A STUDY OF THE IMPACT OF LIFESTYLE CLINIC ATTENDANCE ON INDIVIDUAL BEHAVIOUR MODIFICATION

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A Study of the Impact of LifeStyle Clinic Attendance on Individual Behaviour Modification

by

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Abstract

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Cardiovascular diseases (CVD) accounted for 36% of all deaths in Canada in 1997 (Heart and Stroke Foundation of Canada, 2000). Different methods of communication have been employed to increase CVD risk awareness. The purpose of this study was to generate knowledge regarding the association between one method of communication, interpersonal communication (specifically LifeStyle (LS) Clinics) and individual behaviour modification. This study also served as a pilot project for the province-wide evaluation of this communication approach by the Newfoundland & Labrador Heart Health Program. A quasi-experimental study with one pretest and two post-tests was conducted in Stephenville, Newfoundland and Labrador. Thirty individuals participated in this study. Consenting LS Clinic participants completed 2 pre-coded questionnaires (pre-and post-LS Clinic attendance) and were interviewed one-month post-LS Clinic. Participant responses were analyzed using SPSS 8.0. A key informant interview was conducted with the LS Clinic public health nurse. Participants modified certain lifestyle behaviours post-LS Clinic attendance, such as increasing daily physical activity levels ($p=0.015$). LS Clinic attendance, however, was not associated with a change in participants' CVD risk knowledge and attitudes. Additional variables, including: personal health; spouse's health; physicians' advice; gender; and, season of year were also associated with behaviour modification. Recommendations were suggested for the province-wide evaluation of the LS Clinics.

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CHAPTER 1: THE PROBLEM

Introduction

Despite significant declines in recent decades, cardiovascular diseases (CVD) still account for the largest proportion of death in most industrialized countries, including Canada (Heart and Stroke Foundation of Canada, 2000). Because cardiovascular diseases have strong behavioural components (e.g., smoking, diet, and physical activity), much of the emphasis in public health has focused on changing individual behaviour (Avis, McKinlay, & Smith, 1990). It is thought that by communicating health information to individuals, health promoters can enable these individuals to make more informed decisions regarding lifestyle choices (e.g., a decrease in the consumption of fatty foods) (Oldenburg, Gomel, & Graham-Clarke, 1992).

Several different methods of communication are available and have been used in many different health promotion projects; yet there is a lack of information regarding the most effective of these methods in inducing behaviour changes among individuals (Lyons & Langille, 2000). It seems rather that there is more information available as to what methods are *not* effective. Literature does suggest however, that the most commonly accepted method of communication is interpersonal communication (McAlister, 1991) which has been defined as health communication in the form of presentations; training sessions; informal networks; and/or, clinical settings (University of Toronto Website, 2001). Moreover, some recent studies (Hussain, Edvard, & Kvale, 1997; Schafer, Vogel, Viegas, & Hausafus, 1998; Stewart et al. 2001) have been able to depict the success of interpersonal communications in influencing participants to take up healthier lifestyle behaviours.

An example of interpersonal communication is the LifeStyle (LS) Clinics which the Newfoundland and Labrador Heart Health Program (NLHHP) initiated in 1993. The Clinics provide participants with information on smoking; nutrition; healthy weight; blood pressure; and, active living (Newfoundland & Labrador Heart Health Program [NLHHP] Program Overview, 1991). An evaluation report compiled by the NLHHP (Neville, Kolonel, & Grainger, 1996) depicted that 87% (13/15) of the participants reported lifestyle behaviour changes post-attendance. These preliminary findings indicate the potential of LS Clinics in promoting behaviour changes among participating individuals. However, further research is necessary to provide more precise information regarding the association between LS Clinic attendance and individual behaviour modification. Moreover, since the 1996 evaluation, the LS Clinics have grown substantially in frequency and their protocols have evolved to adapt to community needs. Given their popularity and adaptation, the NLHHP indicated an interest in developing an effective means for evaluating the LS Clinics.

This study attempted to generate more information regarding the association between interpersonal communication and behaviour modification in LS Clinic settings and also served as the pilot project for a province-wide evaluation of the LS Clinics component of the NLHHP.

Statement of the Problem

This study attempted to provide more precise information about the extent to which one form of interpersonal communication, LS Clinics, is capable of inducing lifestyle changes that will affect the prevalence of CVD. The question asked: How effective are LS Clinics in influencing participants to adopt healthy lifestyles? Given the

exploratory nature of this study and its' value to the NLHHP as a pilot study, this study attempted to verify the feasibility of this evaluation approach for a full provincial study.

Background Information

In 1989 a provincial survey known as the Newfoundland Heart Health Survey, reported 70% of Newfoundland adults as having one or more risks associated with CVD (Newfoundland Dept. of Health, 1990). The survey also indicated a considerable lack of knowledge and awareness among Newfoundlanders about lifestyle and environmental determinants of cardiovascular disease risk. In response to these alarming findings the Newfoundland and Labrador Heart Health Program was initiated in 1990. The purpose of the program was to create a community-based heart health promotion program, which would utilize the resources and peoples of a community to promote and disseminate health information to the community (NLHHP Proposal, 1991). The program was based on the relative success of larger projects such as the North Karelia Project in Finland (Puska et al. 1985); the Pawtucket Heart Health Program in Rhode Island (Carleton, Lasater, Assaf, Lefebvre, & McKinlay, 1987); and, the Standford 5 City Project in California (Flora, Maccoby, & Farquhar, 1991). All of these projects had aimed for disseminating heart health information to the general public in order to increase CVD risk awareness and to induce healthy lifestyle changes, such as smoking cessation. The programs used various methods of communication such as radio, television, newspapers, walk-in community clinics/resource centers, community meetings, and work-site programs. One approach of communication especially highlighted in these programs was risk communication, which is defined as an interactive process of exchange of information and opinion among individuals, groups and institutions (Maibach and

Holtgrave, 1995). According to the Ontario Ministry of Health (1992), risk communication is most effective when based on a thorough understanding of the community's perception of risk and when conducted in a face-to-face format.

Based on this research and on behavior change theories (such as Bandura, 1986) the NLHHP piloted LS Clinics in 1993 with the following objectives:

(i) to train community volunteers to conduct lifestyle clinics;
(ii) to provide resource materials to be used by volunteers in the clinics; and,
(iii) to provide clinic participants with information on lifestyle issues, particularly: smoking, nutrition, healthy weight, active living and blood pressure (NLHHP Demonstration Phase Report, 1996).

The original pilot-project sites were to be St. Mary's and St. Barbe. However, St. Mary's was not able to participate in the piloting of the clinics and two other communities (Port Saunders and Baine Harbour) joined instead.

Regional NLHHP staff recruited community members to volunteer through word of mouth; radio announcements; and, church bulletins. Volunteer training included: four-hour information session on current CVD statistics and high blood pressure (BP) trends; an explanation of the risk factors of CVD; and, an instruction segment for BP and body mass index (BMI) measurement. The training session was then followed by two-three hours of practice in BP measurement as well as a practice LS Clinic to allow the volunteers an opportunity to apply their skills with close supervision before holding an open public Clinic. Volunteers were also required to complete a written and practical exam. Upon successful completion, the volunteers were then awarded a "Certificate of Competency" which would be valid for one year.

The LS Clinics were successfully piloted and since then have been distributed provincially to community health regions that are taking the lead in promoting this

resource and working with volunteers to establish LS Clinics in their communities (NLHHP Demonstration Phase Report, 1996). The NLHHP activity tracking system shows that 59 LS Clinics were held during the period of September 1998 to March 2000 across Newfoundland and Labrador (NLHHP Tracking Database, 2001). Twenty-one of these LS Clinics (36%) were identified as "on-going" which indicates that the actual number of LS Clinics held during the specified period (1998-2000) is considerably higher than 59 (e.g., a site may have reported hosting a LS Clinic only once even though the LS Clinic was a monthly event and thus would be held a total of 12 times). The majority of the Clinics were held in the Western (27%) and Northern (36%) regions of Newfoundland and Labrador.

In the Stephenville area, the LS Clinics have been held bimonthly since January 2000, prior to which, they were held biannually. In Stephenville, the LS Clinic protocol has evolved to fit the needs of the community. Due to a shortage of lay volunteers, for instance, the Clinics are conducted by public health nurses. Also, in addition to BP, BMI measurements and weight checks, the nurses also measure blood sugar (BG) levels. The bimonthly LS Clinics are quite popular and report an attendance of 20-40 participants, who are recruited through word of mouth; radio advertisements; church bulletins; posters; and, meeting announcements (e.g., Women's Club).

Each LS Clinic has a different focus (e.g., CVD risk information, Breast Cancer awareness, Pap Smear information). During each Clinic, there is a 30-minute presentation on the chosen health topic. Healthy living literature pamphlets and other relevant literature is placed alongside the presentation table and participants are encouraged to pick up copies. After the presentation, the nurses measure BMI (for all

individuals over the age of 65 years), BP, and, BG levels. The BP and weight measures are recorded onto NLHHP cards which the participants are instructed to keep for their own records. Individuals identified with a high BP measurement and/or a high BG reading are referred to the Health Clinic, from which further referrals may be given for a participant to visit a physician. During some LS Clinics, fruit trays and/or vegetable trays are provided. Given the friendly ambience of the LS Clinic, a sense of friendship exists between the nurses and the participants. At the end of the Clinics, most participants remain behind to socialize with fellow attendees and a few also help out with the cleanup.

Literature Review

Search of the literature detected only one study (Neville et al., 1996), which addressed the effect of LS Clinics on inducing healthy behaviour changes. Neville et al. summarized the participation and evaluation feedback received from the three pilot LS Clinics. Key informant interviews were conducted with both volunteers and Clinic participants at all three sites. The investigators found that more than 80% of the participants reported lifestyle changes post-LS Clinic attendance including: (a) an increase in walking/exercise; (b) a decrease in salt intake; and, (c) general monitoring of diet.

The literature search identified several projects which had studied similar forms of interpersonal communication in (a) disseminating disease risk information to the public (Lasater, Lefebvre, & Carleton, 1988); and, (b) in influencing behavior changes among individuals (Hussain, Edvard, & Kvale, 1997). Lasater et al., for instance, documented the effectiveness of using volunteer-led mobile counseling services, SCOREs (Screening, Counseling Or Referral Events), in communicating cholesterol and

health weight information to the public. The SCOREs were an initiative of the Pawtucket Heart Health Project (PHHP), a community-based health promotion program initiated in 1981 in Rhode Island, USA. Over 10,000 citizens were reported to have taken advantage of the PHHP's SCORE services. The Pawtucket Heart Health Project was ultimately able to report an average of 6% serum cholesterol level reduction post-intervention (Lasater et al., 1988).

An example of the use of interpersonal communication to influence behaviour change included a community-based health promotion program in Bangladesh, where a group of researchers studied the different communication channels and their effectiveness in increasing the consumption of vitamin A rich foods in the rural communities of Bangladesh (Hussain et al., 1997). Vitamin A deficiency is a major cause of blindness among rural Bengali children even though Bangladesh reports an abundance of vitamin A rich foodstuffs in the form of leafy green and yellow vegetables. In an effort to enhance the already existing vitamin A education programs in these communities, the researchers compared and contrasted the effectiveness of media communication (i.e., community shows) to interpersonal approaches (i.e., volunteer-led community workshops with one-to-one counseling). Post-intervention, 2,011 members of the communities were randomly selected (multi-stage random sampling procedure) for interviews with the use of a structured questionnaire. The results indicated that while the community shows were able to draw larger crowds in attendance, they were not capable of influencing the desired behaviour change (increase in green leafy vegetable consumption) as much as did the community workshops. That being, "...the likelihood of consuming dark green leafy

vegetables was higher among households who were exposed to interpersonal or group communication/education" (Hussain et al., 1997, p. 108).

In another study (Schafer et al., 1998), a demonstration project was conducted to test the effectiveness of interpersonal communication (volunteer peer counseling program) for promoting breastfeeding in a community. The two-year project was conducted in Iowa, USA and included an intervention group (72) and a control group (64). The members of the control group were drawn from six counties that had received no significant breastfeeding promotion programs. All the participants were rural low-income women. The women in the intervention groups received one-to-one and informal lessons from a community volunteer both before and after the baby was born. The findings illustrated that 82% of the women in the intervention group compared with only 31% of the women in the control group, breastfed their babies. Moreover, the women in the intervention group continued breastfeeding more than twice the length of time that the control group women breastfed, 5.7 and 2.5 weeks respectively.

In another study McDonald (1999) was able to delineate the significance of interpersonal communication ("interactive channels") in recruiting individuals to participate in a smoking cessation program. McDonald conducted an analytic review of 33 published studies in order to identify potential variables that might enhance recruitment for community-based smoking cessation programs. Logistic regression was used to examine the effect of six variables on recruitment rate, including: the type of program sponsor; the type of program; program costs; use of participation incentives; whether messages were segmented by stage of change; and, the type of communication channel used to send messages. The only significant predictor of recruitment rate was the

communication channel type. McDonald concluded that interactive recruitment channels such as interpersonal communication were 66.5 (95% CI= 17.5, 253.1) times more effective than using the passive recruitment strategies, such as mass media and direct mail.

Interpersonal communication has also been associated with the increase of participants' knowledge of disease risks. In a recent study (Ribeiro & Blakeley, 2001), a semi-experimental design was used to measure any changes in the participants' knowledge of osteoporosis post-intervention. The intervention consisted of informal, volunteer-led workshops conducted in a one-to-one format which were designed to: (a) educate women about osteoporosis; (b) encourage them to take appropriate steps to prevent it; and, (c) to make informed decisions about its treatment. A group of women (59), recruited from a women's club, attended the workshop and were asked to fill out an evaluation questionnaire before, immediately after, and then six months after attending the workshop. Their scores were then compared with another group of women (79), recruited from another women's group, who had not attended any osteoporosis-related workshops. Based on the findings, Ribeiro and Blakely concluded that the health workshops were effective in increasing the participants' level of knowledge of osteoporosis. Moreover, the positive effects appeared to be long lasting since the increase in knowledge was still evident six months following workshop attendance. Response rates six months post-intervention were 74% and 62% for the intervention and control groups, respectively.

A number of studies have also evaluated the effectiveness of interpersonal communication in increasing physical activity. A group of researchers (Stewart et al.,

2001) examined the effectiveness of CHAMPS II (Community Health Activities Model Program for Seniors), a choice-based physical activity promotion program in increasing physical activity levels among seniors. The CHAMPS volunteers were trained to guide participants to choose activities that took into account their health, preferences, and abilities. The volunteers also offered information on ways for the seniors to exercise safely, motivate themselves, overcome barriers, and develop a balanced exercise regimen. The one-year randomized controlled trial included 173 participants. The collected data depicted that the intervention group participants increased their estimated caloric expenditure more than did the participants in the control group ($p<0.03$) (Stewart et al., 2001). The magnitude of increase of nearly 500 cal expended per week in various activities is equivalent to adding approximately a one-mile brisk walk five times to a person's previous physical activity regimen. The intervention was therefore capable of promoting an increase in the individuals' reported weekly physical activity. This is an important finding given the sedentary lifestyles of most Canadians and the absolute necessity of regular physical activity for health promotion and CVD prevention.

