Satisfaction with a Primary Care-Based Diabetes Management Program

by

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CHAPTER 1: BACKGROUND OF THE STUDY

Introduction

Diabetes is the sixth leading cause of death in the United States and affects approximately 7% of the population (Hupke, Camp, Chaufournier, Langley, & Little, 2004; Piatt et al., 2006). It is an established fact that the long-term complications of diabetes can be reduced by tight glycemic control. There is a clear relationship between control of blood glucose, blood pressure, and lipid level, and the ability to decrease microvascular and macrovascular morbidity (Nutting et al., 2007). A common measure of blood sugar control is that of glycosylated hemoglobin, or HbA1c. This laboratory test provides a measure of blood sugar control over the previous 3 months (Canadian Diabetes Association [CDA], 2007). A Cochrane collaboration review reported that an average reduction of HbA1c of 1% or more can result in a 21% reduction in mortality, a 14% reduction in acute myocardial infarction (AMI) , and a 37% reduction in microvascular complications if sustained over time (as cited in Wagner, Austin, et al., 2001).

There is, however, a gap between this evidence and what is achieved in clinical practice (Nutting et al., 2007). Wagner, Austin, et al. (2001) argued that fewer than half of patients in the United States with diabetes are receiving proper treatment. A primary care management study of Type 2 diabetes reported that 47.5% of patients had at least one diabetes-related complication (Spann et al., 2006). Over half of the patients (60.8%) in this study had a body mass index greater than 30 and a mean HbA1c of 7.6%; 35.3% had adequate blood pressure control; and 43.7% had adequate low-density lipoprotein (LDL) cholesterol levels.

Statement of Purpose

To examine the program satisfaction of patients with Type 2 diabetes over the age of 18, who received diabetes education and management support in their primary care physicians' offices at the Credit Valley Family Health Team (CVFHT).

Objectives

To determine the factors that contribute to patient satisfaction in regard to their continuing diabetes management support.

To determine the extent of patient satisfaction with the availability of diabetes support through the use of a specialized diabetes team in conjunction with their primary care physician.

To enhance primary care level diabetes management programs.

Significance of the Study

Diabetes education programs within primary care are a new venture for Ontario. This study will provide valuable information about how the participants feel about these programs. Studies have investigated patient satisfaction with self-management education and the role of self-management in chronic disease. This study specifically examined the role of these programs within family health team (FHT) environments. It will provide valuable data toward the development of these types of programs as well as direction for further evolution of the Diabetes Management Program at the CVFHT.

Conceptual Framework

Diabetes self-management education has been thought to be a crucial element in the management of Type 2 diabetes, but the number of patients who receive this type of education is low (Emerson, 2006). Traditional patient education involves knowledge

acquisition and counseling, but it is often unsuccessful in changing behaviour or improving disease control (Wagner, Austin, et al., 2001). In recent years, an emphasis has been placed on disease prevention within the primary care setting. Utilization of the chronic care model (CCM, 2007; see Figure 1) can enhance diabetes care delivery, particularly within primary care. The CCM was developed by Wagner, director of the MacColl Institute for Healthcare Innovation, Group Health Cooperative of Puget Sound, and colleagues of the Improving Chronic Illness Care Program with support from the Robert Wood Johnson Foundation.

The premise of this model is that "diabetes care is not delivered in isolation and can be enhanced by community resources and self-management support" (Piatt et al., 2006, p. 811). The development and utilization of the CCM reflects a paradigm shift with self-management as a key focus on making diabetes a part of patients' daily lives (Hupke et al., 2004). The CCM encourages patients to set goals and solve problems for improved self-management, and to become active and informed participants in their own care (Wagner, Austin, et al., 2001).

The characteristics of high-quality diabetes care include consistency with assessments, support for self-management, optimization of therapy, and regular follow-up (Wagner, Austin, et al., 2001). Researchers have found that these types of care management activities, as described in the CCM, provide support for patient self-management activities and are associated with better clinical outcomes, including lower HbA1c values and lower cholesterol ratios, which reduce diabetes-related complications over time (Nutting et al., 2007; Piatt et al., 2006; Spann et al., 2006).

The Chronic Care Model
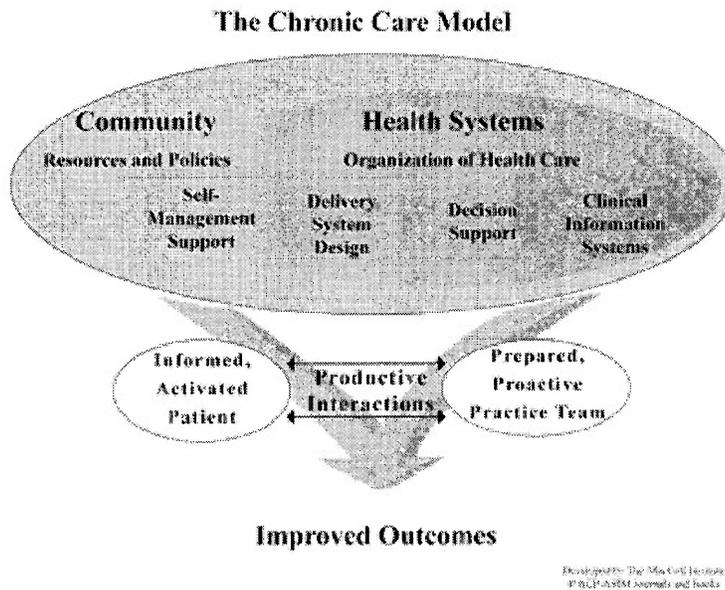
Figure 1. The chronic care model.
Source. Retrieved from www.improvingchroniccare.org

The Ministry of Health and Long-Term Care in Ontario (MOHLTC, 2005)

developed a chronic disease prevention and management (CDPM) framework based on

Wagner's CCM to guide efforts toward effective prevention and management of chronic

disease (as cited in Jain, 2007). This framework helped to guide ministry transformation

initiatives with a focus on chronic disease such as primary health care renewal and the

development of FHTs, local health integration networks (LHINs), an e-health strategy,

and specific chronic disease strategies (Jain). In September 2005, the MOHLTC

published its *Guide to Chronic Disease Management and Prevention* for FHTs, which

helps FHTs to plan programs based on this CDPM framework. The MOHLTC purposed

that the use of the CDPM approach may reduce the number of people with chronic

diseases, achieve better clinical outcomes, increase efficiency in the system, improve the

quality of care, reduce hospitalizations, reduce the use of emergency services, and

increase healthy behaviors (as cited in Jain). This chronic disease prevention and

management model was used as the guiding structure during the development of the

CVFHT Diabetes Management Program.

CHAPTER 2: LITERATURE REVIEW

Introduction

This literature review provides background information on diabetes mellitus, the health status of people with diabetes, and the health care costs associated with diabetes. Literature regarding the use of the chronic care model (CCM) and patient self-management is examined and is intended to provide evidence to support research in the area of patient satisfaction with this type of disease management framework.

Definition and Prevalence of Diabetes

Type 1 diabetes is a condition in which the pancreas does not produce insulin (CDA, 2007). Type 2 diabetes is a condition in which the pancreas does not produce enough insulin or when the body does not use the insulin it makes properly, known as insulin resistance (CDA). More than 2 million Canadians have diabetes, and this number is expected to rise to over 3 million. In 2000, the World Health Organization (WHO) estimated that over 177 million people had diabetes and that this number is expected to exceed 300 million by 2025 (as cited in CDA). Approximately 10% of people with diabetes have Type 1 diabetes (CDA).

Within the Mississauga-Halton Local Health Integration Network (LHIN), the diabetes prevalence rate in 2004-2005 was a total of 59,629 cases, with 28,221 females and 31,408 males in all age groups (Institute for Clinical Evaluative Sciences [ICES], 2007). ICES reported that the prevalence of diabetes in individuals ages 20 and older in the Peel Region increased from 1995-1996 to 2004-2005. It is also identified the diabetes prevalence rates for Peel Region in 2004 as 8.82%, compared with the Ontario prevalence rate of 8.8%. ICES also reported that the percentage of adults with diabetes

ages 30 and older who received routine eye examination during 2002-2004 was 72% in the Mississauga-Halton LHIN, compared with 73% in Ontario.

Diabetes Health Status

The CDA (2003) recommends that people with diabetes have an HbA1c level every 3 months to monitor their blood glucose level; a lipid test every 1 to 3 years; regular blood pressure checks, eye exams, and foot exams; and assessments for early signs of kidney disease. The UK Prospective Diabetes Study (UKPDS; Turner et al., 1998) was a 20-year trial of over 5,000 patients with Type 2 diabetes in England, Northern Ireland, and Scotland. This landmark study showed that complications from diabetes are not inevitable and that the risk of these complications can be reduced by appropriate therapy. The UKPDS also found that the appropriate diabetes therapy consists of not only a lowering of blood sugar but also an overall risk reduction for risk factors of diabetes complications. For every 1% decrease in HbA1c, there is an associated 14% reduction in the incident of AMI and a 16% decrease in heart failure rates (Turner et al.). The UKPDS also reported that better blood glucose control reduces the risk of major diabetes eye disease by 25% and early kidney damage by 33% and that better blood pressure control reduces the risk of death from long-term diabetes complications by a third, stroke by more than a third, and serious vision deterioration by more than a third. The Ontario Diabetes Task Force (2004) reported that nearly 50% of people with diabetes are not receiving the recommended laboratory tests or exams that could reduce these complications.

The Diabetes in Canada Evaluation study (DICE) revealed that nearly half (49%) of Ontarians with Type 2 diabetes are not at recommended blood glucose targets (HbA1c

< 7%) and are at high risk of developing complications (Harris, Ekoe, Zdanowicz, & Webster-Bogaert, 2005). The DICE study was the largest diabetes study of its kind in Canada and involved a chart audit of 2,473 patients from across Canada. The goal was to investigate glycemic control and disease burden associated with Type 2 diabetes within the Canadian family practice setting. Primary care providers were asked to complete a two-page patient record of 10, Type 2 diabetes patients. This record obtained demographic information and data on medical history and current medications.

Harris et al. (2005) found that 32% of patients had suboptimal blood sugar control (HbA1c 7.0% - 8.4%), and 17% had inadequate blood sugar control (HbA1c > 8.4%). The findings also suggested that the longer individuals have diabetes, the more likely they are to have poorly controlled blood sugars. Harris et al. reported that 62% of patients with diabetes for more than 15 years had an HbA1c at or greater than 7%, compared to 31% of patients who had diabetes for less than 2 years.

Diabetes is the leading cause of heart attacks, strokes, kidney failure, adult blindness, and limb amputations in Canada (CDA, 2007). The risk of end-stage kidney disease in 13 times higher in people with diabetes (Oliver, Lok, Shi, & Kopp, 2003). Hospitalizations for stroke are approximately 3 times higher in people with diabetes (Kapral et al., 2003). AMI occurs 15 to 20 years earlier for people with diabetes (Booth, Rothwell, Fung, & Tu, 2003). The Ontario Diabetes Task Force (2004) reported that the life expectancy of people with diabetes is 13 years less than people without diabetes. In 1997, almost 25% of deaths in Ontario were people with diabetes; of these diabetes-related deaths, almost 70% were from cardiovascular disease (Diabetes Task Force).

Harris et al. (2005) also found that of the 2,473 patients in the DICE study, 63% had hypertension, 59% had dyslipidemia, 11% had stable angina, 11% had previous AMI, 7% had congestive heart failure, 6% had peripheral vascular disease, and 5% had a history of stroke. Microvascular complications were also present, and 22% had microalbuminuria, 11% had cataracts, 8% had neuropathy, and 1% had undergone a limb amputation. In addition, 14% of patients had a diagnosis of depression, and 21% of males had erectile dysfunction.

