

**IMPORTANT ASPECTS OF CARE  
FOR PEOPLE WITH TYPE II DIABETES**

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## Abstract

Type II diabetes is a chronic disease that impacts millions of people in North America and around the world. Research has shown the relationship between diabetes management and aspects of care, including food choices, physical activity, stress reduction, medications, family and social support, and health care provider follow up. This project examines how important these aspects of care are to clients with Type II diabetes and their disease management. The completed mail in surveys indicated that clients rated food choices, follow-up with their physician, and medications among the most important aspects of care. Stress reduction and supportive friends received the lowest rating of importance. Variables including area of residence, sex, age, number of years with diabetes, insulin use, and oral medication use were used to further examine the responses. All aspects of care were rated higher by female respondents. Means for stress reduction and supportive friends varied the most between the genders. As the number of years with diabetes increased, so did the rating of importance of medications and follow-up with health care providers. Supportive family, supportive friends and follow-up with the physician all showed a pattern of being rated high for participants with diabetes less than one year. These ratings dropped for participants having diabetes between two and ten years but increased again for participants having diabetes over 11 years. Participants also listed other areas important to managing their diabetes. Checking and monitoring blood sugars and receiving additional information on diabetes were the most common responses given. Suggestions for further research and current practice are included.

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## Introduction

The education offered to adults with Type II diabetes has changed a great deal in the last decade. The changes involve both the way education is offered and the topics that may be covered. These changes may be related to a variety of factors such as decreasing health care resources, increasing client population, increasing emphasis on treating the person as a whole including physical, mental and physical realms, as well as increasing focus on client choice and empowerment.

Research related to the education needs of health professionals and physicians in the area of diabetes have been conducted (Meigs & Stafford, 2000; Tanzola & Houlden, 2000). As well, there are a variety of studies that support the use of diabetes education in improving patient outcomes (Lorenzi, 1998; Robson, Blackwell, Waine & Kennedy, 2001). Education programs throughout North America usually cover a similar range of topics considered to be important in diabetes management by the literature. However, there is little research examining what aspects of care clients perceive as important for managing their diabetes.

As a dietitian who has worked with clients with Type II diabetes, I am interested in understanding what areas of care clients feel are very important to their disease management. In my current position as the Manager of Clinical Nutrition for the Chinook Health Region, I am also interested in knowing if our diabetes education program focuses on the areas that our clients feel are very important. Based on the results of this research project, the focus of our education programs may need to be reexamined and/or we may need to develop further client awareness programs for certain aspects of diabetes care.

### *Research Question*

This study's main research question is "What aspects of diabetes care do clients with Type II diabetes feel are the most critical to their disease management?" The aspects of care considered are currently the main cornerstones of current diabetes education programs. These include nutrition or diet related management, exercise, stress reduction skills, medications, supportive family and friends, and physician or health professional contact. The variables examined in relation to the major research question are area of residence, gender, age, years with diabetes, insulin use, and oral diabetes medication use.

### *Significance of the Study*

Because of the similarity of educational topics offered through diabetes education programs across Canada, the information regarding the clients' perceived importance of specific aspects of care as well as some further insight into our clients' thoughts and perceptions should be useful for other education centres. However, the information gathered regarding whether or not these aspects are addressed in local education offerings will be more useful for the local diabetes education program and physicians than for other centres. This information will be shared with the CHR Diabetes program and will not be summarized in this report.

On a broader scale, research that potentially improves the education offered to clients with diabetes and increases the health professionals' knowledge of their clientele is critical in addressing the impact that diabetes has within North America. This impact is described well by Tanzola and Houlden (2000). They observe that

Diabetes is a common chronic disease affecting 1.2 to 1.4 million Canadians. This number is expected to rise sharply as the population ages. Because of its high

prevalence and the associated complications, the cost of diabetes to the health care system is enormous. It is estimated that 1 in 7 health care dollars or \$6 billion annually is spent on the care of patient with diabetes. Diabetes is a leading cause of death by disease in Canada, the leading cause of adult-onset blindness and chronic renal failure. It is a significant risk factor for cardiovascular disease and lower-limb amputation. (p. 33)

## Literature Review

The current literature review suggests that there is little research on what messages clients are taking from education programs or what they perceive as the important aspects of diabetes management. However, a somewhat similar area of research is the examination of the quality of life and life experiences of people with diabetes. However, Mitchell stated in her quality of life study that “There has not been a lot of attention given to developing knowledge that helps professionals understand what life is like for persons with chronic illnesses such as diabetes” (1998, p.30).

