionnaires are coded only in order that I may match your response to the four questionnaires.

A copy of the results of the evaluation will be sent out to you if you call or write the Heart and Stroke Foundation, 301-352 Donald Street, Winnipeg, MB, R3B 2H8, phone number 949-4000.

Please direct any questions about the study to me or my thesis advisor, Dr. Dexter Harvey, at the University of Manitoba, Faculty of Education by calling 474-9013.

I would appreciate your participation in this study but realize that it is your right to refuse to do so or to discontinue such participation at any time without penalty or prejudice.

I agree to participate in the study.

Signature of Participant

Hélène Beauchemin

Signature of Researcher

Date

APPENDIX 2
PRE-TEST

HEART SMART COOKING COURSE: PARTICIPANT PRE/POST COURSE SURVEY

LOCATION OF SURVEY: _____

REGION:

SURVEY NO.:

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12	1	1
13	1	1
14	1	1
15	1	1
16	1	1
17	1	1
18	1	1
19	1	1
20	1	1

DIRECTIONS: For each statement, indicate your level of agreement or disagreement by TOTALLY FILLING IN THE CIRCLE corresponding to the response you choose. ERASE mismarks completely - MAKE NO STRAY MARKS.

CORRECT

INCORRECT

BASE YOUR RESPONSE FOR THIS SECTION ON THE FOLLOWING SCALE:

- 35. On average I eat at "Fast Food" Restaurants (i.e., McDonald's, Burger King, etc.)
- 36. On average I eat at "Family" Restaurants (i.e., Swiss Chalet, Red Lobster, Bonanza, etc.)
- 37. On average I eat at "Snack Shops" (i.e., ice cream, donut shops, etc.)
- 38. On average I eat at "Fine Dining" Restaurants (The Keg, Crock and Block, etc.)

LESS THAN ONCE PER MONTH	ONCE PER MONTH	2-3 TIMES PER MONTH	4-5 TIMES PER MONTH	MORE THAN 5 TIMES PER MONTH
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BASE YOUR RESPONSE FOR THIS SECTION ON THE FOLLOWING SCALE:

- 39. I eat broiled or poached fish
- 40. I eat poultry with the skin removed
- 41. I eat broiled red meat
- 42. I eat beans and/or lentils
- 43. I eat sauces or gravies

LESS THAN ONCE PER WEEK	ONCE PER WEEK	2-3 TIMES PER WEEK	4-5 TIMES PER WEEK	MORE THAN 5 TIMES PER WEEK
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BASE YOUR RESPONSE FOR THIS SECTION ON THE FOLLOWING SCALE:

- 44. On average I eat fruit
- 45. On average I eat vegetables
- 46. On average I eat breads and cereals
- 47. On average I drink milk and/or eat milk products
- 48. I plan meals for myself and/or for my family (Fill in appropriate circle below)

LESS THAN ONCE PER DAY	ONCE PER DAY	2-3 TIMES PER DAY	4-5 TIMES PER DAY	MORE THAN 5 TIMES PER DAY
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

more than 1 week in advance
 1 week in advance
 3-4 days in advance
 one day in advance
 I do not regularly plan meals

APPENDIX 3
POST TEST

HEART SMART COOKING COURSE: PARTICIPANT PRE/POST COURSE SURVEY

LOCATION OF SURVEY: _____ REGION:

SURVEY NO.: PAGE NO.: CODE NO.:

SURVEY NO.	PAGE NO.	CODE NO.
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35	1	35
36	1	36
37	1	37
38	1	38
39	1	39
40	1	40
41	1	41
42	1	42
43	1	43
44	1	44
45	1	45
46	1	46
47	1	47
48	1	48

DIRECTIONS: For each statement, indicate your level of agreement or disagreement by **TOTALLY FILLING IN THE CIRCLE** corresponding to the response you choose. ERASE mismarks completely - MAKE NO STRAY MARKS.