Likewise, another study (Diabetes Prevention Program Research Group, 2002) depicted that interpersonal communication was more effective in the prevention of type 2 diabetes than was the use of the drug metformin. In a large randomized controlled clinical trial, the researchers randomly assigned 3,234 nondiabetic persons with elevated fasting and post-load plasma glucose concentrations to one of three groups: (a) placebo, (b) metformin, or (c) a lifestyle-modification program with the goals of increasing weekly physical activity levels as well as changing diet. The standard lifestyle recommendations were provided in the form of written literature and in 20-30 minute

individualized information sessions. The incidence of diabetes was reduced by 58 % with the lifestyle intervention and by 31% with metformin, as compared with placebo.

The existing literature therefore provides some evidence on the ability of interpersonal communication to influence lifestyle behaviour changes. More specifically, literature to-date illustrates the idea that interpersonal communication approaches can be successful in the prevention of various conditions and diseases and are not limited to the area of CVD prevention alone. The literature also indicates that interpersonal approaches can increase knowledge levels about disease (Ribeiro & Blakely, 2001) as well as promote healthy behaviors (i.e., breastfeeding) which may prevent disease onset (Schafer et al., 1998).

Some study findings are strengthened through the use of control groups and the randomized allocation of group participants (Stewart et al., 2001; Diabetes Prevention Program Research Group, 2002). Most studies were similar to the NLHHP LS Clinic protocol because of their emphasis and reliance on community volunteers (Hussain et al., 1997; Schafer et al., 1998; Ribeiro & Blakely, 2001). However, some limitations were associated with the studies. Large, complex multi-component trials, like the Pawtucket Heart Health Project, can mask subgroup effects, and the main findings often do not tell the whole story (Koepsell, Diehr, Cheadle, & Kristal, 1995). For instance, as these programs simultaneously utilize many different channels to communicate information to the community, it is often difficult to distinguish the outcomes of one specific method of intervention. Likewise, Hussain et al. (1997) did not take into account the fact that participants reporting increases in the consumption of vitamin A rich foods may have been influenced by the media channels as well as the interpersonal communication

approaches, as these individuals may have attended both interventions and thus been influenced by both methods. Similarly, Ribeiro and Blakely (2001) reported high attrition rates among both the experimental group (17%) and the control group (35%). Moreover, the experimental and control group members were not completely homogenous, differing in their original knowledge of osteoporosis and their use of calcium and vitamin D supplements. Another limitation was the choice of study participants, as some studies focused only on vulnerable (e.g., elderly) or high-risk populations (Stewart et al., 2001; Diabetes Prevention Program Research Group, 2002).

In conclusion, the reviewed literature has focused on the effectiveness of different approaches of interpersonal communication in the prevention of various debilitating diseases (e.g., osteoporosis, blindness, and type 2 diabetes). There is a lack of information however, focusing specifically on the effectiveness of the LS Clinic approach in influencing behaviour modification, as a primary prevention of CVD. Research which provides more information about the relationship between LS Clinic attendance and individual behaviour changes is therefore warranted and necessary as CVD continue to be one of the leading causes of death in Canada.

Conceptual Framework

Individuals are social beings who derive their sense of self and personal efficacy from others through interpersonal exchanges. This interpersonal environment provides the means, models, reinforcements, and resources from which persons can learn about themselves and can affect their health behaviour and health outcomes (NLHHP Program Proposal, 1991).

The Social Cognition Theory (SCT) addresses both the psychosocial dynamics influencing health behaviour and the methods of promoting behavioral change. It emphasizes that a person's behaviour and cognitions affect future behaviour. In this way, SCT not only explains how people acquire and maintain certain behavioural patterns but also provides the basis for intervention strategies.

Psychologists have been developing the SCT for well-over five decades. Milestone publications (developments) by Mischel (1973) and Bandura (1977, 1986) formulated a number of SCT constructs that are important in understanding and intervening in health behaviour. Examples include: (1) observational learning (behavioural acquisition that occurs by watching the actions and outcomes of other's behaviours) and, (2) reciprocal determinism (the dynamic interaction of the person, the behaviour, and the environment in which the behaviour is performed) (Glanz, Lewis, & Rimmer, 1997). In addition, one of the major environmental factors (variables external to the person) which can influence behavior is reinforcement (social support received for participating in the behaviour). Health educators and behavioural scientists have used SCT ideas creatively to develop procedures or techniques that influence underlying cognitive variables (individuals' confidence in performing a behaviour), thereby increasing the likelihood of a behavioural change.

The NLHHP utilized strategies supported by the SCT in the development of health promotion projects (LS Clinics) targeted at individual behavior change (NLHHP Program Overview, 1991). For instance, individual self-efficacy is a central concept in social cognition theory and is defined as "...confidence a person feels about performing a particular activity, including confidence in overcoming the barriers to performing that

behavior" (Glans et al., 1997, p. 27). Bandura (1986) proposed that self-efficacy is the *most* important prerequisite for behavioural change, because it affects how much effort is invested in a given task and what level of performance is attained.

Efficacy is enhanced when individuals experience: (1) success in engaging in behaviour, and (2) social reinforcement for the behaviour. LS Clinics therefore aimed to: (1) increase the likelihood that an individual experiences success within their endeavors (small; realistic goals for weight loss), and (2) expose individuals to environmental variables which will support the desired behaviour (peer model behavior by other individuals and community members similar to themselves).

Purpose

The primary purpose of this study was to: (1) describe LS Clinic participants' CVD related knowledge, behaviours, and attitudes prior to and after the LS Clinic visit; (2) describe participants reported behaviour changes and their reasons for them, following attendance at a LS Clinic; and, (3) to better understand the impact of LS Clinic attendance on individual behaviour modification. The ultimate purpose of this study was to explore the feasibility of this (pre- and post- LS Clinic attendance test) approach for evaluating the effectiveness of LS Clinics in inducing behaviour change, on a provincial basis.

CHAPTER 2: METHODS AND PROCEDURES

Research Design

The researcher conducted a quasi-experimental study with one pretest and two post-test interviews with study subjects. As a qualitative addendum to this study, a key informant interview (Appendix I) was conducted with the public health nurse administering the Stephenville LS Clinics. The purpose of this interview was to better understand the Stephenville LS Clinic protocol. As mentioned previously, each community has adapted the protocol to suit their needs. As well, the interview was planned to enable the researcher to familiarize the public health nurse with the purposes of this study. The LS Clinic public health nurse was contacted by the researcher, post-receipt of approval from the Human Investigation Committee and six weeks prior to the anticipated date for data collection. During this telephone conversation, the study objectives were explained and permission was sought for the researcher to send out an explanation letter (Appendix A) and a consent form (Appendix B) to the nurse. After receiving the nurses' consent for participation, the researcher then scheduled an interview date with the nurse. The researcher arrived in Stephenville, Newfoundland, one day before the scheduled LS Clinic and conducted the key informant interview. After conducting the interview, the researcher reminded the nurse of the participant recruitment procedures and answered any questions.

Upon arriving at the Stephenville LS Clinic, individuals were approached by the nurse, who briefly introduced this study and its' intent. The participants were then asked if they would be willing to meet with the researcher to learn more about the study. The willing participants were then approached by the researcher who explained the study in more detail, answered any relevant questions and obtained informed consent from the

participant in order to administer the first survey (Appendix E). Participants were offered the option of having the survey questions read to them by the researcher in an interview format to facilitate participants with reading difficulties. Two onsite surveys were then administered, one before the participants attended the LS Clinic session and the second, immediately after the participants attended the LS Clinic session (Appendix F). One-month post LS Clinic attendance, study participants were contacted at their residence and interviewed using a structured script (Appendix G). Many participants requested call backs and for this reason some individuals were contacted up to a week after the initial telephone contact. As a time span of approximately one month had been set for this study, these individuals were kept in the study results. Participants who were not reached two (2) weeks after initial telephone contact, were removed from the study. Thus the study was designed to describe participants' CVD related behaviors, knowledge, and attitudes during three different timeframes: Timeframe 1 (T1) prior-to LS Clinic attendance; Timeframe 2 (T2) immediately post-LS Clinic attendance; Timeframe 3 (T3) one-month post-LS Clinic attendance; and, any differences that may have occurred between the three frames (T1-T2, T1-T3, T2-T3).

Setting

The study was conducted in Kippen's community, Stephenville, Newfoundland and Labrador. Stephenville was chosen as a study site as it was the only site to continue holding LS Clinics through the data collection period of this stud y (summer 2001). The key informant interview was held a day before the scheduled LS Clinic in the Kippen's Community Health Clinic, Stephenville, Newfoundland and Labrador. The LS Clinic was held at its' designated location: Kippen's Community Center, Stephenville,

Newfoundland and Labrador. The surveys were administered in a large room in the Community Center with tables evenly placed around. Participants chose their own seating and a private office was offered to all participants requiring more privacy. All completed surveys were handled only by the researcher. Telephone interviews with the participants consisted of calls which were placed to their homes.

Sample

The researcher went through the exercise of sample size calculation; met with a biostatician and worked out numbers for the minimum number of participants necessary in order to validate statistical tests. A sample size of a minimum of 30 individuals was recommended for the anticipated statistical data analysis. The target population for this study was all individuals who attended LS Clinics. The study sample consisted of individuals who attended the LS Clinic and agreed to participate in this project. The original sample included 34 participants. Four individuals, however, were lost to follow-up. The final convenience sample consisted of 30 subjects, 23 females and 7 males, who were chosen according to the following criteria:

1. Male or female over the age of 19 years;
2. Participant at the Kippen's Community LS Clinic;
3. Resident of Stephenville;
4. Able to speak and understand the English language; and,
5. Available for contact four weeks post-initial interview.

Ethical Review

The procedures of obtaining free and informed consent, preservation of subject anonymity, and assessment of risks and benefits to subjects follow the guidelines set by the Human Investigation Committee, Memorial University of Newfoundland. Ethics approval was received from the Human Investigation Committee in May of 2001. All consent forms to be used in this study were written in lay terms so as to facilitate reading and comprehension for all participants. Participants were provided copies of the study consent form for their personal record. Contact information for the researcher was provided on the consent forms and participants were encouraged to contact the researcher should they have had any questions and/or concerns. Participant names and contact information was kept in a locked drawer in an office area, accessible only to the researcher. The forms used by the investigator to explain the study and obtain necessary written consent are presented in Appendices A-D.

Research Instruments

Five different previously conducted provincial and national survey instruments were utilized in the preparation of the surveys and the personal interview schedule used in this study. These included: the Newfoundland Heart Health Survey (Newfoundland Department of Health and Department of National Health and Welfare, 1990); the Ottawa-Carleton Heart Beat Survey (Ottawa-Carleton Regional Health Unit, 1994); the Newfoundland and Labrador Heart Health Pilot Program Evaluation (Neville et al., 1996); the National Population Health Survey (Statistics Canada, 2000); and, the Local Public Health Infrastructure Development Project (Eastern Newfoundland Health and Community Services Region, 2001). All five of these survey instruments were either

researched by the researcher and/or recommended to the researcher by members of the supervisory committee as tools sensitive to record participant behavioural changes.

The participant surveys and the personal interview schedules all began with simple non-intimidating questions designed so that they can be easily answered (thus helping the participant to relax). Examples included sex and age. After demographic data was collected, the investigator then addressed four different areas of personal health behavior in order to learn participants' current practices, attitudes, and knowledge. The four focal points included: diet; smoking; blood pressure; and, exercise.

The research instruments for this study consisted of two onsite surveys and one telephone interview for each participant. The first survey (Survey A: Appendix E) served to record the participants' degree of knowledge regarding CVD related risks, attitude towards his/her own personal health, and current lifestyle behaviours. This survey was conducted *prior* to the LS Clinic session. Question types included: 19 open-ended and 31 tick-box questions. Nineteen questions were original and the rest (29) were referenced from previously conducted health surveys (Appendix H). Participant's age, weight, and height were recorded. Total time for completion of Survey A was approximately 15-20 minutes. All recorded data from Survey A was categorized into Timeframe 1 (T1). The second onsite survey (Survey B: Appendix F) was conducted *after* each participant attended the LS Clinic session. During this survey, the participant was asked a series of questions on any new information they may had learned during the LS Clinic session. The participants' blood pressure was also recorded on this survey. Question types included: 9 open-ended and 5 tick-box questions. Two questions were adapted from previously conducted health surveys (Appendix H). Total time required for this portion

of the procedure was approximately 10-15 minutes. Responses to Survey B were categorized into Timeframe 2 (T2). All participants filled in their responses to both surveys.

The researcher conducted a telephone interview (Appendix G) four weeks after the participants' LS Clinic visit. During the phone interview, the participant was asked a series of questions which depicted the participants' health behaviors, attitudes, and any lifestyle modifications (e.g., weight gain, weight loss) that may have occurred since the initial surveys had been administered. The interview script included a total of 50 questions: 26 open-ended and 24 tick-box. Twenty-nine questions were original and the rest (21) were referenced from previously conducted health surveys (Appendix H). Total time for the telephone interview was approximately 15 minutes. Interview responses were categorized into Timeframe 3 (T3). The investigator recorded the telephone interviews in writing.

Validity

Two independent professionals, a family practitioner specialized in health promotion campaigns and principal researcher for the NLHHP; and, a health policy specialist and co-principal investigator (evaluation) for the NLHHP, were asked to assess the face and content validity of the interview schedules.

Each professional was asked to determine if: (1) the content to be elicited was appropriate to the purposes of the study; and, (2) all important variables were included. Face and content validity were supported by both professionals.

Reliability

Surveys A and B were solely administered by the investigator. Similar directions were given to every individual who may have had questions regarding the survey questions. Likewise, all of the telephone interviews were conducted by the investigator. During both procedures, all subjects were assured of total anonymity and confidentiality. A pretest was conducted prior to data collection in order to enhance instrument reliability. As the instruments were developed for this study, no additional evidence of instrument reliability has been collected (i.e., repeat administration of the instruments to the same population did not occur).

Pretest

A pretest of the participant questionnaires and interview schedule was conducted at the St. Mary's LS Clinic in May of 2001, upon receiving approval from the Human Investigation Committee and the St. Mary's Health Clinic Staff. The St. Mary's LS Clinic was chosen as the pretest site because of travel convenience and also because the St. Mary's site has been holding LS Clinics regularly since 1993. As well, similar to the Stephenville LS Clinic, public health nurses conduct the St. Mary's LS Clinic.