Health Care Costs

One in 20 hospital admissions in Ontario is the result of acute care needs such as heart attacks, strokes, and kidney failure due to diabetes (CDA, 2007). This amounted to more than 99,900 admissions in 2005. The CDA has estimated that diabetes is the contributing factor in the deaths of approximately 41,500 Canadians each year.

Diabetes accounts for almost 10% of Ontario's health care costs, that is, more than $2 billion annually (Ohinmaa, Jacobs, Simpson, & Johnson, 2004). This cost includes medications, supplies, hospitalization for surgery and emergency care, and physician and specialist visits. It does not include the cost of rehabilitation after surgery, personal costs to the family or the individual, or the impact on employers and the community.

A study examining the cost of diabetes care in Canada found that the total cost of diabetes and complications in 1998 was $3.7 billion (Dawson, Gomes, Gerstein, Blanchard, & Kahler, 2002). The prevalence of diabetes has increased dramatically since 1998, so these costs are likely much higher today. Dawson et al. reported that of the total medical expenditures for diabetes, 50% is associated with hospital care, 19% with

physician care, and 31% with medications. They further broke down these medical expenses by complication, reporting that neurological disease accounted for 5.7%, peripheral vascular disease accounted for 2.4%, cardiovascular disease 24.3%, renal disease 1.9%, eye disease 0.2%, and other chronic complications 0.6%. The CDA (2007) estimated that the direct and indirect costs of diabetes in Canada are $13.2 billion, rising to $15.6 billion by 2010 and more than $19 billion by 2020. As diabetes is projected to increase by 75% by 2016, it is estimated that the financial impact on Ontario will be more than $3 billion annually (Ohinmaa et al.).

An analysis by O'Brien, Patrick, and Caro (2003) broke down these annual costs related to diabetes into single-event costs, that is, only direct medical costs and those directly related to the delivery of health care service for various complications in Canada in 2000. They reported that for patients treated in hospital for AMI, the acute care portion of the event, which includes physician costs and ambulance costs, was $9,739. Subsequent postacute costs for AMI, including outpatient care, postsurgical care, cardiac rehabilitation, and long term-care, increased the cost per event to $18,635 for one year.

Angina that was considered unstable and required hospitalization costs $9,661, angina treated in an emergency room as an outpatient cost $1,397, and angina treated by the primary care physician costs $1,230 (O'Brien et al., 2003). Acute care for the treatment of ischemic stroke was $8,822, increasing to $33,256 when costs for rehabilitation were included. The annual cost to treat end-stage kidney disease was an average of $63,045, depending on treatment option. The cost for amputation depended on the degree of amputation. The cost for an above-the-knee amputation was $19,760, amputation, notably higher than a toe amputation ($6,460), because there were

significantly more postamputation care and rehabilitation services required. The cost for a second amputation could increase to as much as $26,077. Foot ulcers treated as inpatients cost $7,802, compared to much lower outpatients costs of $1,042. The cost of treating hypoglycemic events ranged from $24 for self-treatment with glucagon and no medical personnel, to an emergency room treatment at a cost of $194, to the highest level of hypoglycemic event requiring hospitalization at a cost of $4,184 per event. This analysis clearly showed that the costs of treating a single event of a diabetes complication were extreme even in 2000 and that outpatient treatment options were and still are more cost efficient.

The CDA (2007) reported that for every $1 spent in helping people with diabetes manage their disease more effectively, the government could save $4 in health care costs and make emergency room beds and other general hospital beds more readily available. The personal medical costs for someone with diabetes are 2 to 3 times higher than the medical costs for someone without diabetes. A person with diabetes can face direct annual costs for medication and supplies of $1,000 to $15,000 (CDA).

Although there is no known way to prevent Type 1 diabetes at this time, the onset of Type 2 diabetes may be prevented or delayed through physical activity, healthy eating, weight loss, and stress reduction (CDA, 2007). These core components are part of the approach to chronic disease management utilizing the CCM.

Chronic Care Model in the Management of Diabetes

The CCM (2007) is gaining momentum in the management of chronic disease because it uses a proactive, population-based, planned approach to chronic care delivery (Nutting et al., 2007). O'Connor et al. (2005) conducted a study to test the hypothesis that

a quality improvement intervention would lead to improved diabetes care. The study

consisted of 12 primary care practices that were matched by size and location and which

randomized participants to either the intervention group, which involved a 7-step quality

improvement (QI) change process, or the control conditions of usual care. The sample

comprised 754 patients and 329 clinic staff. Each intervention clinic sent a team to eight

3-hour training sessions over 18 months. At the first training session, the 6 intervention

teams agreed on a common goal of decreasing HbA1c values by 10%. Each subsequent

training visit focused on one step of the seven-step QI process. The seven steps that were

taught were (a) identify opportunities for improvement, (b) collect the data, (c) analyze

the data, (d) choose an approach, (d) develop the concepts and processes, (f) implement

the processes, and (g) evaluate and improve the processes.

Once trained in the 7-step process, the team became the QI change team at the

clinic and developed changes in care practices within their clinic. Once the changes were

developed, the changes in the care processes were implemented. Baseline and follow-up

surveys of diabetes care were conducted. O'Connor et al. (2005) found that the change

process produced no significant differences in the use of guidelines; however, they did

find a significant change in the frequency of diabetes care procedures, which included

annual measurement of HbA1c, cholesterol, and blood pressure. An increase in the use of

diabetes patient registries and the use of active outreach to those who needed care was

found. Although this intervention significantly changed the care processes for diabetes,

there was no significant change in the outcomes.

O'Connor et al. (2005) concluded that although QI is fundamental in a process-

change model, there was no guidance about what changes should occur. They asserted

that clinical inertia, defined as the failure to intensify therapy when a patient is not at goal, occurs in over 60% of visits and that it is difficult to improve levels without reducing this clinical inertia; in addition, the intervention clinics did not emphasize this aspect of care. The researchers also concluded that although there was a significant change in care, there was no change in the outcomes because there was no emphasis on patient activation. Increased measurement alone was not enough to motivate patients to actively manage their disease. Use of the CCM provides substantial support for patient self-management activities and patient activation (Nutting et al., 2007).

It is this type of patient motivation to manage disease where the CCM provides guidance for program change. A multilevel cluster design study of 11 primary care practices in Pittsburgh, Pennsylvania, used the CCM to shift to a prevention-based system (Piatt et al., 2006). The goal of the study was to determine whether the use of the CCM in an underserviced community would lead to improved clinical and behavioral outcomes for people with diabetes. The study consisted of 3 phases: (a) cross-sectional chart review to determine baseline patterns of care, (b) randomization and intervention with a 12-month follow-up and clinical assessment, and (c) repeat chart review to determine postintervention patterns of care.

The practices were randomized to the intervention group of care based on the CCM (2007), a group that received only provider education, or to the usual care group (Piatt et al., 2006). The CCM intervention group involved patient and provider education as well as other CCM elements such as self-management support, delivery system redesign, decision support, and organizational support. The self-management support consisted of diabetes self-management training by a certified diabetes educator (CDE)

that was held weekly as well as monthly support groups that used the empowerment approach to diabetes education. Delivery system redesign consisted of redesigning the process in which patients with diabetes were seen for routine visits. This included the use of a CDE on specific "diabetes days," when the provider focused on diabetes care and could refer patients to the CDE for point-of-service education. Decision support was provided through a problem based learning session with an endocrinologist, who presented case studies and lead the providers through a series of diabetes management questions, which incorporated American Diabetes Association (ADA) guidelines, the use of flow sheets, and patient education tools.

The provider education only group attended the problem based learning session with the endocrinologist. A CDE was not placed in the practices but was made available for consultation. The usual care group was mailed a copy of the ADA guidelines, flow sheet, and patient education tools. Baseline and follow-up testing was done. This included a series of questionnaires to gain information about diabetes knowledge, patients' self-care practices, health care utilization, comorbidities, and satisfaction.

This study found that the use of a CCM-based intervention was effective in improving clinical, behavioral, psychosocial, and diabetes knowledge outcomes (Piatt et al., 2006). The use of the CCM showed a significant decrease in HbA1c and non-high-density lipoproteins (HDL) cholesterol. The intervention group also had increased rates of self-monitoring of blood glucose. Improvements were also found in HDL cholesterol levels, diabetes knowledge, and empowerment scores with the use of CCM elements. These outcomes were maintained even after adjustments were made for treatment intensification.

A study in Colorado of 90 clinicians and 886 patients also showed that the CCM is significantly associated with a decrease in HbA1c and cholesterol (Nutting et al., 2007). Physicians were recruited from the Copic Insurance Company database, which includes more than 95% of the primary care physicians in Colorado. Clinical staff in 30 practices agreed to participate. The participants were given a uniform set of instructions to generate a list of patients with diabetes. The patients who were identified were sent a letter from their primary care physicians inviting them to participate in the study. These researchers used a questionnaire about current practices and the use of elements of the CCM. They focused on nine items:

> (a) The use of a registry to identify and track care, (b) the use of a tracking system to remind patients of visits, (c) follow-up telephone calls, (d) the use of published practice guidelines, (e) involvement of office staff in identifying and reminding patients in need of follow up, (f) assistance to patients in setting and attaining self-management goals, (g) referral of patients to someone within practice for diabetes education, (h) referral of patients to someone outside of practice for diabetes education, and (i) use of flow sheets to track elements of care. (p 16)

Nutting et al. (2007) found that greater use of the elements of the CCM was associated with a decrease in HbA1c and lipid ratios. For example, for every unit increase in reported use of the CCM elements, there was an associated decrease of 0.3% in HbA1c and 0.17% in lipid ratios. In addition, the clinicians in Colorado reported being able to incorporate elements of the CCM without major structural change to their practice routine. These changes also could occur with modest clinician-level efforts. Nutting et al. found that the presence of an electronic medical record does not substantially improve care unless it is used to support chronic care in specific ways, such as flagging for overdue tasks and providing reminders to support self-management activities.

The CCM provides a basis for a paradigm shift toward preventative care. A study of 707 patients selected at random from a diabetes registry in the Seattle region randomized patients to the intervention of chronic care clinics or usual care (Wagner, McGregor, et al., 2001). The intervention involved of the use of chronic care clinics that consisted of an assessment; individual visits with a primary care physician, nurse, and clinical pharmacist; group education; and peer support session. Self-management support was included in both the individual counselling with the nurse and during the group session. Surveys were sent to the participants on three separate occasions, and they collected data on preventative measures, measures of health status, depression scale, and diabetes satisfaction.

Wagner, McGregor, et al. (2001) found that the intervention group had significantly more preventative care, such as eye and foot care. The intervention group also had more primary care visits but significantly fewer specialty and emergency room visits. There was a reported positive association between the number of clinics attended and patient satisfaction and HbA1c levels. There also were higher rates of participation in patient education, and the intervention group reported the helpfulness of all forms of diabetes education as significantly higher. These researchers looked at the cost of these types of programs and found no difference in health care costs between the intervention group and the control group. There were no significant differences found in physical function or depression measures but the intervention group reported their general health to be significantly better than that of control patients. Being in the intervention group had a positive effect on patient self-management of their disease.

Patient Self-Management

The key to good chronic disease care is to empower patients with the necessary information to manage the disease themselves. Patients with diabetes see a health care provider for 10 to 15 minutes four times a year, which is equivalent to 1 hour of interaction annually (Peeples & Seley, 2007). Health care providers diagnose, prescribe, and adjust medications, and they also monitor for complications, but the patients make the decisions about day-to-day management of the disease. Providing patients with the information to handle this decision making is essential in chronic disease management.

The Diabetes Attitudes, Wishes, and Needs study (DAWN) was the largest psychosocial diabetes study of its kind (Alberti, 2002). It addressed the perceptions and attitudes of more than 5,000 people with diabetes and nearly 4,000 diabetes health care professionals in 13 countries. The research was conducted in 2001 and consisted of face-to-face or telephone interviews depending on the country, the culture, and the local telephone penetration rate. The interviews were 30 to 50 minutes in length and focused on aspects of patient self-management such as physical health, diabetes knowledge and beliefs, life patterns, personality, sociocultural environment, and diabetes history.