CORRECT

INCORRECT

BASE YOUR RESPONSE FOR THIS SECTION ON THE FOLLOWING SCALE:

- 35. On average I eat at "Fast Food" Restaurants (i.e., McDonald's, Burger King, etc.)
- 36. On average I eat at "Family" Restaurants (i.e., Swiss Chalet, Red Lobster, Bonanza, etc.)
- 37. On average I eat at "Snack Shops" (i.e., ice cream, donut shops, etc.)
- 38. On average I eat at "Fine Dining" Restaurants (The Keg, Crock and Block, etc.)

LESS THAN ONCE PER MONTH	ONCE PER MONTH	2-3 TIMES PER MONTH	4-5 TIMES PER MONTH	MORE THAN 5 TIMES PER MONTH
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BASE YOUR RESPONSE FOR THIS SECTION ON THE FOLLOWING SCALE:

- 39. I eat broiled or poached fish
- 40. I eat poultry with the skin removed
- 41. I eat broiled red meat
- 42. I eat beans and/or lentils
- 43. I eat sauces or gravies

LESS THAN ONCE PER WEEK	ONCE PER WEEK	2-3 TIMES PER WEEK	4-5 TIMES PER WEEK	MORE THAN 5 TIMES PER WEEK
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BASE YOUR RESPONSE FOR THIS SECTION ON THE FOLLOWING SCALE:

- 44. On average I eat fruit
- 45. On average I eat vegetables
- 46. On average I eat breads and cereals
- 47. On average I drink milk and/or eat milk products
- 48. I plan meals for myself and/or for my family (Fill in appropriate circle below)

LESS THAN ONCE PER DAY	ONCE PER DAY	2-3 TIMES PER DAY	4-5 TIMES PER DAY	MORE THAN 5 TIMES PER DAY
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

more than 1 week in advance
 1 week in advance
 3-4 days in advance
 one day in advance
 I do not regularly plan meals

APPENDIX 4
ONE MONTH FOLLOW-UP

APPENDIX 5
PARTICIPANT INFORMATION (DEMOGRAPHICS)

HEART SMART COOKING COURSE: PARTICIPANT INFORMATION

LOCATION OF SURVEY: _____

REGION:

SURVEY NO.:

PAGE NO.:

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SURVEY NO.	PAGE NO.	CODE NO.			
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4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9

This survey is designed to provide the Heart and Stroke Foundation of Canada with information that will assist in developing future programs and in making any changes to the current cooking program. The information will remain strictly confidential. Your participation is greatly appreciated.

DIRECTIONS: For each of the following questions, please indicate your answer by **TOTALLY FILLING IN THE CIRCLE** that most closely applies to you. **ERASE** mismarks completely - **MAKE NO STRAY MARKS.**

CORRECT ●

INCORRECT ✓ ✗ ○ ◐ ◑

1. What is your age category?

- 20-29
- 30-39
- 40-49
- 50-59
- 60-69
- 70-79
- 80 +

2. What is your gender?

- male
- female

3. What is your occupation status?

- student
- houseperson
- retired person
- unemployed person
- self-employed person
- part-time employed
- full-time employed

4. What is your household income?

- \$15,000 and less
- \$16,000 - \$20,000
- \$21,000 - \$30,000
- \$31,000 - \$40,000
- \$41,000 - \$50,000
- \$51,000 and over

5. What is the level of education you completed?

- Grades 1-6
- Grades 7-9
- Grades 10-12
- Technical/Vocational
- Some University training
- Undergraduate University degree
- Post Graduate university degree

6. Do you currently smoke?

- Yes
- No

7. If you used to smoke, how long has it been since you quit?

- less than 1 year
- 1-3 years
- 3 or more years

8. Do you currently exercise (i.e., walk, swim, jog, cycle) regularly on a weekly basis?

- Yes
- No

9. If you answered yes to question 8, do you exercise

- less than once a week
- 1-3 times a week
- more than 3 times a week

10. On average would you say you exercise at one time

- less than 30 minutes
- 30 minutes - 1 hour
- more than 1 hour

11. What would you say is your most common activity(ies) (You may fill in more than one response)

- walk
- swim
- jog
- cycle
- organized sport
- OTHER

If OTHER, please SPECIFY on LAST SHEET of survey.