Prospective participants were approached by the community public health nurse who briefly introduced the study and its' intent and then asked the participants if they would be willing to meet with the study investigator to learn more about the study. The willing participants (3) were then approached by the investigator who explained the study in more detail, answered any relevant questions and obtained informed consent. The three participants were asked both the survey questions and the telephone interview script in an interview format with the investigator tape recording their responses. Both

questionnaires and the interview schedule were administered in one setting. The collected data were then given to the co-principal investigator of the NLHHP, in order to determine the accuracy and reliability of: (1) the investigator's written recording of participant responses to open-ended questions (those questions for which not all pre-coded response categories existed and therefore the participant's complete response was recorded) and, (2) the investigator's recording of responses to close-ended questions. The majority of the questions in the research instruments had pre-coded responses.

Feasibility of sampling, data collection, and data analysis procedures were assessed. The pretest results failed to indicate any necessary or significant changes to the instrumentation or measurement procedures. As well, all participants reported similar findings indicating instrument reliability.

Data Analysis

Due to the expected small sample size (n=30), normal distribution of the sample was not assumed. Information on ratio scale variables of related samples was analyzed using paired-T Test, while information on qualitative outcome variables was analyzed using non-parametric tests such as chi-square, McNemar's chi-square, and the Wilcoxon signed-rank test (Daniel, 1999). Descriptive statistical tests (e.g., mean, median) were also used for data analysis. The critical level of significance for all statistical tests was set at 5% ($p<0.05$).

Qualitative data, consisting of information generated from the key informant interview, were systematically re-read by the researcher in order to set up a context (i.e., background information) for the anticipated collected data from the Stephenville LS Clinic participants. Quantitative data (i.e., data collected from participant responses to

both surveys and telephone interviews) were coded and analyzed using the statistical software package, SPSS, version 8.0.

The purpose of data analysis included the following:

1. To describe the level of participant knowledge of cardiovascular disease risks before attending a LS Clinic session (T1);
2. To describe the level of participant knowledge of cardiovascular disease risks after attending a LS Clinic session (T1-T2, T1-T3);
3. To describe participants' lifestyle behaviours and attitudes before attending a LS Clinic session (T1);
4. To describe participants' lifestyle behaviours and attitudes after attending a LS Clinic session (T1-T2, T1-T3); and,
5. To compare pre- and post-LS Clinic attendance data.

Description of Data

Description of participant lifestyle behaviors and knowledge before *and* after LS Clinic attendance involved nominal data and the use of open-ended questions with coded sub-categories. Participants were able to provide multiple answers to many of the survey questions. The first data set included information garnered through the administration of the pretest at the St. Mary's Clinic, St. Mary's, Newfoundland and Labrador. The second set of data included the surveys administered at the research site in Stephenville, Newfoundland and Labrador. The qualitative data from Stephenville consisted of information generated through a key informant interview with the LS Clinic public health nurse. The quantitative data consisted of participant responses to questionnaire open-ended and tick box questions which were coded and analyzed. The association between

LS Clinic visits and individual behavior modification was assessed through comparative tests between survey A (T1) and the results of the telephone interviews one month later (T3).

CHAPTER 3: FINDINGS

Pretest Data

Two females and one male constituted the pretest sample. The participants ranged in age from 60-75, with a mean of 67 years. All individuals were retired and reported "light" levels of physical effort in their daily activities.

Participants reported attending an average of eight LS Clinics over the past "several months." All individuals attended LS Clinics in order to have their blood pressure measured.

Participants were asked to respond to all questions. Responses were tape recorded and hand written by the researcher. All individuals responded to survey questions with ease, comfort, and reported no confusion.

Given the findings of the pretest, the survey and interview schedules were then finalized for data collection in Stephenville, Newfoundland and Labrador.

Key Informant Interview with LS Clinic Nurse

A key informant interview was conducted with the LS Clinic nurse at the Kippen's Community Health Clinic, Stephenville, Newfoundland and Labrador. The nurse stated that she had been organizing and arranging the monthly-LS Clinics since January of 2000. Prior to this date, the LS Clinics had been held biannually. Given the large number of attendants, however, the Regional Health & Community Services recommended the LS Clinics be held more frequently.

The nurse stated that approximately 20-40 individuals attended each LS Clinic, with up to as many as 50% being "regular" attendants. Participants are recruited through

radio advertisements a few days before the scheduled LS Clinic, posters posted throughout community, church bulletins, and, at Women's Club meetings.

The typical LS Clinic agenda begins with a 30-minute presentation on a health topic. Sometimes the nurse presents the information, other times a guest speaker, including community physicians; NLHHP regional staff; and, nutritionists present. Health information literature from the NLHHP and other organizations (e.g., Canadian Cancer Society) is distributed to the participants. After the presentation, a BMI measurement is conducted for all individuals over the age of 65; everyone has a BP measurement; weights are checked; and, for any individuals requesting one, BG levels are measured. Individuals with elevated BP and/or BG levels are referred to the Health Clinic. During the measurements, the nurse explains the test processes and normal levels of BG; weight; BMI; and, BP as applicable to each individual. Participants are encouraged to take small steps towards improving certain lifestyle behaviours (e.g., participants are encouraged to walk, instead of drive, to the local stores in order to slowly increase their physical activity levels). Approximately, 5-10 minutes is spent with each participant.

Volunteer recruitment has been unsuccessful and as a result, the LS Clinics are conducted by one, sometimes two, community public health nurses. The nurse explained that additional time would be beneficial in discussing disease risks (e.g., elevated B/P) in more detail with each participant. However, given the shortage of volunteers and the large number of waiting attendants, a few minutes is all that can be given to each participant. In terms of how the NLHHP can enhance the LS Clinics, the nurse suggested

additional resources, such as a TV set; which can be utilized to show health videos and exercise tapes to interested audiences.

Loss To Follow-up

Thirty-four individuals, who voluntarily attended the LS Clinic session, participated in this study. Only thirty individuals were included in the final results however, as four participants were lost to follow-up. The average age of the participants lost to follow-up was 67.3 years (64-70). Average weight for the three female participants was 164 lbs (138-202 lbs) and the male participant reported a weight of 205 lbs. Two (50%) of the participants reported attending 15 previous LS Clinics over the past "several months" while the other two individuals did not provide a response. Seventy-five percent (3/4) reported being previous smokers, but none were currently smoking. As well, seventy-five percent (3/4) reported having high blood pressure, one of whom was taking medication. Fifty percent (2/4) reported "moderate" levels of daily physical activity. Seventy-five percent (3/4) had made changes to their dietary behaviors over the past year and two (50%) of these individuals reported changing their diets as a result of illnesses. A review of the responses of these four individuals failed to indicate any significant discrepancy between their responses and those of the 30 individuals included in the study. Two of the four (50%) participants were not included in the study because they did not complete Survey B and thus researcher could not account for T2. The other two (50%) individuals were not included in the study because the researcher was not able to contact them four weeks post initial meeting and thus could not account for T3. As a minimum of 30 participants had been deemed as necessary for statistical

analysis however, the loss to follow-up of four individuals did not have any implications for the findings.

Demographic Characteristics of the Sample

As Table 1 depicts, participants ranged in age from 36 to 81 years, with a median age of 63.2 years. Females constituted 76.6% (23) of the study population and 73% (22) of all participants were retired. Twenty-three percent (7) of the participants reported "working outside the home", seven men and four of the women.

Table 1
Characteristics of the Sample
(n=30)

	Male		Female	
	#	%	#	%
Age				
30-39	0	0.0	1	3.3
40-49	0	0.0	2	6.7
50-59	2	6.7	8	26.7
60-69	4	13.3	8	26.7
70-79	0	0	1	3.3
80-89	0	0	0	0.0
Not Stated	1	3.3	3	10.0
Occupation				
Retired	3	10.0	4	13.3
Employed	0	0.0	4	13.3
Not Stated	4	13.3	15	50.0

Previous Experiences with LS Clinics

Eighty-three percent (25/30) of the participants reported attending previous LS Clinics (20/23 women and 5/7 men). On average, participants reported attending 7.5 (0-20) LS Clinics over the past "several months," with the men slightly below the mean (7) and the women slightly above (7.7). Fifty-three percent (16/30) of the participants reported attending the LS Clinics in order to "check on blood pressure" and/or "check on blood sugar levels." Other reasons for attendance included LS Clinics being

"informative" (8/30) and "educating" (5/30). Table 2 depicts participants' previous LS Clinic experiences.

Table 2
Previous LS Clinic Experiences
(n=30)

	Male		Female	
	#	%	#	%
Previous LS Clinic Attendance	5	16.7	20	66.7
Not Stated	2	6.7	3	10
# LS Clinics Attended				
0		3.3	2	6.7
1-5	0	0.0	5	16.7
6-10	2	6.7	6	20.0
11-15	0	0.0	4	13.3
16-20	1	3.3	0	0.0
20+	0	0.0	0	0.0
Not Stated	3	10.0	6	20.0
Timeframe of Attendance				
Several Weeks	1	3.3	1	3.3
Several Months	3	10.0	14	46.7
Several Years	0	0.0	3	10.0
Not Stated	3	10.0	5	16.7

Pre-LS Clinic Attendance Data (T1)

Participant Health Related Behaviors and Attitudes Prior to LS Clinic Attendance

Over half (16, 53%) of the participants identified themselves as having "good" health. Thirty-seven percent (11/30) reported their health as "very good" and three percent (1/30) reported their health as being "excellent." The rest of the participants (2, 6.7%) identified their health as being "fair." The average weight for study participants was 156.42 lbs (124-230 lbs) with a mean of 177 lbs for males and 150 lbs for the female participants. All weights were self-reported by the individuals.

While 53.3% (16/30) reported being "regular smokers" in the past, only one individual reported currently smoking. Sixty-three percent (19/30) reported having high blood pressure, eight of whom were on prescription medication.

As Table 3 illustrates, fifty-three percent (16/30) of the participants reported "moderate" levels of physical effort used in their daily activities. Over half of the participants, 56.7% (17/30) asserted that more exercise would improve their health by "a great deal" and that they were getting "less exercise than needed." Twenty-three percent (7/30) reported exercising for 15 minutes at "least 3-4 times a week."

Table 3
Pre-LS Clinic Health Status and Physical Activity Behaviours (T1)
(n=30)

	Male (n=7)		**Female (n=23)**	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Reported Health Status				
Excellent	0	0.0	1	3.3
Very Good	4	13.3	7	23.3
Good	3	10.0	13	43.3
Fair	0	0.0	2	6.7
Poor	0	0.0	0	0.0
Not Stated	0	0.0	0	0.0
Physical Activity (15 min)				
Daily	4	13.3	4	13.3
5-6 times/week	1	3.3	5	16.7
3-4 times/week	1	3.3	6	20.0
1-2 times/week	0	0.0	5	16.7
<1/week	0	0.0	1	3.3
Never	0	0.0	1	3.3
Not Stated	1	3.3	1	3.3
Level of Daily Activity				
Light	2	6.7	5	16.7
Moderate	2	6.7	14	46.7
Heavy	2	6.7	2	6.7
Not Stated	1	3.3	2	6.7

As depicted in Table 4, the majority of study participants (24, 80%) reported multiple dietary changes prior to attending the LS Clinic.

Table 4
Participants' Reported Dietary Modifications Reported Prior to LifeStyle Clinic Attendance (T1)
(n=30)

	Male (n=7)		Female (n=23)	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Modification				
Less Fat/Low Fat	5	16.7	17	56.7
More Vegetables/ Fruits	5	16.7	16	53.3
No/Less Salt	4	13.3	16	53.3
More Fiber	4	13.3	13	43.3
More Water/Juice	3	10.0	15	50.0
No/Less Junk Food	3	10.0	13	43.3
More Balanced Diet	4	13.3	9	30.0
No/Less Red Meat	3	10.0	11	33.3
Healthier Foods	4	13.3	11	33.3
No/Less Sweets/Sugar	3	10.0	6	20.0
Eat Less	3	10.0	8	26.7
Non/Low cholesterol	3	10.0	9	30.0
No/Less Eggs	2	6.7	7	23.3
Extra Vitamins	2	6.7	7	23.3
Quit/Less Alcohol	2	6.7	6	20.0
Not Stated	2	6.7	4	13.3

The main reasons for diet modification included: "become healthier" (9); "to reduce high blood pressure" (6); "spouse has high blood pressure" (5); "to reduce high cholesterol level" (4); "physicians' advice" (3); and, "had a heart attack" (1). Reasons for *not* modifying diet included: "already practice a healthy diet" (8); "lack of motivation" (1); and, "too old to change" (1). The majority (23, 77%) reported eating food fried in fat or oil "less than once a week." Similarly the majority of study participants reported "never" adding salt to food consumed at the table. Fifty percent (15/30) of the participants reported consuming at least three fruit and/or vegetable servings per day.

Regular exercise and weight loss were the most common future-intended health improvements for the study participants, 18 and 16 respectively.

CVD Risk Knowledge *before* LS Clinic attendance (T1)

Eighty-seven percent (26/30) of all study participants stated that heart disease is preventable. As depicted in Table 5, the following factors were identified as conducive to the prevention of heart disease. All participants identified more than one factor.

Table 5
CVD Prevention Factors (T1)
(n=30)

	Male		Female		Total	
	#	%	#	%	#	%
Factors						
Regular Exercise	4	13.3	17	56.7	21	70.0
Balance Diet	3	10.0	15	50.0	18	60.0
Smoking Cessation	1	3.3	9	30.0	10	30.3
Low Fat Diet	0	0.0	7	23.3	7	23.3
Regular MD Checks	1	3.3	3	10.0	4	13.3
Not Stated	2	6.7	2	6.7	4	13.3

Ninety-seven percent (29/30) identified cigarettes as hazardous to their health. All participants reported high blood pressure as being capable of affecting one's health, 20 (67%) individuals stated that high blood pressure could "cause a stroke". Seven percent (2/30) did "not know" or did not provide any factors which may cause high blood pressure. Ninety-three percent (28/30) however, identified several factors, as depicted in Table 6.

Table 6
Factors Causing High Blood Pressure (T1)
(n=30)

	Male		Female		Total	
	#	%	#	%	#	%
Factors						
High Salt Diet	2	6.7	16	53.3	18	60.0
Stress	2	6.7	11	36.7	13	43.3
Being Overweight	1	3.3	9	30.0	10	33.3
Lack of Exercise	2	6.7	6	20.0	8	26.7
Genetics	2	6.7	5	16.7	7	23.3
Smoking	3	10.0	4	13.3	7	23.3
High Fat Diet	1	3.3	6	20.0	7	23.3
Improper Diet	1	3.3	5	16.7	6	20.0
Excessive Drinking	1	3.3	1	3.3	2	6.6
Not Stated	2	6.7	0	0.0	2	6.7

Eighty percent (24/30) of the participants connected diet to the risk of developing a CVD. The majority of the participants did not respond to this question and one individual reported not knowing an answer (Appendix E, Q# 38).