Alberti (2002) found that most of the people interviewed reported not following the treatment recommendations given by their health care professionals and that many people found their diabetes demanding and prevented them from doing what they wanted. The health care providers recognize that psychosocial factors strongly influence how well patients manage with diabetes. The study confirmed that half of the patients with diabetes felt a great deal of stress and anxiety from the diabetes and that 20% felt "burned out." Alberti reported that only 33% of the respondents felt they were effectively managing

their diabetes. The DAWN study emphasized that a family network or other support system is needed to help patients cope with the demands of the disease. Those with strong support have a better sense of well-being, which leads to better self-management, as compared to those who live alone and do not manage the disease as effectively (Alberti).

Spann et al. (2006) examined the diabetes status of 822 patients with diabetes within four primary care practice-based research networks in the United States. The 95 participating clinicians were asked to enroll 10 consecutive diabetes patients for the study. The clinicians completed a baseline questionnaire about their practices, and the patients completed a baseline questionnaire prior to their clinic visit about self-management activities. After the visit, the clinician completed a checklist of diabetes complications and medical information, which included laboratory values.

Spann et al. (2006) found that in primary care practices, only 40.5% of patients achieved HbA1c targets of less than 7.0%, 35.3% achieved blood pressure targets of 130/80 mmHg, and 43.7% achieved LDL cholesterol targets. They also found that only 8.4% of practices used disease registries and that 72.6% used disease-specific protocols and flow sheets. Among standard care practices that do not actively involve patient management support, less than half of patients are meeting recommended targets. Spann et al. also found that 47.5% of the patients with diabetes had at least one complication, indicating that it is necessary to provide patients with the tools they require to actively manage their disease. Clearly, visiting primary care providers is insufficient in encouraging patient self-management. Being actively involved in the management of their disease will also have an impact on patient satisfaction with care.

Patient Satisfaction

Patient satisfaction can be useful in the development and evolution of chronic care programs. It is important to obtain the perspective of the persons for whom the programs were actually designed. If self-management is the key to CDPM, programs that do not provide patients with adequate support or information will not keep them engaged with their care. Roblin, Becker, Adams, Howard, and Roberts (2004) conducted 41,209 random patient satisfaction surveys from 1997 to 2000 to investigate patient satisfaction and primary care visits. All of the patients were members of Kaiser Permanente Georgia throughout the metropolitan Atlanta area. The post visit survey was administered by phone within 2 weeks of the visit. Each patient survey was linked with the original patient visit record to obtain information on the presenting condition.

Roblin et al. (2004) found that the patients were more satisfied with practitioner interaction on visits with a physician assistant or nurse practitioner than with a medical doctor in the area of adult medicine and pediatrics. They also reported that factors other than type of practitioner had a more profound influence on patient satisfaction. Time restraints on visits and whether patient requests for specific practitioners were accommodated accounted for a greater proportion of patient satisfaction than type of practitioner. In the area of diabetes, the patients reported more satisfaction with a medical doctor than a physician assistant or a nurse practitioner. Diabetes was the only specific condition in which a difference in satisfaction based on practitioner type was evident.

A study in the inner-city health district of Greater Manchester was designed to measure well-being and treatment satisfaction in older people with diabetes (Petterson et al., 1998). The diabetes register for the Salford Collaborative Diabetes Care Program was

used to identify prospective participants by the computer using random numbers. Mail-in surveys were used to collect data on the well-being and treatment satisfaction of older people. The diabetes register is updated annually with details of the patients, including biochemical data such as HbA1c. Petterson et al. found that well-being or satisfaction correlated with HbA1c. They also found that the patients using insulin tended to be younger and reported lower well-being. There were no differences in well-being and treatment satisfaction between patients treated with diet alone or with oral medications. Overall, the females in the study reported lower well-being than the male participants did. The female participants also tended to rate their treatment satisfaction higher than the males. Patients with longer duration of diabetes were generally more depressed and reported lower general well-being.

These findings were similar to those of a study of 1,348 patients with Type 2 diabetes in Holland (Redekop et al., 2002). General practitioners, who were selected from a computer database, recruited patients from their practices to participate. The participants completed questionnaires regarding quality of life and treatment satisfaction. Redekop et al. found that patients using insulin therapy had a lower health-related quality of life. They also found that obesity, presence of complications from diabetes, older age, and female gender resulted in a lower health-related quality of life. Having no complications increased the participants' ratings of quality of life. Overall, there was high treatment satisfaction with diabetes care.

Gross et al. (2003) conducted a study of 135 people with diabetes in 12 primary care practices in Israel that examined patient satisfaction and practitioner adherence to guidelines. Physicians employed by the Clalit and Maccabi health plans were randomly

sampled, and participants were randomly obtained from a list of diabetic patients provided by each physician. Telephone interviews were conducted using structured questionnaires. The patients were asked questions regarding the use of clinical guidelines and satisfaction with their primary care physicians and treatment of diabetes. Gross et al. found that adherence to guidelines and maintenance of constant communication were positively associated with patient satisfaction. Both are crucial elements in the development of primary care chronic disease programs. This study also found higher patient satisfaction with physicians with a fixed salary because they have an incentive to keep patients satisfied as compared to physicians who are reimbursed according to the number of patient visits.

Summary

Diabetes is a chronic health condition that is going to increase to epidemic proportions over the next decade. The cost of treating the complications of this disease are astronomical, and research has supported the assertion that the financial and physical costs of these complications can be reduced by increasing the intensity of diabetes management. Managing complications within primary care is also more cost effective than in hospital care. In order for this to occur, patients must be able to self-manage their diabetes to gain optimal control.

The use of the CCM (2007) has been well documented to help with the management of chronic disease, as long as it is used in a way that increases the self-management aspect of chronic disease. Minor practice changes to incorporate elements of the CCM that activate patients has been clearly shown to reduce HbA1c and lipid ratios as well as increase patient satisfaction and self-management participation. The use of the

CCM as a format for the increased monitoring of outcomes of diabetes within primary care is not sufficient to achieve better glycemic control such that the prevalence of complications is reduced. Diabetes self-management programs need to be accessible to patients and evaluated regularly to ensure that patients are receiving the support and education they need to proactively manage their diabetes and increase their overall well-being in order to be sustained.

CHAPTER 3: NEEDS ASSESSMENT

Region of Peel

The Credit Valley Family Health Team (CVFHT) is part of the Mississauga-

Halton LHIN, which is composed of portions of both the Region of Peel and the Region

of Halton (see Figure 2). The Region of Peel serves the communities of Brampton,

Caledon, and Mississauga in Ontario. Although the CVFHT does not exclusively provide

services to patients in the Region of Peel, a large majority of the patients reside within

this region. Because diabetes funding is provided based on census data per region, data

for only the Region of Peel are discussed in this study.
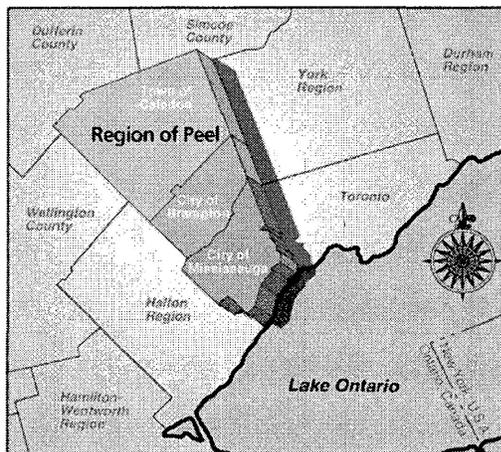
Figure 2. Map of the region of Peel.

Demographic and Population Trends

The Region of Peel has a population of 1,159,405, a 17.2% increase since 2001

(Statistics Canada, 2007a, 2007b). The population density per square kilometre is 933.2,

and the mean age of the population is 35.6, with the mean age of males at 35.0, and the

mean age of females at 36.1. Approximately 78.9% of the population is over the age of

15. Within the Region of Peel, 520,350 residents are legally married, 49,275 are

divorced, and 41,000 are widowed (Statistics Canada, 2007a, 2007b). Tables 1 and 2

represent the immigration characteristics and religious views of the people living within

the Region of Peel.

Table 1

Immigration Characteristics in the Region of Peel

Immigration characteristics	Total population
Canadian-born population	553,440
Foreign-born population	424,820
Immigrated before 1991	265,845
Immigrated between 1991 and 2001	158,975
Nonpermanent residents	7,300

Source. Statistics Canada. (2007b). *2002: Community profiles.* Retrieved from http://www12.statcan.ca/english/Profil01/CP01/Index.cfm?Lang=E

Table 2

Religion in the Region of Peel

Religion	Total population
Catholic	392,640
Protestant	242,940
Christian Orthodox	24,000
Muslim	53,470
Jewish	2,635
Buddhist	14,985
Hindu	46,965
Sikh	58,315
No religious affiliation	116,740

Source. Statistics Canada. (2007b). *2002: Community profiles.* Retrieved from http://www12.statcan.ca/english/Profil01/CP01/Index.cfm?Lang=E

Education

The education level of people in the Region of Peel is similar to that of Ontario in

regard to high school education and college certificates for most age categories. Data

from the census in 2001 showed that within the Region of Peel, 34.6% of the population

ages 20 to 34 have a high school diploma, compared to 33.7% in all of Ontario (Statistics

Canada, 2007b). In the age category of 35 to 44, 26% of the population in Peel have a

high school diploma, compared to 25.6% in Ontario. The percentage of the population

who have a college education also is similar, with 19.3% of those ages 20 to 34 and 21%

of those ages 35 to 44 within Peel, compared to 19.5% and 21.2%, respectively, within

Ontario. There does seem to be a difference among the oldest age category of 45 to 64 in

that within Peel, 26.1% of the population has less than a high school diploma, compared

to 27.5% in Ontario.

Peel appears to have more people in the 35- to 44-age category with a university

degree (26.5%), compared to all of Ontario at 24.3%. This trend continues into the 45- to

64-age category, with 23.2% within the Region of Peel having a university degree,

compared to 21.5% for Ontario. This trend does not remain in the 20- to 34-age group,

with similar data between the Region of Peel and Ontario at 26.1% and 25.7%,

respectively. The increased percentage of people in Peel having a university education is

reflected in fewer people in the region having trades certificates, 10.2% ages 35 to 44,

compared to 11.5% for the whole province. This trend is less pronounced in the 45- to

64-age group, with 11.2% in Peel having trade certificates, compared to 11.6% for all of

Ontario.

Income

Income level within Peel does not differ from that of Ontario as a whole. Statistics

Canada (2007b) census data reported that the average income in 2000 for full-time

workers was $47,636 in Peel, compared to $47,299 for all of Ontario. The median total

income for those 15 and older was higher in Peel ($27,969), compared to Ontario

($24,816). Government transfers within Peel were also less than that for all of Ontario, at

6.5% and 9.8%, respectively.

Employment

The Region of Peel reported a higher employment rate than Ontario. Peel has an

employment rate of 69.8%, compared to 63.2% for all of Ontario (Statistics Canada,

2007b). The three largest industries in Peel are manufacturing and construction,

wholesale and resale trade, and business services. Agriculture is the smallest industry.

Most people within Peel are employed in business, finance and administration, or sales

and service.

Health Indicators

Peel reported fewer smokers than Ontario as a whole (see Table 3). Data also

showed less physical activity and more reported stress in Peel. The Peel Regional Health

Unit reported lower influenza immunization rates than those for the whole province.

More people within the Peel Regional Health Unit have a regular doctor (92.1%),

compared to all of Ontario (91.1%; Statistics Canada, 2007a).