12. How often do you cook meals in your household?

- more than 4 meals per week
- 3-4 meals per week
- 1-2 meals per week
- less than 1-2 meals per week

13. On average how many people do you cook for?

- No one
- 1 person
- 2 people
- 3 people
- 4 people or more

14. Do you cook for anyone who is on a special diet (i.e., diabetic, low salt, low fat, weight loss)?

- Yes
- No

15. If you answered yes to question 14, what type of diet is the person following? (You may FILL IN more than one response)

- diabetic
- low salt
- low fat
- weight loss
- OTHER

If OTHER, please SPECIFY on LAST SHEET of survey.

16. How do you feel about the state of your physical health compared to other people your age?

- excellent
- very good
- good
- fair
- poor

17. Do any of the following people think that you should alter your eating habits to improve your health? (You may FILL IN more than one response)

- self
- spouse
- family
- co-workers
- boss
- no one

APPENDIX 6
LETTER TO INSTRUCTORS



HEART
AND STROKE
FOUNDATION
OF MANITOBA

301 Canada Bldg.
352 Donald Street
Winnipeg, Manitoba
R3B 2H8

Tel: (204) 942-0195
Fax: (204) 957-1365

CHAPTERS:

203-42 McTavish Ave., E.
Box 33
Brandon, Manitoba
R7A 5Y6

Tel: (204) 727-6971

Box 392
Dauphin, Manitoba
R7N 2V2

Tel: (204) 638-9746

Box 111
Thompson, Manitoba
R8N 1M9

Tel: (204) 778-7162

September 5, 1990

Dear Heart Smart Cooking Course Instructor:

I would like to invite you to participate in a first of its kind study sponsored by the Heart and Stroke Foundation of Canada. The study will be evaluating the effects of the Heart Smart Cooking Course on participants', attitudes, knowledge and behavior.

As a graduate student at the University of Manitoba I will be conducting this research project as partial fulfilment of the requirements for a Masters' of Education degree.

May I ask your assistance in administering the questionnaire to your class participants?

In 1-2 weeks time (depending upon when your course starts) you will receive in the mail a package containing:

- a) 15 consent forms
- b) 25 number-coded envelopes
- c) 1 participant information sheet
- d) 1 self-addressed envelope

Each envelope will contain: 1) a pre-test; 2) a post-test and 3) a participant information form.

Please distribute and collect on the same day of class the forms and questionnaires in the following format:

CLASS 1:

- 1) Hand out consent form first and collect immediately.
- 2) Write a participant name on each envelope near the code number (in pencil).
- 3) Hand out pre-test giving coded sheets to the participant whose name matches that code ie. Jane Doe must always receive forms with 001 code from the envelope with her name on it.
- 4) Complete the list of participant names, addresses, postal codes and code numbers.

NOTE: I will have completed the coding at the top of the answer sheet. Answers must be in pencil with any stray marks completely erased. I would suggest that one page be handed out at a time so that you can be filing completed sheets back into the envelope while Page 2 is being completed.

... 2

CLASS 2 OR CLASS 3:

Hand out participant information forms being careful to give 001 to Jane Doe. Return forms to the correct envelopes.

CLASS 4:

Hand out the post-test being careful to give 001 to Jane Doe. Return forms to the correct envelopes.

Please mail all 15 participant envelopes in the stamped self-addressed envelope provided after this class (even if a fifth class is planned).

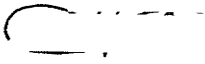
SOME NOTABLES:

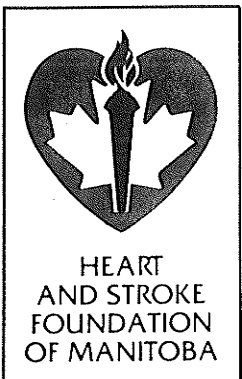
- Each participant envelope before you mail them back to me should contain 1) a consent form 2) a pre-test 3) a post-test 4) a participant information form.
- Envelopes must have a name beside the code number. This will make it much easier for you to distribute the right forms to the right person.
- Have participants fill out questionnaires at the beginning of class (for those who leave early) except for the post-test which must be completed at the end of the class.
- Remind the class that this is the first evaluation of the Heart Smart Cooking Course being carried out across Canada so we are all a part of history in the making!
- The participant information form may be completed at the first class if this suits your schedule better.
- All forms are coded so that information remains confidential except to me.
- The participant information sheet with names, addresses and postal codes is vital to the last phase of the study, the post-post test sent out one month after the the last class.