Regular exercise was identified by 37% (11/30) of the participants as important to reducing CVD risk. A lack of regular exercise was stated to lead to "weakened organs and muscles" and/or "weight gain", which would in turn increase CVD risk.

Post-LifeStyle Clinic Attendance Data (T2, T3)

Participant Health Related Behaviours, Knowledge, and Attitudes *Immediately* After LS Clinic Attendance (T2)

Thirty-seven percent (11/30) of the study sample reported learning new information about self-health and heart disease during the LS Clinic they had just attended. New information acquired included: "current BP, BG, and weight" (9); and, "healthy lifestyle techniques" (2).

The following were identified as the main causes of heart disease and/or heart attacks: "improper diet" (23); "lack of exercise" (14); "smoking" (10); "fatty diet" (10);

"genetics" (6); "stress" (5); "high blood pressure" (4); "excessive drinking" (3); "high salt diet" (3); and, "high cholesterol" (1). Table 7 illustrates the CVD prevention factors identified at T1 and T2. No significant changes were noted at T2.

Table 7
CVD Prevention Factors (T1-T2)
(n=30)

	T1		T2	
	#	(%)	#	(%)
Factors				
Regular Exercise	21	70.0	24	80.0
Eating Well	18	60.0	22	73.0
Smoking Cessation	10	33.3	9	30.0
Regular Checkups	4	13.3	5	17.0
Reduction of Salt Intake	0	0.0	5	17.0
Stress Reduction	0	0.0	3	10.0
Increase Water Intake	0	0.0	1	3.0
Low Fat Diet	7	23.3	0	0.0
Increase Fiber Intake	0	0.0	1	3.0
Not Stated	4	13.3	0	0.0

Eighty-seven percent (26/30) of the participants identified LS Clinics as a "good way of providing CVD risk information to the public." Similarly 73% (22/30) stated their regular LS Clinic attendance had helped them by "reinforcing healthy behaviors" (8), such as changing diet and/or exercising more regularly. A reported 73% (22/30) intended on changing certain aspects of their lifestyle behaviours over the following month such as: "improving their diet" (8); "exercising more" (8); "cutting down on sweets" (6); and, "reducing stress" (1). The mean reported blood pressure measurement was 126/72 Hgmm (90/50- 162/80 Hgmm).

A number of the participants (14) provided suggestions for the improvement of LS Clinics through an open-ended question (Appendix F, Q #13). Table 8 depicts participant responses.

Table 8
Participant Suggestions for LS Clinic Improvement (T2)
(n=30)

	Male		Female		Total	
	#	%	#	%	#	%
Suggestions						
Cholesterol Screening	0	0.0	3	10.0	3	10.0
Healthy Recipes/Diets	0	0.0	3	10.0	3	10.0
More LS Advertisements	0	0.0	3	10.0	3	10.0
Involve Younger Adults	0	0.0	2	6.7	2	6.7
More Frequent LS Clinics	1	3.3	1	3.3	2	6.6
New, Diverse Topics	1	3.3	0	0.0	1	3.3
Guest Lecturers	1	3.3	0	0.0	1	3.3
More Resources, TV	0	0.0	1	3.3	1	3.3
Class Exercises	0	0.0	1	3.3	1	3.3
Not Stated	5	16.7	11	36.7	16	53.4

Participant Health Related Behaviours and Attitudes *One-month* Post LifeStyle Clinic Attendance (T3)

The mean weight of participants was 153.83 lbs one-month post-LS Clinic attendance as calculated with the self-reported weights of the participants at T3. Pair T-test was used to assess the differences in weights reported. The decrease in the mean weight of participants from T1 (156.4lbs) to T3 (153.8 lbs) was found to be statistically significant (p=0.014).

Table 9
Participant Mean Weight (T1-T3)
(n=30)

	T1		T3	
	Male	Female	Male	Female
Mean Wt (lbs)	177	150	172	146.2
Mean Wt (Total)	156.4		153.8	

Over a third of the participants (37%) stated that an increase in their exercise routines would improve their health by a "great deal", and 50% (15/30) reported getting

"less" exercise than needed. Fifty percent of the participants significantly increased their physical activity (p=0.015), with the majority (19) exercising "daily." The Fisher exact test depicted that significantly more women increased their exercise regiments than did men (p=0.029). Fifteen (50%) participants reported getting "less exercise" than needed, not statistically significant according to the Wilcoxon test (p=0.356). Seventy-three percent (22/30) of the participants reported their intent to "increase exercise" regimens over the next year, while 40% (11/30) reported "weight loss" as a future health improvement goal.

At T3, the number of participants reporting their health to be "very good" was 50% (15/30), while 33% (10/30) reported their health to be "good", and 13% (4/30) reported it to be "fair." Similar to the results obtained at T1, only one individual reported their health as "excellent." The Wilcoxon signed-rank test, a two-related samples test, was used to compare the distributions of the participants reported reponses. The test did not depict a statistical significance between the reported health status of individuals at T1 and T3 (p=0.860). There was also no statistical significance detected between the number of individuals desiring to lose weight before (15, 50%) and after (16, 53.3%) the one-month period (p=0.928). Male and female health status responses were distinguished through cross tabulation, as shown in Tables 10. Table 10 displays participant responses at T1 and T3.

Table 10
Participant Health Status T1-T3
(n=30)

	T1				T3			
	Male		Female		Male		Female	
	#	%	#	%	#	%	#	%
Reported Health Status								
Excellent	0	0.0	1	3.3	1	3.3	0	0.0
Very Good	4	13.3	7	23.3	3	10.0	12	40.0
Good	3	10.0	13	43.3	2	6.7	8	26.7
Fair	0	0.0	2	6.7	1	3.3	3	10.0
Poor	0	0.0	0	0.0	0	0.0	0	0.0

Although the majority of females (12/23, 52%) reported their health as "very good" during T3, the McNemar test was not able to detect any statistically significant difference ($p=0.180$) in comparison to female responses during T1. Similarly, Fisher exact tests did not depict any statistically significant differences in male and female health status responses during T1 ($p=1.0$) and T3 ($p=1.0$).

Sixty-three percent (19/30) reported lifestyle modifications that could improve their health. These modifications included: "more regular exercise" (14); "eating better" (8); "lose weight" (4); "attend more LS Clinics" (1); "drink more water" (1); and, to "cope better with stress" (1). This is a lower percentage than that reported during T1, where 23 participants (77%) identified lifestyle modifications which could improve their health. This decrease may be associated with the idea that more participants were performing these activities (e.g., exercising more frequently) during T3 and thus would not report them.

Ninety percent (27/30) of all participants reported modifying their diets over the past month but no statistically significant difference in diets at T1 versus T3 was

detected. Thirty-seven percent (11/30) reported eating "five or more fruits a day" as compared to 20% (6/30) at T1. The main reasons for diet modification included: "seasonal, more fruits to eat" (2); "want to lose weight" (2); "found out cholesterol level is too high" (1); "spouse now has high blood pressure" (1); "live healthier" (1); and, "physicians' advice" (1). Reasons for *not* changing dietary patterns included: "already eat healthy" (20); "time constraint" (1); and, "too old to change" (1). Using the Wilcoxon signed-rank test, twenty-four of the participants reported eating food fried in fat or oil "less than once a week" ($p=1.0$); nineteen participants reported "never" adding salt to their food at the table ($p=0.477$); and, participant fruit/vegetable consumption did not alter significantly ($p=0.175$). The McNemar test depicted no statistical significance ($p=0.688$) between the frequency of fat-fried foods consumed by the females* before and after the one month period. Similarly, no significance was detected between the reported female fruit/vegetable consumption before and after the one-month period.

A little over half (16) of the participants reported checking their blood pressure since attending the LS Clinic. Likewise, 43% (13/30) reported taking up new behaviours in order to control blood pressure by ticking off choices, such as "taking medication" (9), and "reducing salt in diet" (9) from a list of options (Appendix G, Q#27).

The participant who had reported smoking regularly during T1, now reported a "decrease" in smoking, from 21-25 cigarettes/day to 16-20 cigarettes/day. No response was given as to why this behaviour had been changed. Participants were asked to

* male sample too small for testing

identify some factors which would support them in starting and/or maintaining these health improvement goals in the future. The following factors were identified in an open-ended question (Appendix G, Q #47): "family/spouse support" (14); "community/social functions" (9); "more frequently held LS Clinics" (4); "more health education" (3); "workplace support" (1); and, "more time" (1). Participants were then asked to name some factors/issues that would hinder them in pursuing their health improvements.

Thirty percent (8/30) of the participants reported a form of "illness" hindering them from regular exercise at T3 as compared to only one individual (3.3%) who reported a "physical ailment" as an obstacle to regular exercise at T1. Other obstacles identified included: "other priorities (full/time job/children)" (7); "time constraint" (3); "isolation from other communities" (1); "transportation" (1); and, "financial constraints" (1).

The majority (26, 87%) reported their intention to attend future LS Clinics and many offered suggestions for the improvement of LS Clinics. As Table 11 illustrates, the following suggestions were provided: "more frequent LS Clinics" (9); "more advanced notices" (5); "teach exercise techniques" (3); "show health-related films" (2); "health recipe classes" (2); "guest speakers" (2); "cholesterol screening" (2); "diverse health topics" (2); "audience discussions" (1); and, to "involve younger adults" (1).

Table 11
Participant Suggestions for LS Clinic Improvement Immediately (T2) and One-Month (T3) post-LS Clinic Attendance
(n=30)

	T2		T3	
	#	(%)	#	(%)
Suggestions				
Cholesterol Screening	3	10.0	2	6.7
Healthy Recipes	3	10.0	2	6.7
More LS Advertisements	3	10.0	5	16.7
More frequent LS clinics	2	6.6	9	30.0
New, diverse topics	1	3.3	2	6.7
Guest lecturers	1	3.3	2	6.7
More resources, TV	1	3.3	0	0.0
Class exercises	1	3.3	3	10.0
Audience discussions	0	0.0	1	3.3
Show health-related films	0	0.0	2	6.7
Involve Younger Adults	0	0.0	1	3.3

CVD Risk Knowledge *One Month* after LS Clinic Attendance (T3)

Similar to the results collected during T1, eighty-seven percent (26/30) of the participants stated that heart disease is preventable. Table 12 identifies the prevention measurements reported. More responses were provided immediately (T2) after LS clinic attendance than during T3. No significance was detected between this frequency and the responses collected at T1 (p=0.733).

Table 12
CVD Prevention Factors (T1, T2, and T3)
(n=30)

	T1		T2		T3	
	#	%	#	%	#	%
Factors						
Regular Exercise	21	70.0	24	80.0	12	40.0
Eating Well	18	60.0	22	73.0	14	46.7
Smoking Cessation	10	33.3	9	30.0	0	0.0
Regular Checkups	4	13.3	5	17.0	2	6.7
Reduction of Salt Intake	0	0.0	5	17.0	0	0.0
Stress Reduction	0	0.0	3	10.0	5	16.7
Increase Water Intake	0	0.0	1	3.0	0	0.0
Low Fat Diet	7	23.0	0	0.0	7	23.3
Increase Fiber Intake	0	0.0	1	3.0	0	0.0
Start Healthy Habits Young	0	0.0	0	0.0	1	6.7
Not Stated	4	13.0	0	0.0	4	13.3

At T3, ninety-seven percent (29/30) of the participants reported cigarettes as hazardous to their health because: "they can cause lung disease and/or cancer" (11); "they contain harmful chemicals/toxins" (9); "research statistics show that they are harmful" (9); and, "they slow down the heart rate and may harden arteries" (3). Ten percent (3/30) of the participants admitted not knowing the exact reasons why cigarettes may be harmful to ones' health. Likewise, 93% (28/30) of the participants identified cigarettes as a CVD risk, many (12) however, were not sure of the exact reasons for this link. No statistically significant changes were seen in participants' knowledge regarding smoking at T3.

In terms of blood pressure, all participants stated that high blood pressure can affect ones' health through the following mechanisms: "may lead to stroke" (20); "makes one tired, have less energy" (12); and, "deteriorates the heart muscle" (6). As depicted during T1, 93% (28/30) of the participants reported factors associated with increasing blood pressure. Table 13 lists the factors identified. No significant changes were

observed in participant's knowledge about high blood pressure and its potentially detrimental effects between T1 and T3 (p=0.180).

Table 13
Factors Causing High Blood Pressure (T1-T3)
(n=30)

	T1		T3	
	#	%	#	%
Factors				
High Salt Diet	18	60.0	14	46.7
Stress	13	43.3	13	43.3
Overweight	10	33.3	10	33.3
Genetics	7	23.3	7	23.3
Lack of Exercise	8	26.7	6	20.0
Fatty Diet	7	23.3	5	16.7
Smoking	7	23.3	5	16.7
Excessive Drinking	2	3.3	3	11.0
Narrowing of Arteries	0	0.0	2	6.6
Some Medications	0	0.0	1	3.3
Improper Diet	6	20.0	0	0.0
Not Stated	2	3.0	0	0.0

The majority of LS Clinic participants (26, 86.7%) reported that they would attend future LS Clinics.

CHAPTER 4: DISCUSSION

Following a discussion of (a) participant demographics and, (b) the key informant interview, the findings of this study regarding the impact of LS Clinic attendance on individual behaviour modification, will be addressed in the context of the theoretical framework and relevant literature.

Key Informant Interview

The key informant interview with the LS Clinic public health nurse served as the qualitative addendum to this study. The interview script (Appendix I) documented information regarding LS Clinic agendas; schedules; participants; and, suggestions for improvement. It was evidenced through the key informant interview that the LS Clinic protocol has evolved to meet community needs in Stephenville. Due to a shortage of lay volunteers, for instance, the public health nurse explained that she along with a few other nurses, conduct the bimonthly LS Clinics. Since the nurses follow the exact same protocol as taught to LS Clinic volunteers however, transferability of these findings would be not be jeopardized.

Additional information generated through the key informant interview facilitated an understanding of the informal and friendly atmosphere in which LS Clinics are held. Most, if not all, participants are familiar with both the other participants and the nurses conducting the LS Clinics. Moreover, most participants are similar in respect to age and employment status (e.g., retirement). In this manner, a sense of community exists between the LS Clinics attendants and the nurses. Health information is communicated through presentations as well as in a face-to-face format with the public health nurse during BP, BG, BMI, and weight measurements. The nurse explained that the

participants are encouraged to take "small steps" towards behaviour modification, such as increasing their physical activity levels by walking, instead of driving, to a local grocery store.

The nurse stated additional resources, such as a TV set, are necessary to accommodate participants who would like to watch health videos and/or arrange exercise classes with an exercise tape.