Table 3
Health Indicators

	Region of Peel			Ontario		
	Total	Male	Female	Total	Male	Female
Current smoker, 2005	18.8	23.0	14.7	20.7	23.3	18.2
Physical activity, 2005	48.4	54.6	42.3	51.3	54.5	48.2
Life stress, 2005	26.3	24.0	28.4	23.1	22.1	24.1
Sense of community belonging, 2005	65.6	65.8	65.4	63.4	62.1	64.6
Influenza immunization, 2005	34.3	32.8	35.9	41.1	37.9	44.1
Has a regular medical doctor, 2005	92.1	89.2	95.0	91.1	89.1	93.1

Source. Statistics Canada. (2007b). *2002: Community profiles.* Retrieved from http://www12.statcan.ca/
english/Profil01/CP01/Index.cfm?Lang=E

Within the Mississauga-Halton LHIN, the percentage of patients 65 and older

with diabetes who were prescribed an angiotensin-converting enzyme (ACE) inhibitor as

recommended by the CDA (2003) guidelines was just over 60% and is similar to the

percentage prescribed an ACE for Ontario. The percentage of these patients who received

a lipid-lowering agent was 52% in Mississauga-Halton LHIN, compared to 48% in

Ontario. The rates of prescriptions for antihypertensive agents did not differ in the

Mississauga-Halton LHIN, compared to Ontario, and the rate of being prescribed all three

agents within the Mississauga-Halton LHIN was 39%, compared to 36% for Ontario

(ICES, 2002).

Diabetes Health System

There are three hospitals in Peel Region providing diabetes education services.

The MOHLTC stated that these diabetes centres are currently providing services to 22%

of the diabetes population within the region (Hollahan, personal communication,

November 1, 2007). The Ontario Diabetes Task Force (2004) reported that 28% of

Ontarians were able to access structured diabetes education and care in 2004. The

funding for these programs is based on current diabetes programs in the province of

Ontario, compared to the prevalence count (Hollahan, personal communication). The

funding for one full-time team consisting of one full-time registered nurse (RN) and one

full-time registered dietitian (RD) was set in March 2001 based on a literature review and

a scan of national and international programs for resource allocation (Ontario Diabetes

Task Force). Hollahan (personal communication) reported that these services reach 22%

of the diabetes population based on a team of one full-time RN and one RD per 1,000

clients (see Table 4).

The Ontario Diabetes Task Force (2004) submitted a recommendation to the

minister of health that an investment be made to increase this to 100% access to

maximize the ability of patients to self-manage their diabetes and to reduce the

downstream costs associated with complications. The task force also asserted that the current staffing ratio does not factor in the increasing complexities of diabetes care. In February 2007, the Ontario government announced funding for 44 new diabetes education teams within Ontario. Within the Mississauga-Halton LHIN, the CVFHT received funding for one full-time diabetes team. It is projected that this new funding for community-based program, along with current hospital-based funding, will increase access to diabetes education for people in Peel Region to 32% (Hollahan, personal communication).

Table 4

Diabetes Education Program Reach in the Region of Peel

Program	Clients per year	Visits per year
Trillium Health Centre Adult Diabetes Management Centre	6,000	19,500
Credit Valley Diabetes Care Centre	8,000	17,000
East Mississauga Community Health Centre – Lakeshore Area Multiservice Project (LAMP) West	80	
Credit Valley Family Health Team Diabetes Management Program	146	250
William-Osler Diabetes Education Centre (Central West LHIN, Peel Region)		
Lifestyle Metabolism Clinic	1184	2000
Halton Diabetes Program (Mississauga-Halton LHIN, Halton Region)	4,500	11,400
Peel South Asian Diabetes Program	1,000	2,100

Source. Mississauga-Halton Local Health Integration Network. (2008). *Inventory of diabetes education programs.* Mississauga: Author.

CHAPTER 4: METHODOLOGY

Research Design

Development of a Primary Care Diabetes Management Program

A needs assessment of the hospitals within the Mississauga-Halton LHIN was

conducted to gather information regarding services currently provided to patients with

diabetes and to identify areas where a community-based program can complement

current tertiary programs. The three hospital-based programs were contacted; one

hospital-based program chose not to participate. A community-based program was

visited, and two other community-based programs participated in a teleconference

discussion of their current programs. The information provided from the needs

assessment form was compiled to identify general themes.

These visits reaffirmed that the design of the current health system is geared

toward addressing acute care for a person with diabetes (Ontario Diabetes Task Force,

2004). A report by the task force to the MOHLTC emphasized that "comprehensive

diabetes management including effective blood glucose control, management of co-

existing cardiovascular risk factors such as hypertension and dyslipidemia and screening

for complications cannot be effectively delivered in such a context" (p. 10). The task

force, in agreement with the LHIN, recommended to the MOHLTC that it "reduce

waiting times for structured diabetes education and care in the province by improving

access from the present level of 28% of people diagnosed with diabetes" (p. 11).

Wait times range from 2 to 8 weeks, depending on location. This is consistent

with the finding of the Ontario Diabetes Task Force (2004) gap analysis in June 2004 of

125 diabetes education centres in southern Ontario. The task force found an average

increase in wait times of 17.3 days since 2001. There was a wait time of 26 days (range

7-75 days) for a first appointment (Ontario Diabetes Task Force). The task force

considered these conservative estimates because 72% of people with diabetes have not

accessed these services at all.

Role of the Credit Valley Family Health Team

The CVFHT consists of 4 staff physicians, 10 resident physicians, 2 RNs, 1 nurse

educator, 1 primary care nurse practitioner, 1 RD and 1 social worker. A registry of all

Type 2 diabetic and prediabetic patients was created. Physician recall and billing data,

combined with electronic medical records, were used to identify patients with a diagnosis

of Type 2 diabetes, impaired glucose tolerance, or impaired fasting glucose. Blood work

for patients was examined for a fasting blood glucose > 6.1 mmol/L, HbA1c > 6%, or

other risk factors such as lipid levels.

A program was created to intensify the follow-up of patients with Type 2 diabetes

or prediabetes within the CVFHT. Prior the program, each physician had a different

routine for diabetes care. There was no method in place to ensure that patients were

followed at the recommended times or had the recommended tests completed. The

program was designed to provide patients with the education and tools required to

enhance their self-management of diabetes and provide continual support through the

change process. The program was designed based on a Halton-Peel Region Diabetes

Network Pathway (see Appendix A) and the Ontario CDPM Framework (see Appendix

B). The program consists of routine follow-up every 3 months with blood work

completed prior to each visit. All four yearly visits are with both the diabetes nurse

educator and the RD. The visits are combined with the visits to the physician two times

per year, with one of these visits including a complete physical exam. All visits consist of a review of blood sugar logs, foot exams, blood pressure checks, diet counselling, weight management, and discussions about diabetes-related complications. A medication review in consultation with the physician is done at every visit to ensure that patients are receiving optimal treatment regimens. Other discussions during the course of the visits include information of goal setting, stress management, and any concerns brought up by the patients. The visits are patient directed and focus on their particular concerns and barriers to diabetes at that time.

Patients are given the information and tools required to manage their diabetes and gain some control over the disease. One such tool developed to help with self-management is a diabetes portfolio that lists all blood work results and recommended values, which helps the patients to understand their results and see a trend in the values. Recall protocols were created within the electronic medical records to track visit dates and dates of other recommended tests such as foot exams and eye exams. These recall protocols alert the providers when a recommended action is overdue, and the patients are notified either by phone or letter that they are due for a specific action, such as their 3-month follow-up visit, annual eye or physical exam.

In some circumstances, patients require more advanced care than the staff at the CVFHT can provide. For example, patients who have been diagnosed with Type 1 diabetes, may have become unstable, or are not responding in the anticipated way to initial treatment. In these circumstances, the patients are referred to hospital-based programs where they can get more advanced education as well as access to an

endocrinologist. The program also includes a quick-start component to provide basic information to patients who are waiting to attend hospital-based programs.

The basic information provided during these initial visits explains what diabetes and blood sugar monitoring are. Information about carbohydrate counting and weight management also is provided to help patients develop an initial understanding of their disease and to reduce their fears and anxiety prior to attending intensive teaching sessions offered by hospital-based programs. The assumption is that if patients have a basic understanding of their disease and have some initial control of it, they may enter the hospital-based programs with less anxiety and take away more information. Once discharged from the hospital programs, patients join the CVFHT's Diabetes Management Program and begin the same regime of visits every 3 months.

Research Questions

How do patients feel about the CVFHT's Diabetes Management Program?

What factors are important in diabetes programs?

How could the CVFHT program change to meet their support demands?

Study Sample and Data Collection

For this descriptive, exploratory study, a questionnaire was used to collect the data (see Appendix C). This design was chosen because it allowed the researcher to obtain about the operation of the program, determine if the intended results were produced, and receive feedback about the program and other services that can be offered (Polit, Beck, & Hungler, 2001). The questionnaire collected demographic information as about the participants' age, gender, education level, and employment. Some basic information regarding their diabetes also was collected: time since diagnosis, treatment

plan, if previous diabetes education was received, and who provided this education. Data

on the type of health care provider the participants see regarding their diabetes, as well as

the presence of any other comorbid conditions such as high blood pressure, kidney

problems, eye problems, heart problems or feet problems, were collected. The

questionnaire collected information about what the participants like best about the

program, what could be improved, and any topics that could be introduced for future

group education sessions. The survey also included the Diabetes Treatment Satisfaction

Questionnaire (DTSQ; Bradley, 1994), which has been proven highly reliable and valid.

The questionnaire was administered by a staff member of the CVFHT in English over the

telephone.

The CVFHT has approximately 5,100 rostered patients. As of August 13, 2007,

248 patients had been identified by their physician as having Type 2 diabetes, defined as

a fasting glucose > 7.1 mmol/L or a random glucose > 11.1 mmol/L. Only patients who

had been seen by the RN or the RD within the CVFHT's Diabetes Management Program

were eligible. Between August 13, 2007, and February 29, 2008, the program had a

compliance rate of 47% of diabetic patients within the CVFHT, for a total of 117

potential participants for this study.

The researcher mailed all eligible participants a letter explaining the study and

asking for their voluntary participation. Some potential participants had incomplete or

inaccurate demographic information within the electronic medical record, which did not

allow a letter to be mailed. Letters were mailed to a potential 80 participants. Patients

were provided with a phone number to call the researcher to arrange a time to complete

the questionnaire. A follow-up phone call was made to those who had not responded

approximately 2 weeks after the letters had been mailed to recruit participants. Every third patient on the eligibility list was called, with a goal sample size of 50. During the recruitment phone call, the participants were able to complete the questionnaire immediately, or they were able to schedule a time that was more convenient for them. Most participants chose to have a return phone call for questionnaire completion.

A final sample size of 25 was obtained. Many participants were unable to be reached during either business or evening hours. Some potential participants scheduled a follow-up phone call and then were unable to be reached for questionnaire completion. A few participants asked for the questionnaire to be mailed or completed in person and were unwilling to participate in the telephone survey. Structured questionnaires were administered by telephone. Responses were immediately put into a computer database. The survey took approximately 10 to 20 minutes to complete. A member of the CVFHT staff who was not directly involved in the care of diabetic patients administered the survey.

Diabetes Treatment Satisfaction Questionnaire

The DTSQ was originally designed to measure the satisfaction of treatment regimens of people with diabetes (Bradley, 1994). The scale is appropriate for comparing satisfaction between different treatment regimens. The scale has been shown to be useful in studies on the effects of diabetes education programs, and it has been widely used as an outcome indicator in routine audits of diabetes care (Bradley). The scale was designed to measure absolute satisfaction with diabetes care, not change in satisfaction. The questionnaire includes satisfaction with perceived hyperglycemia and hypoglycemia, which are important aspects of short-terms outcomes of diabetes management.