I will be contacting you within the next two weeks to answer any of your questions. In the meantime, you may call me at the University of Manitoba 474-9013, at home 231-1957 or leave a message with Tina Wiebe 949-2000 with any questions or concerns you have.

Thanks in advance for your assistance and class time in completing this first evaluation of the Heart Smart Cooking Course!

Sincerely,


Helene Beauchemin, R.D.
Graduate Student in Health Education



August 24, 1990

301 Canada Bldg.
352 Donald Street
Winnipeg, Manitoba
R3B 2H8

Tel: (204) 942-0195
Fax: (204) 957-1365

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Dear Heart Smart Cooking Course Instructor:

I would like to invite you to participate in a study sponsored by the Heart and Stroke Foundation of Canada. The study will be evaluating the effects of the Heart Smart Cooking Course on participants' attitudes, knowledge and behavior.

As a graduate student at the University of Manitoba I will be conducting this research project as a partial fulfilment of the requirements for a Masters' of Education degree.

I would like to attend your Heart Smart Cooking Course and administer questionnaires as follows:

Class 1: consent form and pre-test

Class 2: participant information form

Class 4: post-test

All forms will be coded so that information remains confidential except to me. At the second class I will be asking you for a copy of your class list which includes names, addresses and postal codes so that I can send out post-post tests one month after the course has ended.

I will be contacting you within the next week to answer any of your questions. In the meantime you may call me at the University of Manitoba 474-9013, at home 231-1957 or leave a message with Tina Wiebe 949-2011 with any questions or concerns which you may have.

Thanks in advance for your assistance in this first evaluation of the Heart Smart Cooking Course. The results will be available for national distribution late March 1991.

Sincerely,

Helene Beauchemin, R.D.
Graduate Student in Health Education

APPENDIX 7
COVER LETTER FOR ONE MONTH FOLLOW-UP



November, 1990

Dear Sir/Madam:

I would like to take this opportunity to personally thank you for your participation in the Heart Smart Cooking Course survey thus far.

Enclosed please find the final survey which should take about 10 minutes to complete. Please return it on or before December 3, 1990. It is very important that:

- no stray marks are made on the form
- only pencil is used
- mistakes are well erased
- that the form is not folded in any way.

The survey can be returned to me in the self-addressed, stamped envelope as soon as it is completed.

Again, I would like to remind you that all research information is confidential. Questionnaires are coded so that I may match your response to the four questionnaires. Completion of this fourth survey will ensure that all of your surveys are used in the study.

A copy of the results of the evaluation will be sent out to you if you call or write Tina Wiebe at the Heart and Stroke Foundation, 301-352 Donald Street, Winnipeg R3B 2H8, phone number 949-2011.

Please direct any questions about the study to me or my advisor, Dr. Dexter Harvey at the University of Manitoba, Faculty of Education by calling 477-9013.

Seasons Greetings and thanks again for your time and participation!

Helene Beauchemin,
Graduate Student
in Health Education

301 Canada Bldg.
352 Donald Street
Winnipeg, Manitoba
R3B 2H8

Tel: (204) 949-2000
Fax: (204) 957-1365

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APPENDIX 8
REMINDER POST CARD

REMINDER: POSTCARD

One week ago a questionnaire seeking your assistance in the Heart Smart Cooking Course evaluation was mailed to you. The questionnaire takes only 10 minutes or less to complete. We would greatly appreciate it if you would take the time to complete it today and drop it into the mail.

If by chance you did not receive the questionnaire, or if it was misplaced, please call me collect and I will forward another one to you immediately.

If you have already sent in the questionnaire, thank you again for your participation!

Thank you for your cooperation,

Helene Beauchemin
Graduate Student in Health Education