Through the key informant interview, the researcher was able to set up a context for the collected data as well as to gain a better understanding of the Stephenville LS Clinic protocol, setup, and schedule. Limitations associated with the key informant interview included the small sample size, as more information, regarding the management and protocol of the LS Clinics, may have been generated had additional nurses been interviewed. Only one nurse was available for an interview however.

Demographic Characteristics of the Study Participants

Small sample size and non-random sampling prohibit a claim to sample representativeness. However, the composition of the sample in this study was similar to the evaluation report compiled by the NLHHP (Neville et al., 1996), in that there were considerably more female than male participants. The median age of this group (63.2) however, was slightly older than that of the evaluation report, which reported 74% (11) of its participants as between the ages of 35-64. The sample for this study may be at higher risk for developing CVD than a more random population. The women in this study sample, for instance, would be at a higher risk for developing CVD in comparison to the women in Neville's study due to the older age and assumbly post-menopausal status.

One in ten women 45 to 64 years of age has some form of heart disease and this increases to one in four women over 65 (National Institute of Health, 1994).

The LS Clinic nurse indicated verbally to the researcher that the characteristics of (a) participant age; (b) number of participants retired (22); and, (c) the number of participants attending the LS Clinic (34) in this study were representative of many previously held LS Clinics. However, variations in these characteristics may be present in different community settings and the participant demographics found in this study may only be representative of the Stephenville LS Clinics and not that of other regions. The nurse also reported that many of the study participants were in fact regular LS Clinic attendants, who had been attending these Clinics for the past couple of months. This observation was confirmed during the study questionnaires, which documented eighty-three percent (25/30) of the participants as previously attending an average of eight LS Clinics. Previous LS Clinic attendance may have influenced the participants' current reported lifestyle behaviours therefore.

The Impact of LS Clinic Attendance on Individual Behaviour Modification

The findings identified several issues regarding LS Clinic attendance and behaviour modification. These issues included: lifestyle changes post-LS Clinic attendance; the limited impact of LS Clinics on participants' CVD risk knowledge levels and related attitudes; the utility of the LS Clinic from the participants' perspective; the various barriers that inhibit behaviour change; and, the factors that work to promote behavioural modification.

Lifestyle Changes Post-LS Clinic Attendance

Physical Activity

Regular physical activity has been credited with decreasing peripheral vascular resistance, BP, percentage of abdominal fat, depression, and cholesterol levels, all of which contribute to the severity of CVD. The influence of the LS Clinics in increasing participants' physical activity levels is important to the prevention of CVD. The findings of this study depicted that at one-month post-LS Clinic attendance (T3), fifty percent (15/30) of the participants had increased their physical activity frequency to a "daily" activity. The McNemar test found the increase in physical activity frequency to be statistically significant ($p=0.015$). This finding is consistent with previous studies (Hussain et al., 1997; Schafer et al., 1998; Stewart et al., 2001) which have documented lifestyle interventions, similar to LS Clinics, as an effective means of increasing healthier behaviours among individuals. The Fisher's Exact test depicted that significantly more women than men increased their exercise regiments ($p=0.029$). This finding is also consistent with prior research (Ferrini, Edelstein, & Barrett-Connor, 1994) which has delineated that women are more likely to report health behaviour changes than are men. According to Ferrini et al. examples of reported behaviour changes include increasing levels of daily physical exercise, changing one's diet, and acquiring self-help reading literature. Other literature (Gans, Assmann, Sallar, & Lasater, 1999) states that men are one of the sub-groups, including immigrant populations and low-income individuals, who are less likely to be reached with traditional approaches and therefore are a more difficult group to induce behavioural changes among. Presumably, women may be more

influenced to modify their lifestyle behaviours post-LS Clinic attendance in comparison to the men.

The participants' mean weight decreased from T1 (156.4 lbs) to T3 (153.8) by 2.4 lbs. This decrease was found to be statistically significant ($p=0.014$). Specifically, the male mean weight decreased by 5 lbs (177 lbs (T1) to 172 lbs (T3)) and the female sample mean weight decreased by 4 lbs (150 lbs (T1) to 146 lbs (T3)). Mean weights, calculated at T1 and T3, were based on self-reported weights by the participants. The loss of weight is consistent with the reported increase in frequency of daily physical activity. In comparison to the results obtained at T1, more participants (16, 53%) reported their desire to "lose weight" after attending the LS Clinic (T3) session, mostly in order to "feel better."

Prior-to LS Clinic attendance (T1), only three kinds of responses were provided when participants were questioned about the relationship between exercise and one's risk of developing heart disease. The most frequent response was "regular exercise keeps blood flow proper" (11). Other responses included "lack of exercise weakens organs and muscles" (4), and a lack of exercise "causes weight gain" (2). More responses were recorded immediately after the participants had attended a LS Clinic (T2). Responses included "exercise keeps organs healthy" (8), "exercise decreases risk of CVD's" (3), "lack of exercise weakens organs, muscles" (3), and "regular exercise removes toxins from body" (1). LS Clinic attendance therefore may increase the participants' knowledge of the benefits of regular exercise. While the majority (21, 70%) associated a lack of regular physical activity with an increased risk of developing a CVD, some (6, 20%) were not sure of how or why regular exercise was beneficial to their health.

Smoking

As one of the major risk factors for CVD (Ketola, Sipila, & Makela, 2000), smoking is also highly associated with a plethora of other debilitating diseases, such as cancer and chronic obstructive pulmonary disease. In addition, a recent study (Rosenlund et al. 2001) has shown even modest levels of exposure to tobacco smoke to be associated with an increased risk for myocardial infarctions.

As reported prior to LS Clinic attendance (T1), more than half (16, 53%) of the study participants identified themselves as having been "regular smokers" (regular meaning smoked at least 100 cigarettes in a lifetime) in the past. All but one had since ceased smoking. Whether the participants' smoking cessation was in any way influenced by their LS Clinic attendance (as many of the participants (25/30, 83%) reported previous LS Clinic attendance) is beyond the capacity of this study as definite dates of when these individuals stopped smoking were not recorded by the instruments. The individual smoking, reported a decrease in cigarettes smoked per day from a reported 21-25/ per day (T1) to 16-20/per day after attending the LS Clinic session (T3).

Participants' CVD Risk Knowledge and Related Attitudes Post-LS Clinic Attendance

Although the literature indicates that interpersonal communication is effective in increasing participants' disease risk knowledge levels (Ribeiro & Blakely, 2001), this study depicted that participants' level of CVD risk knowledge post-LS Clinic attendance did not change significantly from the results obtained pre-LS Clinic attendance. This may be due to the fact that the majority of the LS Clinic attenders already knew a lot about CVD risks, prevention, and heart health. Only 11 (37%) participants reported

learning any new information about heart disease and its related risks immediate post-LS Clinic attendance (T2), as described below.

Blood Pressure

Elevated BP is highly associated with an increased risk of CVD. In Newfoundland, the high prevalence of high BP runs parallel to the high incident rates of CVD (Federal, Provincial and Territorial Advisory Committee on Population Health, 1999). Nineteen participants reported having high BP prior to LS Clinic attendance (T1). These individuals had been advised by health care professionals to: "cut down on salts" (13); "take prescribed medications" (8); and, "exercise regularly" (8).

Prior to LS Clinic attendance (T1), a total of 26 (87%) individuals reported performing specific activities in order to control their blood pressure levels. Table 14 depicts mentioned activities reported prior-to LS Clinic attendance (T1) and post-LS Clinic attendance (T3) respectively. The drop in responses at T3 may be due to the wording of the question (Appendix G, Q#27) which asked participants to tick off any "new" activities they may taken up since LS Clinic attendance. Participants who were already watching their weights at T1, therefore would not choose this response at T3, because this would not be considered as a "new" activity at T3.

Table 14
Pre- (T1) and Post-(T3) LifeStyle Clinic Attendance
Activities to Control Blood Pressure
(n=30)

	T1				Total		T3				Total	
	Male		Female		T1		Male		Female		T3	
	#	%	#	%	#	%	#	%	#	%	#	%
Activity												
Watch Weight	5	16.7	15	50.0	20	66.7	1	3.3	8	26.7	9	30.0
Take Medication	2	3.3	15	50.0	17	53.3	1	3.3	10	33.3	11	36.7
Go on low salt diet	2	3.3	15	50.0	17	53.3	0	0	9	30.0	9	30.0
Avoid Stress	4	13.3	13	43.3	17	56.6	0	0	5	16.7	5	16.7
Start exercise	2	3.3	10	33.3	12	36.6	0	0	7	23.3	7	23.3
Cut down on alcohol	4	13.3	4	13.3	8	26.6	0	0	0	0.0	0	0.0
Use Biofeedback	0	0	0	0.0	0	0.0	0	0	2	6.7	2	6.7
Cut down smoking	3	10	2	6.7	5	16.7	0	0	1	3.3	1	3.3
Other	0	0	0	0.0	0	0.0	0	0	1	3.3	1	3.3
Not Stated	2	3.3	2	6.7	4	10.0	6	20	7	23.3	13	43.3

Note. Responses at T3 were reported as "new" activities taken up since T1.

No statistically significant changes were detected in participant attitudes and knowledge regarding high BP, post-LS Clinic attendance. For instance, all 30 participants reported that a high BP can affect one's health both pre- and post-LS Clinic attendance. Most participants were able therefore to associate high blood pressure with an increased likelihood of developing heart disease both prior-to (T1) and post-LS Clinic attendance (T3).

Similarly, only small changes were detected in smoking related attitudes and knowledge. More individuals (29) identified cigarettes as hazardous to one's health, post LS Clinic attendance (T3) and more responses were provided as to why or how cigarettes may be detrimental to one's health, as Table 15 illustrates.

Table 15
Reported Factors for Detrimental Effects of Smoking During T1 and T3
(n=30)

	T1				Total T1		T3				Total T3	
	Male		Female				Male		Female			
	#	%	#	%	#	%	#	%	#	%	#	%
Factor												
Chemical Content, Toxic	2	6.7	5	16.7	7	23.3	4	13.3	13	43.3	14	46.7
Slow Heart Rate	1	3.3	2	6.7	3	10.0	1	3.3	9	30.0	10	33.3
Harden Arteries	1	3.3	4	13.3	5	16.7	1	3.3	8	26.7	9	30.0
Cause Lung Cancer	1	3.3	2	6.7	3	10.0	0	0	3	10.0	3	10.0
Cause Blood Clots	1	3.3	0	0.0	1	3.3	0	0	1	3.3	1	3.3
Cause Cancer	0	0	4	13.3	4	13.3	0	0	1	3.3	1	3.3
Statistical Facts	0	0	0	0.0	0	0.0	1	3.3	0	0.0	1	3.3
Don't Know	0	0	6	20.0	6	20.0	1	3.3	2	6.7	3	10.0
Not Stated	2	6.7	4	13.3	6	20.0	1	3.3	0	0.0	1	3.3

Participants' smoking related attitudes and knowledge were not significantly modified post-LS Clinic attendance.

These findings are consistent with the findings of another pilot project which evaluated the effectiveness of an alcohol education program on attitude, knowledge, and self-reported behaviors of college students (Sharmer, 2001). The intervention included a peer mentor-centered presentation and discussion. Participants filled out a questionnaire

three months post-attendance. Statistical analysis of the findings did not indicate any significant discrepancies between student knowledge levels pre- and post-presentation attendance (Sharmer, 2001).

However, it must be taken into consideration that the majority of the participants (22, 73%) were able to identify many CVD risk factors (e.g., high blood pressure and smoking) before attending the LS Clinic. Thus it may by expected knowledge levels will remain static as the participants already know the information prior-to LS Clinic attendance. As the majority of participants (26, 87%) reported repeated attendance of LS Clinics, these individuals may have acquired their current CVD risk knowledge from previous LS Clinic attendance. The limited impact of LS Clinics attendance on individuals CVD risk knowledge levels and related attitudes may therefore, be due to the amount of knowledge already possessed by the participants. Surveys (which can further describe participant knowledge levels and depth) should be administered randomly, in order to enable the public health nurses to distribute new information to the participants and avoid repeated discussions of previously learned materials.

The Utility of the LS Clinic from the Perspective of the Participants

Similar to the results of the evaluation report (Neville et al., 1996), the majority (26, 87%) of the participants identified LS Clinics as a good method of providing heart disease risk information to the public. In addition, participants were asked to identify features of the LS Clinic which they particularly liked, responses included: "clinics are educating" (15); "convenient for blood sugar, blood pressure, and weight checks" (10); and, "word of mouth is an especially helpful method of information exchange" (2). In comparison, respondents in the 1996 evaluation report identified the following as favored

features: "convenience of having blood pressure and weight checked and information provided on a walk-in basis and without a doctors appointment"; "personnel were nice and helpful"; "hours of the clinic were convenient"; "availability of exercise equipment"; and, "the opportunity to socialize" (Neville et al., 1996).

The majority of the participants (25, 83%) who reported attending LS Clinics for some time stated that LS Clinics have helped them through the various methods: "reinforcing health changes" (8); "motivation for a dietary change" (7); "learned how to live healthier" (5); "can control blood pressure levels through regular attendance" (4); "encouraged to exercise" (2); and, "motivation to decrease alcohol intake" (1). Many (13) stated attending LS Clinics because the (LS Clinics) were "informative" and "educating."

Participants were asked to provide suggestions for how LS Clinics can be improved immediately (T2) after LS Clinic attendance and one-month post-LS Clinic attendance (T3). Immediately post-LS Clinic attendance, the most frequent suggestions included: "cholesterol screening" (3); "more information about health recipes and diets" (3); and, "more advertisement" (13) to recruit and to remind participants of scheduled LS Clinic times and topics. Fifteen participants (15, 50%) however, did not respond to this question. In contrast, one-month post-LS Clinic attendance (T3), all 30 participants responded to this question. Participants reported the following suggestions: "LS Clinics should be held more frequently" (9); "more advertisement with advanced notices" (5); "teach exercise techniques" (3); "show health-related films" (2); "teach healthy recipes" (2); "bring in guest lecturers" (2); "test cholesterol levels" (2); "lecture on diverse health topics" (2); "interact with audience" (1); and, to "address younger adults in health topics

and advertisement" (1). Similarly, all participants (15) in the 1996 evaluation report (Neville et al., 1996) had suggested LS Clinics to be held more frequently.