Bradley described three studies that were used to help in the assessment of reliability and validity of the DTSQ. The Sheffield study included 219 patients who had completed a booklet of questionnaires, 181 of whom had completed the DTSQ. Data were used for psychometric analyses of the scale items (as cited in Bradley). A WHO multicentre study that optimized injection therapy and self-monitoring of blood glucose used the DTSQ in English, French, and German versions. Psychometric properties of the results were explored for 3 of the 11 centres that participated (as cited in Bradley). A study in England of 59 patients attending a diabetic clinic used the DTSQ as one of three questionnaires handed out, and the results were analyzed (as cited in Bradley). Factor analyses and reliability analyses guided the selection of the items for final inclusion. The scale has been modified several times, and the final eight-item scale has been found appropriate for use with people who have diabetes that is being treated with insulin, tablets, and/or diet (Bradley). The scale has been used in studies by both the WHO and the International Diabetes Federation.

Reliability of the DTSQ

Bradley (1994) reported that Cronbach's alpha coefficient for the DTSQ for patients treated with oral medications was 0.79 in the Sheffield sample and 0.82 for people who use insulin in the WHO sample. In the French version, one item had been mistranslated, and the item was excluded. When one item was removed, the alpha coefficient was 0.81, which demonstrated that reliability was retained. The WHO results with the French version also showed that the scale performed well in terms of sensitivity to change, construct, and discriminant validity (Bradley). The reliability was maintained because the alpha coefficient was excellent to start with.

Validity of the DTSQ

The items included in the survey have been useful in studies of mixed practice samples, including patients being treated with diet alone (Bradley, 1994). Although six of the items form a very reliable scale, Bradley found it valid and useful to look at scores for individual items to identify particular areas for any dissatisfaction with treatment. These individual scores could be used to improve patient satisfaction in particular areas of dissatisfaction with treatment. Construct validity was assessed by correlating the scales with other variables collected in the Sheffield sample. Greater satisfaction scores were associated with less overweight, lower HbA1c, and optimistic patient reports of recent glycemic control. These correlations matched expectations and provided evidence of construct validity (Bradley).

Threats to Validity

Selection. A large threat to the validity of a study is participant selection. This threat is a bias that may arise due to preexisting differences between groups and occurs when people are not randomly assigned to groups (Polit et al., 2001). Because the majority of the participants phoned the researcher to schedule a time for questionnaire completion, it was possible that these volunteers were different individuals from those who do not volunteer and were keen to participate and manage their health. By phoning people who did not immediately respond that they would participate, the researcher expected that some people were reached who may not have otherwise volunteered and may have been less keen individuals. Because this survey was completed only by those patients who attended diabetes team visits, it may have been possible that the people who

seek diabetes education are more motivated than those patients who decline diabetes education and only receive information from their primary care providers.

The final sample size of 25 participants also created an area of selection bias. Although the largest contributor to the sample size was the researcher's inability to contact potential participants, it is possible that the participants who were contacted had different views than those that were not. It was noted by the data collector that most participants contacted agreed to participate and few declined, so it is hoped that this may have reduced this threat due to differences of opinions in those who participated and those who did not.

Attrition. The threat of attrition occurs when participants are lost to the study, resulting in a group that may be different from the original group or other groups (Polit et al., 2001). Because the survey took place at one point in time, the researcher did not expect any of the volunteers to drop out of the study. Some people who have participated in the CVFHT's Diabetes Management Program have moved from the area and were not able to be reached, and a few have passed away.

Researcher bias. The interviewers themselves may influence answers if the respondents react to a particular interviewer rather than the questions themselves (Polit et al., 2001). Because the researcher also was the diabetes care provider for the CVFHT at the time of the study, it was anticipated that the participants' responses would be affected if the care provider (i.e., the researcher) were to ask the survey questions. The participants may have felt the need to give the "correct" answer or the answer that they felt the researcher wanted to hear. The potential for this bias was reduced by having a member of the team who did not provide direct patient care administer the survey. They

were ensured that their answers were confidential and that their care providers would not know the answers that they provided. The use of a standard questionnaire also helped to reduce this bias.

Generalizability. This threat to external validity refers to the ability to generalize the findings to other settings or populations (Polit et al., 2001). Because each FHT is able to develop its own CDPM program, the content and effectiveness of each program may vary widely from one centre to another. This makes it difficult to generalize patient satisfaction among programs. Attempts to share programs and collaborate with other FHTs are in progress, but the similarity among programs remains unknown. The small sample size also made this study difficult to generalize to other populations.

Ethical Review

This study was granted ethical approval from the Research Ethics Review Board at Lakehead University. Information letters were mailed to the potential participants to inform them of the study (see Appendix D). Follow-up phone calls were made to obtain their consent and facilitate completion of the questionnaire (see Appendix E). There were no risks to the participants who chose to answer the survey. Although their primary care providers were aware that the survey was being conducted, they did not know or were not apprised of the participants' answers. Other diabetes care providers, such as the nurse practitioner, the diabetes nurse, and the RD, also did not know the answers provided by specific patients. The data will be stored in a password-protected file on the computer that is available only to the researcher. The participants' names will not be stored with the data. The file will be deleted in 5 years, according to Lakehead University's Ethics Review Board requirements.

CHAPTER 5: RESULTS

Quantitative Data: Demographics

A total of 80 people seen within the CVFHT's Diabetes Management Program were mailed an explanation of the study and were asked to participate. This total number did not represent the total number of people seen within the program between August 2007 and February 2008 because of incomplete contact information within the electronic medical record that did not allow a letter to be mailed. A total of 25 people agreed to participate in the survey, giving a response rate of 31%.

Age

Participants ranged in age from 34 to 73. Their average age was 61 (see Table 5).

Table 5

Age Range of Participants

Age range	Frequency	%
30-45	2	8
45-65	15	60
>65	8	32

Education

The majority of participants reported being educated at least at the high school level. Over half of the participants (56%) reported being educated in college or university, with 28% reported obtaining a high school diploma (see Table 6). The remainder of the participants reported obtaining some grade school and/or some high school education.

Table 6

Summary of Education

Level of education	Frequency	%
Elementary school	1	4
Partial high school	2	8
High school completed	7	28
Partial college/university	3	12
College/University completed	11	44
Master's/PhD	0	0

Employment

The participants were most likely to be retired (56%) or working full time (32%).

It was less common for the participants to be working part time (8%); the remainder were

unemployed (4%; see Table 7).

Table 7

Summary of Employment

Employment status	Frequency	%
Unemployed	2	8
Part time	1	4
Full time	8	32
Retired	14	56

Time Since Diagnosis

The participants were asked how long it has been since they were diagnosed with

Type 2 diabetes (see Table 8). The majority of participants reported that they had been

diagnosed for 6 to 10 years (44%) or 0 to 5 years (40%). A small percentage (16%)

reported being diagnosed for more than 10 years

Table 8

Years Since Diagnosis

Years since diagnosis	Frequency	%
0-5	11	44
6-10	10	40
10+	4	16

Diabetes Treatment Regimen

The participants were asked to indicate which type of diabetes treatment they were currently using (see Table 9). The majority (68%) reported taking an oral antihyperglycemic agent. A smaller number of patients reported being on a combination of oral agents plus insulin (12%) or insulin alone (4%). A few participants (12%) reported currently treating their diabetes only with diet modifications.

Table 9

Summary of Treatment Regimen

Treatment regimen	Frequency	%
Diet alone	4	16
Oral medication	17	68
Oral + Insulin	3	12
Insulin	1	4

Previous Diabetes Education

The participants were asked about any previous diabetes education prior to starting the CVFHT's Diabetes Management Program (see Table 10). The majority of participants (80%) reported receiving some education regarding their diabetes in the past. The majority of participants (64%) reported to receiving this education in hospital diabetes education centres. Other sources of diabetes education were their family physicians (12%), the RN with their family physician (24%) or an RD (12%). A total of 12% of patients reported receiving diabetes education from other locations and sources.

Table 10

Previous Diabetes Education

Diabetes education	Frequency	%
None	5	20
Hospital diabetes education centres	16	64
Family physicians	3	12
RN and family physician	6	24
RD	3	12
Other	3	12

Diabetes Follow-Up

Information regarding sources and frequency of diabetes follow-up was sought. The majority of participants (48%; see Table 11) reported that they saw their family physicians in regards to their diabetes every 1 to 3 months. The majority of participants (76%) reported not seeing an endocrinologist about their diabetes. A percentage of participants (20%) reported visiting their family physicians less than once a year about their diabetes. They also reported follow up with their family physicians about diabetes every 4 to 6 months (16%) or once every 6 to 12 months (8%).

Table 11

Diabetes Follow-Up

Diabetes follow-up	Frequency	%
Family physician 1-3 months	12	48
Family physician 4-6 months	4	16
Family physician 6-12 months	2	8
Family physician less than once a year	5	20
Not seeing an endocrinologist	19	76

Health Care Providers

Part of the design of CVFHT's Diabetes Management Program is team-based care. The participants were asked about all of the care providers they meet regularly regarding their diabetes; the answers were varied. The majority of participants reported visits with the diabetes nurse educator and RD (32%) or the diabetes nurse educator alone

(32%; see Table 12). A total of 8% reported seeing the RN, RD, and the endocrinologist, and 8% reported having visits with the RN and the endocrinologist. A few participants (4%) reported seeing their family physicians and the RN, and 4% reported visiting their family physicians only.

Table 12

Number of Heath Care Providers Participants Meet with Regularly

Regular meeting with providers	Frequency	%
Diabetes nurse educator and RD	8	32
Diabetes nurse educator	8	32
RN, RD, and endocrinologist	2	8
RN and endocrinologist	2	8
RN and family physician	1	4
Family physician only	1	4

Diabetes Self-Care

Most care for diabetes occurs outside the health care provider's office. The participants were asked a few indicators of self-care (see Table 13). The majority of patients (80%) reported obtaining some form of exercise on a weekly basis. The majority of patients (68%) reported meeting the recommendation of having their eyes checked on a yearly basis. A total of 24% of participants reported having their eyes checked every 2 years, and a small number of participants (8%) reported not having their eyes checked on a regular basis. The majority of participants also reported checking their blood sugar levels at home. A total of 36% of participants reported checking their blood sugar 1 to 5 times a week, 24% check 6 to 10 times a week, 32% check more than 10 times a week, and a limited number of participants (8%) reported never checking their blood sugar at home.

Table 13

Diabetes Self-Care Practices

Routine eye exams	Frequency	%
More than 1 per year	3	12
Every year	14	56
Every 2 years	6	24
Never	2	8
Weekly blood sugar checks		
1-5	9	36
6-10	6	24
> 10	8	32
None	2	8

Comorbidity Factors

Diabetes contributes to many comorbid complications. The majority of

participants had been told that they have high blood pressure (76%) or that they need to

lose weight (80%). The participants also reported having been told that they have

problems with their eyes (24%), feet (16%), or kidneys (4%; see Table 14).

Table 14

Comorbid Complications

Comorbid complications	Frequency	%
High blood pressure	19	76
Must lose weight	20	80
Eye problems	6	24
Foot problems	4	16
Kidney problems	1	4

DTSQ

The participants were asked to complete a 6-point ordinal scale regarding their

feelings toward their current treatment of diabetes. Most participants were able to

complete this scale, but a few participants with limited English were not able to

understand the scale system. Six items of the scale (Items 1 and 4-8) were summed to

produce a measure of overall treatment satisfaction ranging from 6 (*very dissatisfied*) to

36 (*very satisfied*).

When asked how satisfied they felt with their current treatment, 84% of the

participants responded that they were either very satisfied or satisfied with their current

treatment regimen (see Figure 3). When asked how satisfied they were with their

understanding of diabetes, 60% responded that they were either very satisfied or satisfied.