The participants' suggestion of an increase in the frequency of LS Clinics; the number of recurrent attendants (26, 87%); and, the many participants (26, 87%) reporting their intent to attend future LS Clinics, were indicative of: (a) the participants' perception of the LS Clinic as a useful method of CVD risk communication; and, (b) an overall participant satisfaction with the LS Clinic. The evaluation report (Neville et al., 1996) had also indicated participant satisfaction with LS Clinics. As well, other studies have reported participant satisfaction with similar health promotion workshops and clinics (Brown, Cochrane, & Cardone, 1999; Filinson, 1999; Lanier, Kelley, & Holck, 1999). Most participants are appreciative of the opportunity to learn more about disease risks and prevention (Brown et al., 1999). Moreover, participants are more prone to change behaviors when they are introduced to people in similar situations who are inclined to take up healthier behaviors (Lanier et al., 1999). The Social Cognition Theory (SCT) (Bandura, 1977) states that self-efficacy (defined as the self-confidence an individual feels about performing a particular activity) is enhanced when individuals experience social reinforcement for their behavior, including exposure to peer model behaviour by other individuals similar to themselves. The friendly and easy-going ambience of the LS Clinics provides participants with the opportunity to meet and socialize with fellow peers, who, like, themselves attend LS Clinics for a variety of similar reasons as identified in the findings. Although the study instruments did not specifically measure self-efficacy, the participants' appreciation as documented through satisfaction; suggestion to increase frequency of LS Clinics; high number of recurrent attendance; the intent for future

attendance; and ultimately, the statistically significant increase in participants' levels on physical activity, support the assertion that LS Clinic attendance may enhance self-efficacy (a key construct of the SCT) by providing participants with realistic and small goals that they can work to achieve and a peer-led learning environment that influences healthier behaviours and practices.

Various Factors Serve as Barriers to Behaviour Change

In order to enhance behavior modification, CVD risk communication must account for barriers that inhibit individuals from taking up healthier lifestyle behaviours (Oldenburg et al., 1992). A recent study, researching the utility of self-care strategies (instructive health promotion course), identified 18 categories of barriers to lifestyle changes (Timmerman, 1999). The most common barriers included: "lack of time"; "environmental constraints" (e.g., weather); "lack of motivation"; "tiredness" or "fatigue"; "health status"; and, "lack of social support" (Timmerman, 1999).

The findings of this study share some similarity with the identified barriers, as LS Clinic participants identified "illness" and "poor health status" as the most common barrier to behaviour modification. Specifically, thirty percent (8) of the participants reported a form of "illness" hindering them from regular exercise. Given the average age (63.2) age of this study sample, this type of obstacle may only be applicable to this group and not representative of the obstacles which can limit other populations from exercising. Other identified barriers included: "other priorities (full-time employment, children, grandchildren)" (7), and "time constraints" (3). The participants also identified "isolation from other communities" (1); "transportation" (1); and, "financial constraints" (1) as hindering their efforts to take up healthier lifestyle behaviours, such as increasing their

levels of physical activity. More men than women identified "time constraints" as a barrier to behavior modification. This is consistent with the observations of Mosca, McGillen, and Rubenfire (1998), who studied self-reported barriers to lifestyle change in 293 individuals in order to determine any gender differences in reported barriers. The authors reported that while time constraints were important to both men and women, more men than women identified the lack of time as the foremost barrier to lifestyle modification.

Timmerman (1999) has suggested recommendations for how interpersonal communication approaches can help participants overcome these barriers. The suggestions may be applicable to the LS Clinic volunteers, as Timmerman (1999) based his suggestions on the study of similar interpersonal communication approaches. To assist individuals with time constraints, for instance, LS Clinic volunteers need to teach time management and organizational skills. Moreover, LS Clinic volunteers need to provide participants with anticipatory guidance about potential barriers, so as to prepare the participants to better cope with these issues should they arise (Timmerman, 1999).

Factors that Promote Individual Behaviour Modification

Lifestyle behavior modifications reported by the participants prior to LS Clinic attendance were associated with several variables including: personal health; spouse's health; and, physician's advice. Many participants (11, 37%) identified their health status as the main reason for change. This is consistent with literature that states that individuals affected with disease and/or diagnosed as having one or more disease risks are more likely to make positive lifestyle modifications than healthy individuals (Ferrini et al., 1994). Five individuals (5, 17%) reported modifying their dietary patterns in order

to accommodate their spouse's diets and 14 (47%) stated that spousal support would enhance their ability to maintain behaviour changes. This finding is an indication of the significance of spousal support in inducing and maintaining behavioural changes. In a project studying the effectiveness of spousal support among couples attempting to quit smoking cigarettes (Cohen, 1992), the researchers associated favorable behaviours (i.e., smoking cessation) among couples who reported high levels of spousal support. Other sources of support included seasonal factors, as many participants reported consuming more fresh fruits and vegetables during the warmer seasons because of the greater accessibility. As well, more participants were inclined to exercise more frequently in the warmer seasons.

Physician's advice was another trigger for behavior modification, as evidenced by individuals who have changed their diets in order to monitor their blood pressure levels, following their doctors' suggestions.

Study Limitations

There were several limitations in this study that need to be considered in interpreting the findings.

Study Sample

The small sample size may have introduced sampling bias. The majority of the study participants were demographically homogenous and the study results may therefore only be applicable to such populations. Similarly, sample demographics may be generalizable only to the Stephenville LS Clinic and not to LS Clinics in any other regions of the province.

Moreover, assumptions regarding sample size were incorrect, as the high number of recurrent participants was not predicted nor precedented in previous literature (Neville et al., 1996). Had the large number of recurrent participants been anticipated, a larger sample size would have been recruited and stratified into first-time attendants versus repeat attendants. As individuals who have repeatedly attended LS Clinics over time may be health prone and health conscious, they may differ significantly in behaviour, knowledge, and attitude from other members of the community.

A small sample size (n=1) also limited the qualitative findings of this study (key informant interview with the LS Clinic nurse). More information may have been generated had a larger sample been interviewed.

Study Instruments

Participants' CVD risk knowledge was described, compared, and contrasted in this study. An instrument that could numerically scale participants' responses could have more accurately documented the levels of participants' CVD risk knowledge at T1, T2, and T3.

In addition, as there is no conclusive literature concerning the best method of risk information identification, the instruments in this study relied on both open-ended (i.e., "What do you think are some of the main causes of heart disease or heart attacks?") and closed-ended questions (i.e., "In your opinion, are cigarettes detrimental to your health?"). It could be argued however, that closed-ended questions generate more responses than open-ended questions and therefore, participants may have been able to identify more information had all of the instrument questions been in closed-ended format (Gans et al., 1997)

Moreover, the telephone interview may have introduced some reporting bias in as far as participant responses. Participants may have exaggerated their answers in order to provide more favorable responses to the researcher. Similarly, many of the questions in the questionnaires required participants to remember how many times they may have consumed certain foods over a period of time. Responses to these questions relied on participants' ability to recall and, as a result, may not be precisely accurate.

In addition, participants' weights should have been documented after being measured at T2 in order to assess measurement bias from the self-reported weights at T1 and T3.

Study Design

It must also be taken into account that it may not be theoretically nor practically possible to isolate the effects of a single intervention like the LS Clinic because of the potential for synergistic or cumulative effects of a larger community project such as the NLHHP.

An additional limitation is the lack of a control group, who's pre- and post-LS Clinic attendance behaviours, attitudes, and knowledge could have been compared and contrasted with that of the sample group. A control group would enable a better understanding of any discrepancies that result in the sample population post-LS Clinic attendance.

Feasibility of This Study Design for Province-Wide Evaluation of the LS Clinics

The pre- and post-test design may not be feasible for an evaluation of the LS Clinics given the high number of repeat attenders. Modifications, as identified in the

recommendation section, must be made in order to more accurately record participants CVD risk related behaviours, knowledge, and attitudes post-LS Clinic attendance.

In addition, the incorporation of a control group in a full study is recommended in order to highlight any behavioural modifications that may occur post-LS Clinic attendance among LS Clinic participants.

Summary Statement

LS Clinic attendance may influence individuals to invoke some lifestyle behavioural changes, such as increase their levels of daily physical activity. This study was unable to demonstrate that LS Clinic attendance is influential in modifying participants' CVD risk related knowledge and attitudes. The majority of study participants however, were cognizant of various CVD risks prior to LS Clinic attendance (T1). As many of these individuals reported attending an average of eight previous LS Clinics, some of their risk knowledge may have been acquired through previous LS Clinic attendance.

Moreover many participants reported modifying their lifestyle behaviours prior to LS Clinic attendance. Several factors were identified as reasons for behaviour change. This finding suggests that interpersonal communication alone is not a sufficient method of inducing behavioural modification, i.e., behavioural modification does not occur in isolation and more than one factor may induce a behavioural change. Alternately, it is possible that the identified limitations in this study's methodology, including a small and limited sample size, the large number of recurrent participants, and the lack of instrumentation to provide a numerical and perhaps more accurate grading of

participants' CVD risk knowledge during timeframes T1, T2, and T3, restrict the extent to which the findings may be interpreted and conclusions drawn.

CHAPTER 5: SUMMARY, RECOMMENDATIONS, AND CONCLUSION

Summary

Cardiovascular disease is the major cause of death in Canada (Federal, Provincial and Territorial Advisory Committee on Population Health, 1999). A proper diet, being physically active, not smoking, and controlling blood pressure are major lifestyle factors that play a large role in the prevention of CVD. A crucial element in the effort to prevent such diseases is through lifestyle changes (Oldenburgh et al., 1992). Since the 1970's, many different approaches have been implemented to communicate CVD related risks to the public in order to encourage individuals to adopt healthier behaviours (e.g., eat more vegetables) and/or cease unhealthy habits (e.g., smoking cessation). Research (McDonald, 1999) has illustrated the success of interpersonal communication in communicating disease risk to the public. The Newfoundland & Labrador Heart Health Program, a community-based prevention campaign, uses interpersonal communication thorough its' LS Clinics, which are one of the most popular program-sponsored activities across the province (NLHHP Tracking Database, 2001). Little information is available however, as to how effective these LS Clinics are in influencing participants to adopt healthier lifestyles.

In order to extend the knowledge regarding LS Clinic attendance and individual behavior modification, a study was undertaken to: (1) describe participants' CVD risk related knowledge, behaviours, and attitudes prior to LS Clinic attendance; (2) describe participants' CVD risk related knowledge, behaviours, and attitudes, post-LS Clinic attendance; and, (3) determine how effective, if at all, LS Clinics are in influencing participant behaviour changes post-LS Clinic attendance. Ultimately, this study was to

serve as a pilot project for the development of a provincial evaluation of LS Clinics by the Newfoundland & Labrador Heart Health Program in the near future.

The conceptual framework for the study was based on the Social Cognition Theory (Bandura, 1977). The central proposition developed from the theory was that behavioural modification interventions that enhance self-efficacy are more capable of influencing participants to adopt healthier lifestyles. LS Clinics enhance self-efficacy by (1) increasing the likelihood that an individual experiences success within their endeavors (small; realistic goals), and (2) by exposing individuals to environmental variables (i.e., peer model behavior by other community members) which will support the desired behaviour (NLHHP Demonstration Phase Report, 1996).

The setting for the study was at the Kippen's Community Center, Stephenville, Newfoundland and Labrador. The study design was quasi-experimental with one pretest and two post-tests. The study sample consisted of 30 LS Clinic participants who met the selection criterion.

Data were collected utilizing three instruments developed by the researcher including a pre- and post-LS Clinic attendance questionnaires and an interview schedule, which was conducted one month post attendance. Qualitative data were generated during a key informant interview with the LS Clinic public health nurse. The quantitative data, collected from the participant surveys and interviews, were analyzed according to the purposes of the study. Statistical tests were used to analyze differences between participant responses prior to and post-LS Clinic attendance.

The quantitative and qualitative data generated by this study lead to a discussion of the following issues:

1. Participants modify certain lifestyle behaviours post-LS Clinic attendance, such as levels of physical activity;
2. LS Clinic attendance does not significantly influence participants' health related attitudes nor CVD risk knowledge levels;
3. Participants acknowledge LS Clinics as an important vehicle for the communication of CVD risks;
4. Various factors serve as barriers to behaviour change; and,
5. Several factors, in addition to LS Clinic attendance, promote and are often necessary to influence behaviour modification.

The limitations of this study, including a small sample size, preponderance of recurrent attenders, and the lack of instrumentation to more precisely scale levels of participants' reported CVD risk knowledge during the three timeframes of this study period, prohibit generalization of the findings to a larger population.

Recommendations and Feasibility of This Study Design for Province-Wide Evaluation of the LS Clinics

The results of this study have therefore generated the following recommendations for the province-wide evaluation of the LS Clinics by the Newfoundland & Labrador Heart Health Program:

Modifications to Study Design:

1. The traditional pre-post test design is not appropriate for a majority of the participants in the LS Clinics as they exist today, given the large number of repeat attenders who have been exposed to the intervention several times within a short time frame. A province-wide study may be able to enroll a significant number of subjects

who are attending the LS Clinic for the first time and follow them prospectively over a one month, six month, and 12 month follow-up to examine the short-term and longer-term impact of LS Clinic attendance on knowledge and behaviour. This approach could be supplemented by randomly selecting repeat attenders from LS Clinics across the province and monitoring their LS Clinic attendance and behaviour changes over a one-year period.

2. LS Clinic attenders (sample) should be compared with non-attenders (control group) in order to highlight any modifications in CVD risk related behaviours, attitudes, and/or knowledge levels that may occur in the sample population.
3. Instruments which could provide numerical grading of the participants' reported CVD risk knowledge levels should be used.
4. Participants should maintain a log of their physical activity levels post-LS Clinic attendance in order to document any changes and minimize recall bias.
5. Participants' weights should be recorded immediately after measurement at the LS Clinic (T2) so as to minimize any potential measurement bias.
6. Future studies should explicitly examine the impact of the following variables on behaviour change with respect to CVD:
    a) Participants' health status and history;
    b) Participants' spousal and familial health status and history;
    c) Seasonal factors;
    d) Gender factors; and,
    e) Social support.

Conclusion

The results appear to support the assertion that LS Clinics are capable of influencing individual behaviour modification, such as increasing daily levels of physical activity. However, behaviour modification due to LS Clinic attendance cannot be considered in isolation, as behaviour modification seems to be influenced by the interaction of several variables, including: personal health status; spousal health; physicians' advice; participants' gender; and, season of year. Exploration of relationships among such variables and CVD risk factor modification was included as suggestions for future research. Moreover, the limited impact of LS Clinic attendance on the participants' CVD risk knowledge levels and related attitudes may be associated with the participants' previous experiences with LS Clinics. As the majority of the participants reported multiple previous LS Clinic attendance, they may have acquired their reported knowledge through previous attendance.

This investigation can be regarded as a pilot study which has identified several design challenges for the province-wide LS Clinic evaluation by the Newfoundland & Labrador Heart Health Program. This study has also attempted to add to the body of existing knowledge about the complex phenomenon of effectively communicating CVD risk information in order to influence healthier lifestyles in the prevention of CVD.