The participants also were asked how satisfied they would be to continue their current

treatment plan; 72% responded that they would be either very satisfied or satisfied to

continue. There was no significant correlation between their understanding of diabetes

and their overall treatment satisfaction ($r = 0.39$, $R^2 = 15\%$).
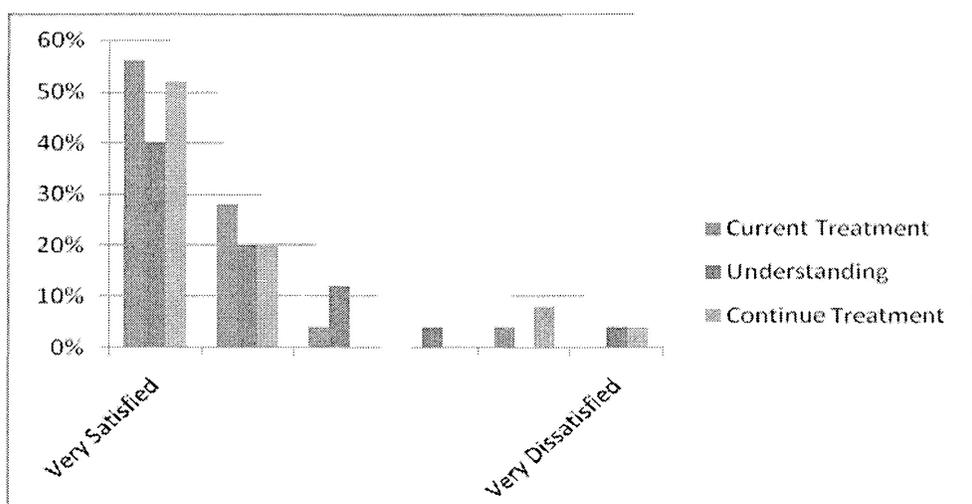
Figure 3. Results of satisfaction.

The participants were asked how often they felt their blood sugars were either too

high or too low. This gives a measure of short-term outcomes of diabetes management.

The majority of participants felt that their blood sugars were either unacceptably high or

unacceptable low none of the time, indicating the perception of good glucose control. No

respondents thought that their sugars were too high or low most of the time (see Figure

4), which would indicate perception of poor glucose control.
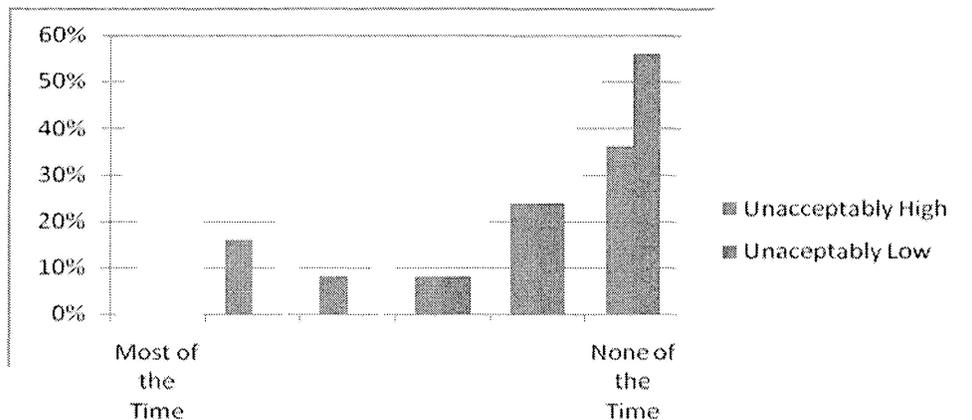
Figure 4. Results of blood sugar control.

The participants also were asked to rate how convenient and flexible they felt

their current treatment plan was. The majority of participants (60%) rated their treatment

as very convenient or convenient (see Figure 5). The majority of participants (60%) rated

their treatment as very flexible or flexible (see Figure 6). The diabetes treatment

satisfaction score correlated with convenience of treatment ($r = 0.82$, $R^2 = 68\%$, $p < .01$)

and flexibility of treatment ($r = 0.85$, $R^2 = 73\%$, $p < .01$).
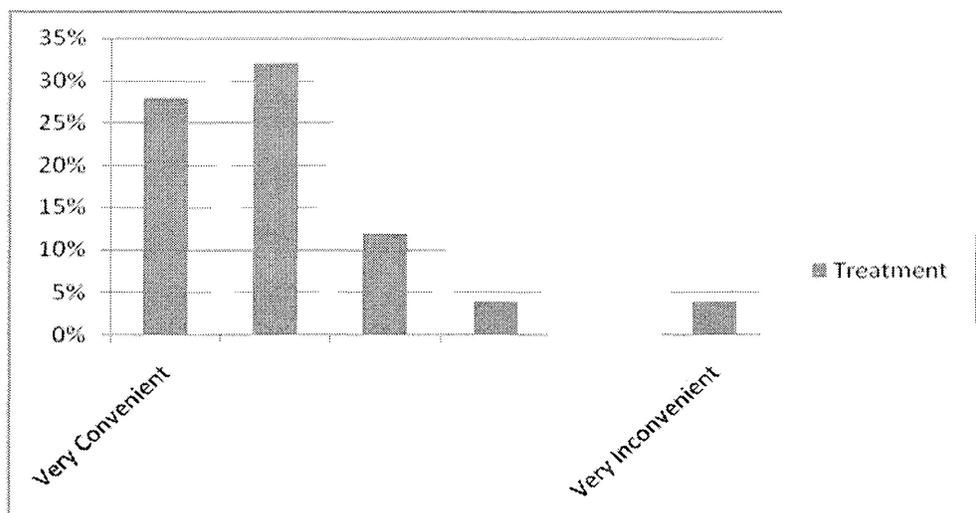
Figure 5. Results of convenience of treatment.
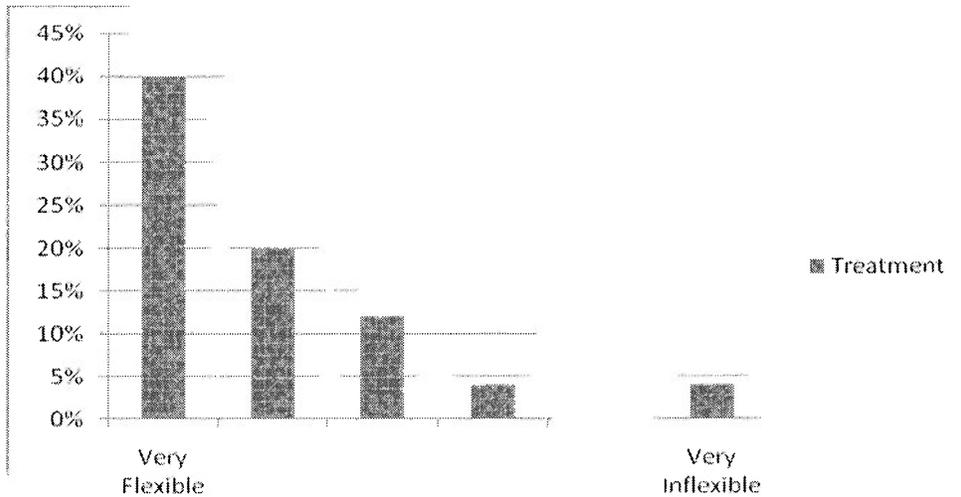
Figure 6. Results of flexibility of treatment.

The majority of participants were so satisfied with the treatment plan that they would recommend the same type of treatment to someone else (see Figure 7). This correlated with overall treatment satisfaction $(r = 0.92, R^2 = 85\%, p < .01)$. Only 1 respondent would definitely not recommend the same form of treatment plan. There was no significant correlation between type of treatment regimen and treatment plan recommendation $(r = -0.08. R^2 = 0.0064)$. There also appeared to be no significant correlation between overall satisfaction with treatment and age $(r = 0.18)$, gender $(r = -0.23)$, or years since diagnosis $(r = -0.27)$
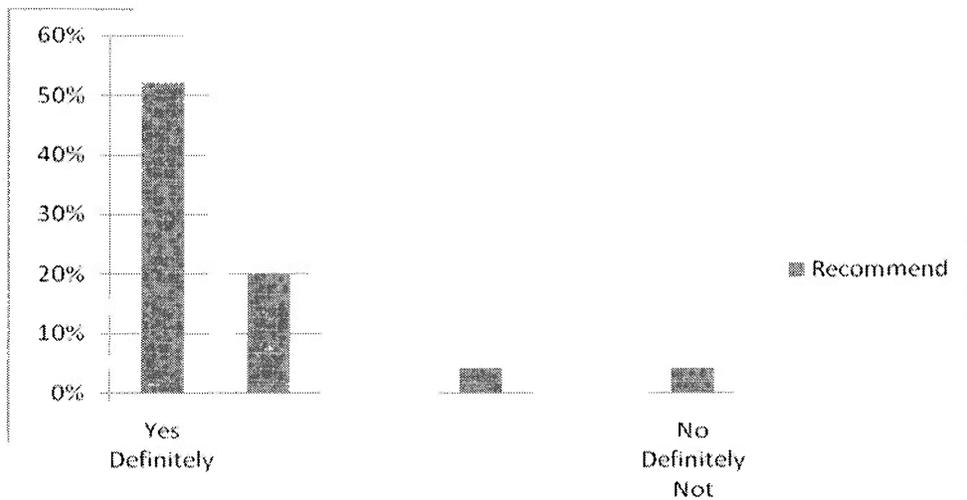
Figure 7. Results of treatment recommendation.

Qualitative Data

The participants were asked open-ended questions regarding their feelings about

the CVFHT Diabetes Management Program to obtain some qualitative information about

what they liked about the program, how they thought the program could improve, and

what other information they would benefit from obtaining. A full list of comments may

be viewed in Appendix F.

Affirmative Comments

The participants were asked what they liked best about the program. A total of 21

of the 25 participants offered information. From these comments, three themes arose. The

first theme was in relation to the ease of availability offered by the team. A comment

about the availability of the team was made by 43% of the respondents. Comments

regarding availability included the following: "accommodating"; "always available";

"available at all times, always calls back"; "can see everyone in one appointment",

"whenever I have questions, it is easy to call."

Another theme was that of obtaining good advice and explanations to help in their understanding of Type 2 diabetes and the management of the condition. These types of comments were made by 28% of the respondents: "good advice in general," "learned more in last 3 weeks than I have ever known," "explanations are very good," and "nonintimidating."

The final theme was about the listening skills of the team members and their responses to these discussions. These comments were made by 23% of the respondents: "They listen. No one has ever listened and understood before"; "understanding and helpful"; "answers all of my questions"; "I can talk about any experiences I am having."

Other comments regarding the program included the following: "I like all of it," "friendly," "very happy with it," and "one-on-one is great." Although these comments provided information surrounding feelings about the program, they did not occur at a high enough frequency to be considered a common theme throughout the responses.

Program Improvements

Few suggestions about areas for program improvements were given. Eight of the respondents declined to answer this question. The majority of participants stated that there is nothing that can be improved (58%). Comments around an area of improvement was that of offering longer hours outside of the 9-to-5 business hours; having more availability or having more frequent visits was made by 2 of the respondents. One comment was made that the participants wished that the program was closer to home. This was not considered a negative comment about the program but that perhaps more information surrounding others locations of obtaining diabetes education should be highlighted. Two comments specific to the information provided were suggested, one in

relation to nutrition information, and one in relation to medication information. There were not enough comments of a particular item to determine a theme of areas that could be improved.

Group Session Topics

The CVFHT Diabetes Management Program is to begin offering group sessions, so the participants were asked what topics they would offer in these sessions. Only 9 of the 25 respondents offered suggestions. The strongest topic theme was on stress management and ways to balance diabetes with daily life (78%). A few participants suggested other topics, including exercise alternatives, cooking with fibre, and alternatives to medicine. There was no mention of topics surrounding basic diabetes education; only update or interest type topics were mentioned.

Discussion

This study provided valuable insight into the perspectives of the consumers of the CVFHT Diabetes Management Program. The demographic information obtained will be helpful in allowing future development of the program to be geared toward the needs of the participants. Learning styles change throughout the lifespan, and gaining information about the ages of participants as well as their education and employment status will be helpful during the development of future self-management teachings. Knowing the average age of patients is helpful in determining the type of teaching style to use.