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Appendix A

Explanation Letter Sent to LifeStyle Clinic Nurse

Dear _____,

Hello. My name is Masomeh Abedi and I am a graduate student at Memorial University. I am currently researching the different methods of informing the public about heart disease risks and other preventable factors. The purpose of this research is to observe how projects, such the LifeStyle Clinics, address these issues.

This study is entitled: "A Study of the Impact of LifeStyle Clinic Attendance on Individual Behavior Modification." Ethical consent has been obtained from the Human Investigation Committee (St. John's, Newfoundland & Labrador). As well, this project is supported by the Newfoundland and Labrador Heart Health Program.

Stephenville is a desirable choice for this study, given your outstanding tracking in number of monthly attendants and the number of years that this LifeStyle Clinic has been going on. Should you decide to participate in this project, the following steps will be taken:

1) You would send me back a copy of the attached consent form;
2) I would then send you a copy of the study objectives and methods for review;
3) Together, we will then set up a time for me to meet with you, so that I may explain the study and the instruments in further detail;
4) We will then chose a LifeStyle Clinic for me to attend and you will approach participants and after briefly mentioning the study to them, ask them if it would be okay for me to approach them;
5) I would brief the participants, if applicable, obtain consent, administer the first survey and send them to you for their LifeStyle Clinic session;
6) After attendance, I would administer one additional survey and obtain a telephone number to conduct an interview one-month later; and,
7) I will compile then this data and send out a final report to you at the end of this study period, estimated for October 2002.

I am very conscious of your busy schedule and therefore, would truly appreciate your help in this study. Please feel free to contact me should you have any questions, concerns, and suggestions. I look forward to hearing from you and once again, thank you for your time.

Sincerely,
Masomeh Abedi
M.Sc. Degree Candidate
Division Of Community Health, Faculty of Medicine
Memorial University of Newfoundland
(709) 777-8384
percat7@hotmail.com

Appendix B

Consent Form for the LS Clinic Nurse

Title of Project: A Study of the Impact of LifeStyle Clinic Attendance on Individual Behavior Modification

Name of Principal Investigator: Masomeh Abedi

To be signed by participant:

I, _____, the undersigned, agree to my participation in the research study titled above. Any questions have been answered and I understand what is involved in the study. I realized that participation is completely voluntary and that there is no guarantee that I will benefit from my involvement.

I acknowledge that a copy of this form has been given to me.

_____ _____

(Signature of Participant) (Date)

_____ _____

(Signature of Witness) (Date)

To be signed by investigator:

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

_____ _____

(Signature of Investigator) (Date)

Appendix C

Explanation Letter for Study Participants

Hello, my name is Masomeh Abedi and I am a graduate student at Memorial University of Newfoundland. I am currently researching the different methods of informing the public about heart disease risks.

You are being invited to participate in this project. Participation in this study is completely voluntary. You may decide not to participate or may withdraw from the study at any time without affecting your normal LifeStyle Clinic attendance.

The purpose of this study is to better understand the role that projects, such as the LifeStyle Clinics, serve in addressing heart disease risks.

Should you decide to participate in this study, I will ask you to sign a consent form, stating your willingness to participate in this project. You will then be asked to fill out a survey, which contains some general questions about your current health and some questions about heart disease. You have the option of requesting me to ask you these questions, instead of reading them yourself. After the completion of this survey, you will attend the LifeStyle Clinic. After attendance, you will be asked to fill out one more survey, which asks you a few questions about any new information you may have learned through the LifeStyle Clinic. Once again, you do have the option of requesting me to read the questions to you. In this survey, you will be asked to provide a telephone number where I can call you in one months' time and ask you some general questions about your health and heart disease.

All information that you provide on the surveys and during the telephone interview will be held in strict confidentiality. Only I will have access to your responses. The final results of this study will be put together into a report and will be made available to Ms. Patricia Young at the end of this study: October of 2002.

Thank you very much for you taking the time to read this letter and please feel free to ask me any questions you might have. Your participation may help us enhance the effectiveness of LifeStyle Clinics in providing information about heart disease.

Sincerely,

Masomeh Abedi
M.Sc. Degree Candidate
Division of Community Health, Faculty of Medicine
Memorial University of Newfoundland
(709) 777-8384
percat7@hotmail.com

Appendix D

Consent Form for Study Participants

Title: A Study of the Impact of LifeStyle Clinic Attendance on Individual Behavior Modification

Investigator: Ms. Masomeh Abedi (709-777-8384)
M.Sc. Degree Candidate
Division of Community Health, Faculty of Medicine
Memorial University of Newfoundland

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

Information obtained from you or about you during this study, which could identify you, will be kept confidential by the investigator. The investigator will be available during the study at all times should you have any problems or questions about the study.

The purpose of this study is to better understand the effectiveness of LifeStyle Clinics on your health.

Should you decide to participate, the following steps would then be taken:

a) the investigator will ask you to fill out Survey A which contains some general questions about your health and heart disease. You have the option of requesting the investigator to ask you these questions, instead of reading them yourself. This survey will take around 30 minutes and must be completed *before* you attend your LifeStyle Clinic session,

b) *after* you have attended you LifeStyle Clinic session, the investigator will hand out Survey B which has been designed to record any new information you might have learned during the LifeStyle Clinic session. Once again, you have the option of requesting the investigator to ask you these questions, instead of reading them yourself. This survey will take approximately 10 minutes,

c) four weeks after today's date, the investigator will call you at a phone number which is convenient for you, to ask you some questions regarding your health, heart disease, and your opinion of the LifeStyle Clinic which you are attending today. This interview will last for 15 minutes.

Participant Initials:___

Altogether, you will participate in two surveys and one phone interview, two of which will be done today and the last one to be completed four weeks from this date.

Your responses will only be available to the investigator, Ms. Masomeh Abedi, who will then put all of the responses together for the official results of this study. The results will be available to you at the end of this study, which is estimated to be around June 2002.

Your decision to participate or to not participate in this study will have no bearing on your LifeStyle Clinic session.

Your signature indicates your consent and that you have understood the information regarding the research study. In no way does this waive your legal rights nor release the investigators or involved agencies from their legal and professional responsibilities.

_____
(print first and last name)

_____
(signature)

_____
(date)

Appendix E

On-Site Survey Schedule A

Thank you for taking the time to participate in this survey. This survey consists of 50 questions, please answer all questions and follow the directions set next to some answer choices. If any question is unclear to you, please feel free to ask about it.

Participant Sex: Male_____ Female_____
Participant Code: (To be filled out by Investigator) _____

1. Have you previously attended a LifeStyle Clinic before?

   i. Yes ☐
   ii. No (go to question #5) ☐

2. How many LifeStyle Clinics have you attended, approximately?

---

3. Over what time period, would you say that you have attended these LifeStyle Clinics?

   i. several weeks ☐
   ii. several months ☐
   iii. several years ☐
   iv. don't remember ☐
   v. don't know ☐

4. Why have you attended these LifeStyle Clinics?

---

5. In general, would you say your health is....

   i. excellent ☐
   ii. very good ☐
   iii. good ☐
   iv. fair ☐
   v. poor ☐

6. Do you think there is anything you personally should do to improve your health?

i. yes ☐
ii. no (go to question #9) ☐

7. What is the most important thing you should do?

_____

8. What do you think are some of the main causes of heart disease or heart attacks?

_____

9. Based upon what you have heard or read, do you believe that heart disease can be prevented?

i. yes ☐
ii. no (go to next section) ☐
iii. don't know (go to next section) ☐
iv. no response (go to next section) ☐

10. What can a person do to prevent heart disease?

_____

_____

Section 2
SMOKING:

Please answer the following questions whether you are a smoker or a non-smoker.

11. In your opinion, are cigarettes hazardous to your health?

i. yes ☐
ii. no ☐
iii. don't know (go to question #14) ☐
iv. no response (go to question #14) ☐

12. Why are they? Why aren't they?

---

13. In your opinion, are cigarettes related to your risk of developing heart disease?

i. yes ☐
ii. no ☐
iii. don't know (go to question # 16) ☐
iv. no response (go to question #16) ☐

14. Why? Why not?

---

15. Have you ever been a regular smoker of cigarettes, cigars or pipes? (regular meaning at least 100 of each in your lifetime)

i. yes ☐
ii. no (go to next section) ☐

16. Have you smoked any tobacco in the past week?

i. yes ☐
ii. no ☐

17. What do you usually smoke?

i.	cigarettes	☐
ii.	cigars	☐
iii.	pipe	☐

18. On the average, how many cigarettes do you smoke a day?

i.	0-5	☐
ii.	6-10	☐
iii.	11-15	☐
iv.	16-20	☐
v.	21-25	☐
vi.	25+	☐

19. Have you tried to stop or decrease smoking in the last year?

i.	yes	☐
ii.	no	☐

20. Why? Why not?

_____

_____

Section 3
BLOOD PRESSURE:

Please answer the following questions regarding blood pressure:

21. Do you think that high blood pressure can affect your health?

i. yes ☐
ii. no (go to question #24) ☐
iii. don't know (go to question #24) ☐
iv. no response (go to question #24) ☐

22. How do think that high blood pressure can affect your health?

---

23. Do you know what things can cause high blood pressure?

i. yes
ii. no (go to question #25) ☐
iii. don't know (go to question #25) ☐
iv. no response (go to question #25) ☐

Could you name some examples?

---

24. Do you agree or disagree with the following statement? "You only need to have your blood pressure checked if you think you have a problem."

i. agree
ii. disagree ☐
iii. no comment ☐

25. When did you last have your blood pressure checked?

i. within last 6months ☐
ii. 6-12 months ago ☐

iii. 1-2 years ago ☐
iv. 3-5 years ago ☐
v. more than 5 years ago ☐
vi. never ☐
vii. don't know ☐
viii. no response ☐

26. Have you ever been told by a doctor, nurse, or other health professional that you have high blood pressure?

i. yes ☐
ii. no (go to question #29) ☐
iii. don't remember (go to question #29) ☐
iv. don't know (go to question #29) ☐
v. no response (go to question #29) ☐

27. What were you told you should do for your high blood pressure?

---

28. Are you currently doing anything to control your blood pressure?

i. yes ☐
ii. no (go to next section) ☐

29. What are you doing?

i. Take medicine ☐
ii. Go on a low salt diet ☐
iii. Watch weight ☐
iv. Avoid stress ☐
v. Cut down or stop smoking ☐
vi. Cut down on alcohol intake ☐
vii. Start an exercise program ☐
viii. Use biofeedback ☐

ix. None

x. Other treatment ☐

xi. Don't know ☐

xii. No response ☐

Section 4
EXERCISE:

The next few questions are about physical activities and exercise. Please answer all questions.

30. In your opinion, how is exercise (or the lack of) related to your risk of developing heart disease?

_____

_____

31. Do you think that getting more exercise would improve your health?

i.	a great deal	☐
ii.	a moderate amount	☐
iii.	a little	☐
iv.	not at all	☐
v.	don't know	☐
vi.	no response/refused	☐

32. "Exercise" includes vigorous activities such as jogging, racquet sports, team sports, dance classes, or brisk walking. Do you feel that you get as much exercise as you need or less than you need?

i.	as much as needed	☐
ii.	less than needed	☐
iii.	don't know	☐
iv.	no response	☐

33. How many times per week do you exercise for at least 15 minutes?

i.	daily	☐
ii.	5-6 times a week	☐
iii.	3-4 times a week	☐
iv.	1-2 times a week	☐
v.	less than once a week	☐
vi.	never	☐

vii. don't know

viii. no response ☐

34. Do you have any difficulty fitting exercise into your routine? Why? Why not?

---

35. Do you work outside the home?

i. yes ☐

ii. no (go to next section) ☐

36. What is your occupation?

---

37. Which of the following best describes the level of physical effort in your occupation or daily activities?

i. light-such as office work, driving, sitting ☐
ii. moderate-such as housework ☐
iii. heavy-such as pushing, carrying objects ☐
iv. don't know ☐
v. no response

Section 5
DIET:

The following questions are about your current diet.

38. In your opinion, is diet related to the risk of developing a cardiovascular disease?

i. yes ☐
ii. no ☐
iii. don't know (go to question #41) ☐
iv. no response (go to question #41) ☐

39. Why? Why not?

---

40. Have you made any changes to your eating habits over the past year?

i. yes ☐
ii. no (go to question # 44) ☐
iii. don't remember (go to question #45) ☐
iv. don't know (go to question #45) ☐
i. no response (go to question #45) ☐

41. What changes have you made to your eating habits over the past year?

i. less fat/low fat diet ☐
ii. no/less salt ☐
iii. no/less red meat ☐
iv. more vegetables/fruit ☐
v. no/less sweets/sugar ☐
vi. no/less junk food ☐

vii. more balanced diet ☐
viii. eat less ☐
ix. healthier foods ☐
x. more fiber ☐
xi. more water/juice ☐
xii. quit/less alcohol ☐
xiii. no/less eggs ☐
xiv. extra vitamins ☐
xv. non/low cholesterol foods ☐
xvi. other ☐

42. What was the main reason for changing your eating habits?

---

43. What was the main reason for NOT changing your eating habits in the last year?

---

44. How often do you eat food fried in fat or oil (including deep-fried)?

i. less than once a week ☐
ii. once or twice a week ☐
iii. 3 or 4 times a week ☐
iv. more than 4 times ☐

45. How often would you say you add salt to your food at the table?

i. always ☐
ii. most of the time ☐
iii. sometimes ☐
iv. never ☐

46. How many servings of fruit/vegetables do you usually eat per day (excluding fries)?

i. less than one per day ☐
ii. 1 or 2 a day ☐
iii. 3 or 4 a day ☐
iv. 5 or more a day ☐

47. Are you presently trying to lose weight, gain weight or neither?

i. lose weight ☐
ii. gain weight ☐
iii. neither ☐

48. Why? Why not?

---

49. What is your current weight_____ height_____age_____?

50. Is there anything you intend to do, to improve your health in the next year?

i. nothing ☐
ii. increase exercise ☐
iii. lose weight ☐
iv. improve eating habits ☐
v. quit smoking/reduce amount smoked ☐
vi. reduce drug/medication use ☐
vii. drink less alcohol ☐
viii. have blood pressure checked ☐
ix. attempt to control blood pressure ☐
x. learn to manage stress ☐
xi. reduce stress level ☐
xii. receive medical treatment ☐

xiii. other_____

xiv. don't know ☐

xv. no response ☐

Thank you for answering these questions.

Please inform the researcher when you are finished filling out this portion of the survey.

Appendix F

On-Site Survey Schedule B

Please answer the following questions. If any question is unclear to you, please feel free to ask about it.