Consistent with general demographic information about the prevalence of Type 2 diabetes, most participants were middle age or older and were retired. It is helpful to know the prevalence of younger patients because this age group may want more specific information about the disease and are likely to be more motivated to prevent

complications while struggling to maintain the flexibility of their peers. It is important to know how many patients are of each age group because the goals of each group would be different and education should be specific to individual concerns and needs. It is important to know that the majority of patient within the program have been diagnosed with diabetes for less than 10 years because their information and goals may be different from patients who have had diabetes for a longer time. Many studies have shown that glycemic control worsens the longer the patient has had the disease (Harris et al., 2005). It is important to intervene immediately and educate patients on the self-management of diabetes so that they can have the skills necessary to maintain adequate control. Good control can prevent or reduce complications. Complications arise the longer that patients have had the disease (Harris et al.), so it is important to know that the majority of patients of the CVFHT are still at with the stage of the disease where reducing their risk factors can have an effect on complications.

The majority of patients of the CVFHT reported being on oral medications. In this study, HbA1c was not examined, but the high percentage of patients that have not had their treatment regime intensified to insulin therapy may represent a dimension of clinical inertia that is present in the treatment. Clinical inertia is found among primary care providers and is the result of their rationalization of avoiding intensification of treatment and lack of education how to achieve therapeutic goals, not by lack of familiarity with guidelines or inappropriately identifying patients with poor control (Harris et al., 2005). Although it was not investigated this study, it is likely present within the CVFHT. Future studies may find value in looking at this theory of clinical inertia and measures of diabetes control.

The information obtained regarding diabetes self-care practices and comorbid conditions is valuable in allowing the program to gear more information toward particular areas. One area is that of routine eye exams. It is possible that more education is needed about this issue to ensure that the participants are getting the recommended care. A large percentage of participants reported having elevated blood pressure and weight, thus highlighting an area where aggressive management and education is needed within the population at the CVFHT. The prevalence of diabetes-related comorbidities within the CVFHT is similar to the comorbidities reported by Harris et al. (2005). They reported the prevalence of hypertension as 63% compared to self-reported 76% at the CVHFT.

The presence of problems with the feet and eyes, 16% and 4%, respectively, at the CVFHT was also comparable to that reported by Harris et al. (2005) at 8% and 6%, respectively. Harris et al. also looked at the prevalence of eye problems, dividing them into cataracts (11%) and diabetic retinopathy (7%). The total percentage of people with eye issues reported by Harris et al. was 18%, which was comparable to that reported at CVFHT of 24%. The majority of participants (92%) reported self-monitoring their blood glucose levels. This type of self-management is often under emphasized by health care providers, but it can provide valuable information to patients and care providers about the day-to-day management of glycemic control. The high reports of this at the CVFHT highlighted that good education and support has been provided about this subject to increase the participants' knowledge of the important of this type of testing in diabetes self-management.

It is helpful to know where the patients of the CVFHT report to receive their diabetes follow-up care. Even if they see an endocrinologist, it is the expectation that

family physicians will manage diabetes between visits with endocrinology. It is recommended that patients seek follow up every 3 months, so it was helpful to know that almost half of the patients at the CVFHT reported to seeing their physician this often. It also was helpful to find out that 20% of patients reported seeing their family physicians less than once a year about their diabetes. This was substantially less than the recommended number of visits, and it was likely that these patients are not at optimal blood sugar or risk factor control. As the use of the recall protocols for follow-up visits widens, it is hoped that these patients will receive more routine follow-up.

This survey could be done again in a future study and the results compared to see if this number decreases and the number of patients receiving routine follow-up stays the same or increases. One goal of the CVFHT's Diabetes Management Program is that all diabetes patients have access to routine visits with both the nurse educator and the RD. The percentage of patients taking advantage of this access is low (32%). The reasons patients are seeing only one provider or the other should be investigated because there is value in having regular counselling with both.

Satisfaction with diabetes treatment was high among the respondents (84%). This was substantially higher than Redekop et al.'s (2002) report that 50% of patients expressed high satisfaction. Regarding their understanding of diabetes, Redekop et al. reported that 40% of patients responded being satisfied with their understanding of diabetes. This was comparable to the 60% of patients at the CVFHT who reported being satisfied with their understanding. Similar to the study by Petterson et al. (1998), no correlation was found between satisfaction and age. Petterson et al. did find a correlation between longer diabetes duration and depression, whereas this study found no correlation

between diabetes duration and satisfaction. Although depression was not studied specifically, it could be assumed that a person with depression would not rate high satisfaction with diabetes treatment. A correlation was also noted by Petterson et al. between gender and treatment satisfaction, whereas no difference was found between gender and satisfaction within the patients at the CVFHT. The small sample size of this study may have accounted for these results not being similar to those of Petterson et al.

A future study looking at specific diabetes control outcome measures such as body mass index, HbA1c, and lipid control, and how they correlate with satisfaction might provide more information about the benefits of the program and could be compared to the results from Petterson et al.'s (1998) study and others. Petterson et al. reported a weak correlation between treatment regimen and satisfaction, but those results were not reproduced in this study where no correlation was found.

A high correlation was found between satisfaction with convenience of treatment and flexibility of treatment. Although no studies have focused on this trend, it would be expected that people who find their treatment plans very convenient and flexible tend to be more satisfied than people who do not find them convenient or flexible. Although easily explained, it is important that health care providers be aware of this factor when discussing and determining treatment regimens for patients.

Patients need to be involved in the decision, and their concerns about specific treatment regimens need to be addressed in order for them to feel in control and satisfied. It could be expected that if patients do not feel their treatment is convenient or flexible, they may be more likely to stop treatment or not follow the plans precisely, which could affect glycemic and risk factor control. This could be an interesting focus of future

research because the CVFHT Diabetes Management Program attempts to make use of motivational interviewing and empowerment to help patients self-manage their diabetes.

One theme arising from the qualitative data is that of being able to obtain good advice and explanations. Even though the majority of patients (80%) reported receiving previous diabetes education, the CVFHT education aims to be motivational and empowering, not only didactic. It is evident that this type of approach was received positively by patients, who reported that the explanations were very helpful in improving their understanding of diabetes. It cannot be assumed that the patients who received education in the past continue to have a good understanding about their diabetes.

This finding was consistent with the findings of Nutting et al. (2007) and Wagner, McGregor, et al. (2001). Nutting et al. reported that visits that included assistance with self-management goals contributed to lower HbA1c and lower lipid ratios among the participants in their study. Wagner, McGregor, et al. found that the use of individual visits and the use of self-management support increased participation and satisfaction and that this had an effect of self-management of disease. Although the current study did not look specifically at blood work outcomes at this early stage in the program, it appears that the approach of education was viewed positively by patients, a finding that was consistent with the findings of Nutting et al. and Wagner, McGregor, et al., both of whom used a similar approach to counselling.

A second theme of having good listening skills described how patients felt open to discuss their concerns regarding their diabetes care. It is important to listen to patients' concerns, to understand how the concerns arose, and help them to find solutions. It is often easy to jump to a conclusion about why a specific concern is present and offer a

solution, but this solution may not be appropriate. The use of motivational interviewing is helpful in teasing out concerns and establishing goals to overcome them. The patients in this study responded to this type of interaction, as noted by their comments about being able to discuss their experiences.

These comments were consistent with Nutting et al.'s (2007) and Wagner, McGregor, et al.'s (2001) utilization of assistance with self-management goals during counselling. This motivational element of the CCM (2007) appeared to make patients comfortable during their sessions and feel as if they had obtained the information they desired in a nonthreatening environment. This nonthreatening perception also allowed the patients to feel free to discuss all of their concerns and experiences.

Piatt et al. (2006) showed that the use of the CCM can increase the behavioral and psychosocial aspects of diabetes self-management. This was consistent with the premise of the CCM that encouraging and helping patient to set goals and solve problems improves self-management and encourages patient activation (Wagner, Austin, et al., 2001). It is important that patients feel comfortable in the discussions in order to overcome some barriers to diabetes care, and it appears that patients within the CVFHT's Diabetes Management Program felt comfortable with the interactions.

The final theme that arose in the qualitative data was that of availability of the staff. This suggested that although the patients were encouraged to self-manage diabetes, they were comfortable knowing that someone was available in case a situation arose that they could not solve on their own. This theme of availability was consistent with Gross et al.'s (2003) findings that constant communication is associated with patient satisfaction. Although the patients of the CVFHT manage their diabetes almost independently, it

appears that they liked being part of a team in its management. This increased availability utilized the elements of the CCM of support for self-management and regular follow-up. A busy primary care physician's practice often involves wait times for appointments, and patients are likely not able to contact providers directly to ask questions. The CVFHT's Diabetes Management Program has quick access to care providers both by phone and in office visits, and patients have responded to this positively.

Overall, most participants appeared satisfied with the CVFHT's current Diabetes Management Program. Most participants felt that the only issue in the program that needs improvement is more evening availability. Physicians offer evening appointments, but these appointments fill up very quickly, and most patients are not able to get evening visits on short notice. A way to increase this access should be investigated. Group classes are another future endeavour of the program. The information provided by the participants will be helpful in determining the information to be offered. The use of group education classes is supported by the CCM because it increases diabetes knowledge and allows for peer-support networks to be formed.

The qualitative information provided by the participants supports the findings of the DTSQ. The majority of patients reported being satisfied within the eight aspects of care assessed. It is helpful to know that the participants feel satisfied with their treatment and that their control of diabetes is acceptable. Their comments about the availability of the program and the comfort they feel with the advice and listening that takes place within the program supported the overall results of the quantitative scores.

Recommendations

Practice

Continual need to support self-care behaviors such as weight loss and

beneficial health choices is prominent. The suggestions by participants for

future workshops highlighted areas of needed education.

Continual monitoring and aggressive management of associated

conditions to reduce the severity of complications

Continual monitoring of the self-care practices of patients within the

practice, as recommended by current CDA guidelines, and development of

ways to increase these practices if falling below guidelines (e.g., annual

eye care, foot care exams).

Solicitation of input from patients about the direction of the program to

ensure that the program meets the changing needs of patients.

Administrative

Increased access to the program by providing evening appointments.

Although the limited staff in the program would not be able to provide this

option daily, it is anticipated that some evening appointment options

would be valuable.

Continuation of education of physicians regarding diabetes care and

treatment intensification through the use of case studies with

endocrinologist and diabetes education sessions.

Education and practice support surrounding the role-out of current CDA guidelines to continue to meet recommended standards of care and management

Further Research

Investigate reasons behind patients seeing only a sole provider for diabetes care (MD, RN, RD) and ways to alter this approach to team-based care. Investigate the type of education information patients receive from other health care providers to identify gaps in information or duplicate areas of information.

Continue to evaluate the progress of the CVFHT's Diabetes Management Program through research using specific diabetes outcome measures such as HbA1c, lipid measurement, blood pressure, and waist circumference

Conclusions

The participants reported being very satisfied with the CVFHT's Diabetes Management Program. The availability of accessing staff within the program as well as the option of team visits was highly emphasized. The participants were satisfied enough with the type of treatment that they were receiving within the program that a majority of them would recommend the same type of treatment plan to someone else. The findings will be used to enhance the program to continue to meet the needs of the participants. Future studies looking at outcome measures of diabetes, such as HbA1c levels, lipid levels, blood pressure, and other self- care practices of patients would be beneficial. Participants are welcoming the changing method of providing health care and are embracing the self-management approach supported by use of the CCM.