1. Were you able to learn any new information about your health from this visit?

   i. yes ☐
   ii. no (go to question #3) ☐

2. What were you able to learn?

---

3. Were you able to learn anything new about heart disease and its' related risks?

   i. yes ☐
   ii. no (go to question #5) ☐

4. What were you able to learn?

---

5. What do you think are some of the main causes of heart disease or heart attacks?

---

6. In your opinion, what can a person do to prevent heart disease?

---

7. In your opinion, are LifeStyle Clinics a good way of providing heart health disease risk information to the public?

   i. yes ☐
   ii. no ☐
   iii. don't know (go to question #9) ☐
   iv. no response (go to question #9) ☐

8. Why? Why not?

---

9. If you have been attending LifeStyle Clinics for sometime, do you think that they have helped you?

i.	yes	☐
ii.	no (go to question #11)	☐
iii.	don't know (go to question #11)	☐
iv.	no response (go to question #11)	☐

10. In what ways has attending LifeStyle Clinics helped you?

_____

11. Based on what you may have learned from this LifeStyle Clinic, do you intend to make any changes in your lifestyle over the next month?

i.	yes	☐
ii.	no (go to question #13)	☐
iii.	don't know (go to question #13)	☐
iv.	no response (go to question #13)	☐

12. What do you plan to change?

_____

13. Do you have any suggestions as to how Lifestyle clinics could be improved?

_____

14. And finally what was your measured blood pressure? _____

Thank you for answering these questions, the second portion of this interview is now complete. As I mentioned to you before, I will contact you at your home or at whatever number you would like to provide to me in **four weeks**. I will then ask some more questions regarding your health, similar to the ones I have asked you today. Could you please provide me with a number to reach you with in one months time?

_____
(Name)

_____
(phone number)

_____
(best time to be reached)

_____
(date of this interview)

Once again, thank you and I will speaking with you in four weeks.
If you have any questions, please feel free to contact me at the number I have provided on your copy of the consent form.

Appendix G

Telephone Interview Schedule

Investigator: "As you might recall a month ago you participated in a survey at the LifeStyle Clinic on June 19th, 2001. My call today concerns the third and final portion of the survey. Do you have approximately 15 minutes available right now for me to ask you some more questions today?"

No_____, "When would be a better time to call you back?"

_____

Yes_____. "Great, well then let's get started. I am going to ask you a series of questions regarding your health. Please do not hesitate to ask me to repeat or explain a question. Do you have any questions for me before we start?"

1. In general, would you say your health is....(Read Responses)

   i. excellent ☐
   ii. very good ☐
   iii. good ☐
   iv. fair ☐
   v. poor ☐

2. Do you think there is anything you personally should do to improve your health?

   i. yes ☐
   ii. no (go to question #4) ☐

3. What is the most important thing you should do?

_____

4. What do you think are some of the main causes of heart disease or heart attacks?

_____

5. Based upon what you have heard or read, do you believe that heart disease can be prevented? (Read Responses)

   i. yes ☐
   ii. no (go to next section) ☐
   iii. don't know (go to next section) ☐
   iv. no response (go to next section) ☐

6. What can a person do to prevent heart disease?

SMOKING:

Ok. Now I'm going to ask you a couple of questions about smoking:

7. In your opinion, are cigarettes hazardous to your health?

i.	yes	☐
ii.	no	☐
iii.	don't know (go to question #9)	☐
iv.	no response (go to question #9)	☐

8. Why are they? Why aren't they?

---

9. In your opinion, are cigarettes related to your risk of developing heart disease?

i.	yes	☐
ii.	no	☐
iii.	don't know (go to next section)	☐
iv.	no response (go to next section)	☐

10. Why? Why not?

If smoker:

11. Now, when we talked last you were smoking regularly, has your smoking behavior changed during the last month?

i.	yes	☐
ii.	no (go to question #12)	☐

12. How has it changed?

i. increased ☐
ii. decreased ☐
iii. smoke a different brand ☐

12. On the average, how many cigarettes do you smoke a day? (Read Responses)

i. 0-5 ☐
ii. 6-10 ☐
iii. 11-15 ☐
iv. 16-20 ☐
v. 21-25 ☐
vi. 25+ ☐

14. Have you tried to stop or decrease smoking in the past month?

i. yes ☐
ii. no ☐

15. Why? Why not?

_____

_____

If not smoker:

16. Now, when we talked last you were not smoking, has your smoking behavior changed?

i. yes ☐
ii. no (go to next section) ☐

17. How has it changed?

_____

18. Why has it changed?

_____

19. On the average, how many cigarettes do you smoke a day? (Read Responses)

i.	0-5	☐
ii.	6-10	☐
iii.	11-15	☐
iv.	16-20	☐
v.	21-25	☐
vi.	25+	☐

BLOOD PRESSURE:

"Now I am going to ask you some questions about blood pressure:"

20. Do you think that high blood pressure can affect your health?

i.	yes	☐
ii.	no (go to question #21)	☐
iii.	don't know (go to question #21)	☐
iv.	no response (go to question #21)	☐

21. How do think that high blood pressure can affect your health?

_____

_____

22. Do you know what things can cause high blood pressure?

i.	yes	☐
ii.	no (go to question #23)	☐
iii.	don't know (go to question #23)	☐
iv.	no response (go to question #23)	

Could you name some examples?

_____

23. Do you agree or disagree with the following statement? "You only need to have your blood pressure checked if you think you have a problem."

i.	agree	☐
ii.	disagree	☐
iii.	no comment	☐

24. Have you had your blood pressure checked since visiting the LifeStyle Clinic?

i.	yes	☐
ii.	no (go to question # 26)	☐
iii.	not sure (go to question #26)	
iv.	no response (go to question #26)	☐

25. What was the reason?

IF IDENTIFIED WITH HIGH BLOOD PRESSURE, OTHERWISE SKIP TO QUESTION # 28.

26. Are you doing anything new to control your blood pressure since you visited the LifeStyle Clinic a month ago?

i.	yes	☐
ii.	no (go to next section)	☐

27. What are you doing? (Read Responses)

i.	Take medicine	☐
ii.	Go on a low salt diet	☐
iii.	Watch weight	☐
iv.	Avoid stress	☐
v.	Cut down or stop smoking	☐
vi.	Cut down on alcohol intake	☐
vii.	Start an exercise program	☐
viii.	Use biofeedback	☐

ix. None
x. Other treatment ☐
xi. Don't know ☐
xii. No response ☐

EXERCISE:

The next few questions are about physical activities and exercise....

28. Has your physical activity level changed at all during the past month?

i. yes ☐
ii. no (go to question #30) ☐

29. How has it changed?

_____

_____

30. In your opinion, how is exercise (or the lack of) related to your risk of developing heart disease?

_____

31. Do you think that getting more exercise would improve your health? (Read Responses)

i. a great deal ☐
ii. a moderate amount ☐
iii. a little ☐
iv. not at all ☐
v. don't know ☐
vi. no response/refused ☐

32. "Exercise" includes vigorous activities such as jogging, racquet sports, team sports, dance classes, or brisk walking. Do you feel that you get as much exercise as you need or less than you need? (Read Responses)

i. as much as needed ☐
ii. less than needed ☐
iii. don't know ☐
iv. no response ☐

33. How many times per week do you exercise for at least 15 minutes? (Read Responses)

i.	daily	☐
ii.	5-6 times a week	☐
iii.	3-4 times a week	☐
iv.	1-2 times a week	☐
v.	less than once a week	☐
vi.	never	☐
vii.	don't know	☐
viii.	no response	☐

34. Do you have any difficulty fitting exercise into your routine? Why? Why not?

DIET:

"Now, let's talk about your diet:"

35. Have you made any changes to your eating habits over the past month?

i.	yes	☐
ii.	no (go to question # 38)	☐
iii.	don't remember (go to question #39)	☐
iv.	don't know (go to question #39)	☐
v.	no response (go to question #39)	☐

36. What changes have you made to your eating habits over the past month? (Read Responses)

i.	less fat/low fat diet	☐
ii.	no/less salt	☐
iii.	no/less red meat	☐
iv.	more vegetables/fruit	☐
v.	no/less sweets/sugar	☐
vi.	no/less junk food	☐
vii.	more balanced diet	☐
viii.	eat less	☐
ix.	healthier foods	☐
x.	more fiber	☐
xi.	more water/juice	☐
xii.	quit/less alcohol	☐
xiii.	no/less eggs	☐

xiv. extra vitamins
xv. non/low cholesterol foods
xvi. other

37. What was the main reason for changing your eating habits?

---

38. What was the main reason for NOT changing your eating habits in the last month?

---

39. In your opinion, is diet related to the risk of developing a cardiovascular disease? Why? Why not?

---

40. How often do you eat food fried in fat or oil (including deep fried)? (Read Responses)

i. less than once a week
ii. once or twice a week
iii. 3 or 4 times a week
iv. more than 4 times

41. How often would you say you add salt to your food at the table? (Read Responses)

i. always
ii. most of the time
iii. sometimes
iv. never

42. How many servings of fruit/vegetables do you usually eat per day(excluding fries)? (Read Responses)

i. less than one per day
ii. 1 or 2 a day
iii. 3 or 4 a day
iv. 5 or more a day

43. Are you presently trying to lose weight, gain weight or neither?

i. Lose weight
ii. Gain weight
iii. Neither

44. Why? Why not?

---

45. What is your current weight _____?

46. Is there anything you intend to do, to improve your health in the next year? (Read Responses)

i.	nothing	☐
ii.	increase exercise	☐
iii.	lose weight	☐
iv.	improving eating habits	☐
v.	quit smoking/reduce amount smoked	☐
vi.	reduce drug/medication use	☐
vii.	drink less alcohol	☐
viii.	have blood pressure checked	☐
ix.	attempt to control blood pressure	☐
x.	learn to manage stress	☐
xi.	reduce stress level	☐
xii.	receive medical treatment	☐
xiii.	other_____	☐
xiv.	don't know	☐
xv.	no response	☐

47. What kinds of things did/would support you in starting or maintaining a change to improve your health?

---

48. What kinds of things have/would interfere with your making a change to improve your health?

---

49. Do you plan on attending more LifeStyle Clinics in the future?

i.	yes	☐
ii.	no	☐
iii.	maybe	☐
iv.	don't know	☐
v.	no response	☐

50. Do you have any suggestions for how LifeStyle Clinics can be improved?

"Thank you for answering these questions, this interview is now complete. Do you have any questions for me?"

"I will have a copy of this study sent to Patricia Young . Should you require a personal copy, please contact me and I will be happy to send one out to you. Thank you once again for your participation in this study."

Appendix H

Instrument Question Reference

Instrument I (Survey A)

Question Number:	Reference:
1	Original
2	NLHHP Evaluation Ques B
3	Original
4	Original (Similar to NLHHP Eval Q C)
5	Original
6	Nat Pop Health Sur (Ques GH-Q1)
7	Ottawa-Carleton (Q 2)
8	Ottawa-Carleton (Q 3)
9	Ottawa-Carleton (Q 5)
10	Original
11	Ottawa-Carleton (Q 6)
12	Original
13	Original
14	Original
15	Original
16	Ottawa-Carleton (Q 18)
17	Ottawa-Carleton (Q 19)
18	Ottawa-Carleton (Q 20)
19	Original (similar to Atlantic HHS Q 20)
20	Ottawa-Carleton (Q 22)
21	Original
22	Atlantic HHS Q 14
23	Atlantic HHS Q 15
24	Atlantic HHS Q 16
25	Ottawa-Carleton Q 7
26	Ottawa-Carleton Q 8
27	Original (Similar to Ottawa Q 9)
28	Ottawa-Carleton Q 10
29	Ottawa-Carleton Q 11
30	Ottawa-Carleton Q 12
31	Original
32	Ottawa-Carleton Q 28
33	Ottawa-Carleton Q 25
34	Ottawa-Carleton Q 26
35	Original
36	Original
37	Original
38	Ottawa-Carleton Q 40

39	Original
40	Original
41	LoPHID Q 9
42	LoPHID Q 10
43	Lo PHID Q 11
44	LoPHID Q 12
45	LoPHID Q 13
46	LoPHID Q 14
47	LoPHID Q 16
48	LoPHID Q 17
49	Original
50	Ottawa-Carleton Q 48

Instrument II (Survey B)

Question	Reference
1	Original
2	Original
3	Original
4	Original
5	Ottawa-Carleton Q 5
6	Original
7	Original
8	Original
9	Original
10	Original
11	NLHHP Eval Q I
12	Original
13	Original
14	Original

Instrument III (Participant Interview Schedule)

Question	Reference
1	Nat Pop Health Sur Q GH-Q1
2	Ottawa-Carleton Q 2
3	Ottawa-Carleton Q 3
4	Ottawa-Carleton Q 5
5	Original
6	Ottawa-Carleton Q 6
7	Original
8	Original

9	Original
10	Original
11	Original
12	Original
13	Original
14	Original (Similar Ottawa Q 22)
15	Original
16	Original
17	Original
18	Original
19	Original (Similar Atlantic HHS Q 20)
20	Original
21	Original
22	Original
23	Ottawa-Carleton Q 7
24	Original
25	Original
26	Ottawa-Carleton Q 11
27	Ottawa-Carleton Q 12
28	Original
29	Original
30	Original
31	Ottawa-Carleton Q 28
32	Ottawa-Carleton Q 25
33	Ottawa-Carleton Q 26
34	Original
35	LoPHID Q 9
36	LoPHID Q 10
37	LoPHID Q 11
38	LoPHID Q 12
39	Original
40	LoPHID Q 13
41	LoPHID Q 14
42	LoPHID Q 16
43	LoPHID Q 17
44	Original
45	Original
46	Ottawa-Carleton Q 48
47	Original
48	NLHHP Eval Q I
49	Original
50	Original

References:

Atlantic Heart Health Survey

NLHHP Evaluation of the LifeStyle Clinics Program 1996

National Population Health Survey 1998-1999

Ottawa-Carleton Hearbeat Survey

Local Public Health Infrastructure Development (LoPHID) Project

Appendix I

Key Informant Interview Schedule

Researcher: "I am going to ask you a couple of questions regarding the layout and typical agenda of the LifeStyle Clinics. Please note that all of your responses will be held in strict confidentiality and will only be accessible to me. Your name will not be mentioned on this form nor in the study report. Please answer the questions as accurately as possible and feel free to ask me for clarification, should any question be unclear to you. If you do not have any questions at the time, we can begin."

1) Please tell me how long you have been volunteering at the Stephenville LS Clinic?

2) How often are the LS Clinics held?

3) Approximately how many participants would you say attend each LS Clinic?

4) How do you recruit participants?

5) What is the typical LS Clinic agenda?

6) Currently, how many individuals, in addition to you, volunteer at the LS Clinic?

7) How do you recruit volunteers?

8) How many minutes would you say, you spend talking with each participant?

9) Do you have any suggestions for how the Newfoundland & Labrador Heart Health Program can improve LS Clinics?

Researcher: "Thank you very much for your time. We have completed the interview, do you have any questions for me? And would you like to add anything to your responses?"