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APPENDIX A: DIABETES MANAGEMENT PROGRAM PATHWAY

## Type 2 Diabetes Management

Diagnosis of Diabetes
FBG ≥ 7.0 mmol/L OR causal PG ≥ 11.1 mmol/L on TWO occasions
OR once in the presence of symptoms OR 75 gm OGTT 2 hr PG ≥ 11.1 mmol/L

Diagnosis of IFG/IGT
FBG 6.1-6.9 mmol/L (5.7 - 6.9 plus risk factors)
AND 2 hPG in a 75-gm OGTT

Criteria for Triage into Community Based or Hospital Based Programs
(Adapted by the researcher from Halton-Peel Regional Diabetes Education Network)

HbA1c of 8% or less	*Other Considerations*	HbA1c of 8.1% or more
↓	▪ acutely ill	↓
COMMUNITY-BASED PROGRAM	▪ unstable ▪ response to initial therapy ▪ < 18 yrs ▪ language barrier	**HOSPITAL-BASED PROGRAM**

▪ Referral to CVFHT Diabetes Management Program
   a. Referral sent through EMR to RN & RD, patient instructed to book initial diabetes management visit
   b. Receive blood work that fits diagnostic criteria, send through EMR to RN & RD
 	
Visit every 3 months. Every visit with diabetes educator and dietitian, alternate visits with family physician, one of which to include yearly physical.
 	
Aggressive management of glucose control, blood pressure, lipids, and kidney function
	▪ Referral to Hospital Based Diabetes Education Centre
	▪ Referral to CVFHT Diabetes Management Team for Quick Start
	-basic information given in regards to blood glucose monitoring, blood glucose targets, diet and exercise while referral in progress
	▪ Once discharged from DEC, to continue follow-up with CVFHT Diabetes Management Program

APPENDIX B: CDPM FRAMEWORK
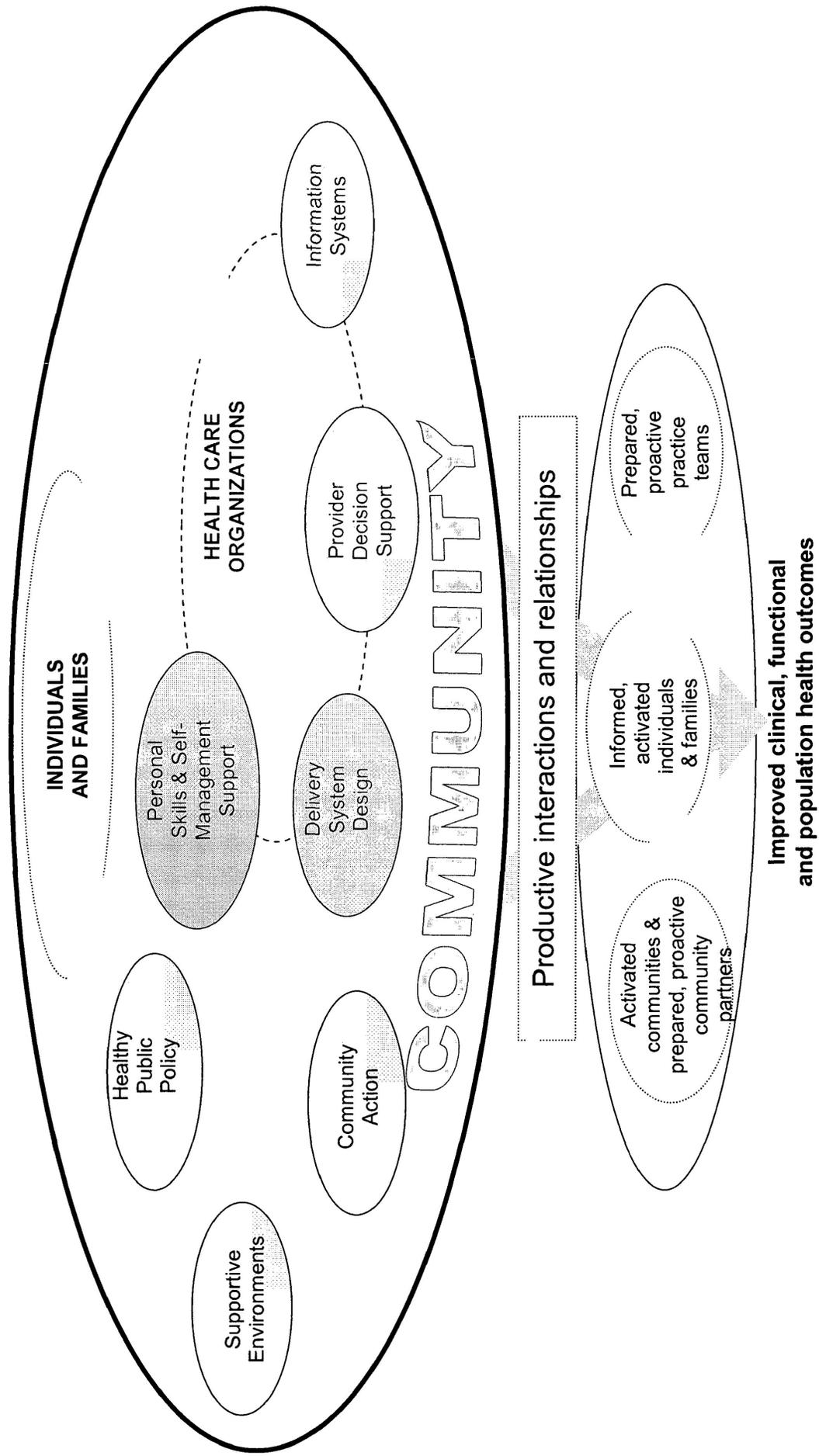
Source. Jain, M. (2007). *Ontario's chronic disease prevention and management framework: Work of a steering committee MOHLTC 2005.* Presentation at GTA Rehab Network Best Practices Day, Toronto, ON.

Age:

Gender: M   F

Highest Level of Education:

Some High School
High School
Some College/University
College/University
Master/PhD

Working Status:
Unemployed
Full time
Part Time
Retired

How many years has it been since you were diagnosed with Type 2 diabetes?
                        0-5   6-10   10+

What is your current treatment plan?
Diet Alone
Oral Medications
Oral +Insulin
Insulin

Have you received any diabetes education in the past? Yes   No

If yes, by whom? Hospital education centre, community centre, Family doctor, nurse, nurse practitioner, dietician, pharmacist

Do you see an endocrinologist (diabetes doctor)?   Yes   No

How often do you see your family doctor regarding your diabetes?

Whom do you see for regular follow-up about your diabetes? Dietician, foot care, nurse

How often do you have your eyes checked?
Every 1 year,
every 2 years,
> 2 years

Do you check your blood sugar at home? How many times a week?

Have you ever been told you have:

High blood pressure?   Yes   No

Kidney problems?   Yes   No

Problems with your feet?   Yes   No

Problems with your eyes?   Yes   No

Need to lose weight?   Yes   No

Do you exercise?   Yes   No

The following questions are concerned with the treatment for your diabetes and your experience over the past few weeks

How satisfied are you with your current treatment?
Very satisfied   6   5   4   3   2   very dissatisfied

How often have you felt that your blood sugars have been unacceptable high recently?
Most of the time   6   5   4   3   2   1   none of the time

How often have you felt that your blood sugars have been unacceptably low?
Most of the time   6   5   4   3   2   1   none of the time

How convenient have you been finding your treatment to be recently?
Very convenient   6   5   4   3   2   1   very inconvenient

How flexible have you been finding your treatment to be recently?
Very flexible   6   5   4   3   2   1   very inflexible

How satisfied are you with your understanding of your diabetes?
Very satisfied   6   5   4   3   2   1   very dissatisfied

Would you recommend this form of treatment to someone with your kind of diabetes?
Yes I would   No I would definitely
Definitely recommend 6   ‾   ‾   ‾   not recommend

How satisfied would you be to continue with your present form of treatment?
Very satisfied   6   5   4   3   2   1   very dissatisfied

What do you like best about the program?

What do you think should be improved?

Are you interested in being part of a focus group to discuss further development of the diabetes program? Yes   No

In the future, group sessions will be added. What do you feel is the most important topic to offer as a group: For example:

Cooking with Fibre
Heart Healthy Cooking
Stress Management

APPENDIX D: LETTER OF PARTICIPATION

This letter is an invitation to consider participating in a study I am conducting as part of my Master's degree in the Department of Public Health at Lakehead University under the supervision of Dr. Darlene Steven titled "Satisfaction with Primary Care Based Diabetes Management Programs." I would like to provide you with more information about this project and what your involvement would entail if you decide to take part.

As you are aware, the Credit Valley Family Health Team has been recently offering a Diabetes Management Program, which you are a part of. The purpose of this study is to obtain information regarding your views of the program. A small amount of demographic information will also be collected. This information will be used as a guide toward future development of this program, as well as necessary changes to the program to meet your needs.

Participation in this study is voluntary. It will involve a telephone interview of approximately 20 minutes in length to take place on a mutually agreed upon date and time. You may withdraw from the study at any time. You may decline to answer any question. All information you provide is considered completely confidential. All anonymous data will be entered into a computer database which is password protected. Your name will not appear in any thesis or report resulting from this study. There are no known or anticipated risks to you as a participant in this study. The information will be collected by a volunteer at the Credit Valley Family Health Team so your physician and other care providers will not be aware of your answers or participation.

If you have any questions regarding this study, or if you would like additional information to assist you in reaching a decision about participation, please contact me at (905) 813-1100 x 6771 or by email at cbarnet@cvh.on.ca or Dr. Darlene Steven at (807) 983-2824 or darlene.steven@lakeheadu.ca . I would like to assure you that this study has been granted approval by Lakehead University's Research Ethics Board. You may contact the Board at (807) 343-8283.

If you would like to participate in this study, please call (905) 813-1100x6771 to schedule a time that is convenient for our volunteer to contact you to complete the survey. If we do not hear from your within 2 weeks, a volunteer will contact you by telephone to ask about your interest to participate. By participating in the survey, it is assumed that you have read and understood the above information and you are agreeing to participate in the research.

Yours sincerely,
Cheryl Barnet, RN, BScN, MPH (cand)
Darlene Steven, RN, PhD

APPENDIX E: PHONE SURVEY INTRODUCTION

Hello, Mr./Mrs./Ms. X,

My name is _____. I am a volunteer at the Credit Valley Family Health Team. I am calling in regards to the letter that was sent to you a few weeks ago about the diabetes program survey being conducted by Cheryl Barnet as part of her graduate program at Lakehead University. The results will help us to further develop the program to fit your needs.

The survey will take approximately 20 minutes to complete. Your answers will be kept completely confidential. Your doctor and the diabetes team will not have access to your answers. Would you like to answer the questions now, or would you like me to call back at a specific time?

If you have any questions about the study, you can contact Cheryl Barnet or Dr Darlene Steven. Would you like their contact information? This study has been granted approval by Lakehead University Research Ethics Board and you may contact them at (807) 343-8283.

Your participation is voluntary. You may stop the survey at any time. If there are any questions you feel you can't answer, please let me know, and we will continue to the next question. Do you understand this information? By agreeing to participate, you are agreeing that you have read and understood the information provided in the letter and that you agree to participate. May we begin the survey now?

APPENDIX F: SAMPLES OF PARTICIPANTS' COMMENTS

What do you like best about the program?

all of it, no complaints.
someone is keeping an eye on me, making sure everything is ok.
accommodating (2)
good explanations (3)
availability (4)
hands on
one-on-one (2)
working with a team of professionals
non-intimidating, non-aggressive, informative without being aggressive.
relaxed
take lots of time
learn new things (2)
friendly, knowledgeable, encouraging
very nice people (3)
they listen (3)
the people are very understanding and helpful (2)
answers all of my questions
feeling of security that someone is there (2)
available at all times if there is a problem with blood sugar and always calls back
can see everyone in one appointment.
convenience!
close to home and at same location as my doctor

What do you think should be improved?

Nothing (10)
more teaching regarding nutrition and exercise
Closer to home would be nice
Redundancy
Open longer hours (2)
More frequent visits
less medications
more knowledge on medicine

Topics for group sessions

Food (5)
exercise (5)
balancing diabetes with daily life
Cooking with fibre (2)
stress management (6)
healthy eating

why, and how food affects blood sugars
alternatives to medicine in conjunction with the medicine
label reading (heart and stroke vs. other methods)