Others studies (Hernandez, 1995; McCord & Brandenburg, 1995; Parker, 1994; Paterson & Sloan, 1994) have started to examine what life is like for someone with diabetes. Parker (1994) examined the life experiences of Native Americans with Type II diabetes and found six major themes to describe the subjects’ experiences with the diagnosis and progression of diabetes. These themes were reactions to Type II diabetes; responses to loss of health; identification with others; fear associated with the disease process; grieving associated with the diagnosis; and lastly, peace related to the diagnosis of Type II diabetes.

Hernandez’s (1995) study provided insights into how clients with Type 1 diabetes perceive living with diabetes and with relating to their diabetes educators. Participants (n=4) in Hernandez’s study found that the teaching done by diabetes educators was not the pivotal factor in helping them gain knowledge and/or control of their diabetes. Thus, the traditionally held belief of health professionals that formal diabetes education is critical to client well-being and diabetes control was not shared by this study’s participants. Hernandez used journals and one-on-one interviews and concluded that

diabetes educators would be wise to adopt a new paradigm of collaborative alliances with clients, thus leaving the old adherence/ compliance paradigm behind. As more of this information comes to light, health professionals should be better able to understand and assist their clients with diabetes (Mitchell, 1998).

Other research has investigated the perceived ease of adherence to specific aspects of the diabetes care routine. Toljamo and Hentinen (2001) stated that, “Although people without diabetes perceived the biggest challenge of living with this disease as following the medication regimens, research actually suggests that following the dietary and exercise related regimens often provides the most difficulty for people with diabetes” (p. 624).

Additional research has examined what services or healthy activities clients with diabetes utilize. For example, Robson, Blackwell, Waine, and Kennedy (2001) investigated the factors affecting the use of dietitian services by clients with diabetes. They found that less than 60 percent of their sample had received dietitian services. Those receiving initial dietitian services were likely to be older, male, and to have poor blood glucose control. However, when examining repeat or recurring access to dietitian services, women, those with poor blood glucose control, and those with shorter duration of diabetes were found to be most likely users.

Marrero, Kakos Kraft, Mayfield, Wheeler, and Fineberg (2000) studied primary care physicians' views of barriers for nutrition management of people with Type II diabetes. Their survey results suggested that physicians perceive patient focused problems as significant barriers. Examples of such perceptions follow: 78% of the physicians felt patients are not interested in regulating their diabetes with nutrition; 97%

viewed patients as non-adherent with nutritional prescriptions; 81% reported that they believe that family members are not supportive of nutrition-based therapy; and 68% felt that patient education level is a moderate to overwhelming barrier (Marrero et al., 2000). Similarly, in a survey of a national sample of diabetes educators, respondents thought that one of “the most important barriers to attending education programs was patients’ lack of motivation” (Sprague, Shultz, Branen, Lambeth, & Hillers, 1999, p. 908).

Regular exercise is considered one of the important components of management for all people with diabetes (Lorenzi, 1998) because “physical activity is a first-line therapy and protects against many chronic health conditions” (Chakravathy, Joyner & Booth, 2002, p.165). Tudor-Locke, Myers, Rodger, and Ecclestone (1998) studied the current practices and experiences related to exercise of health professionals and their clients with Type II diabetes. Their results showed that “diabetes educators were inconsistent in their message concerning exercise and [that] focus group participants [clients] were similarly confused about exercise and ways to become more active” (p.47). Tudor-Locke and colleagues asked diabetes educators to rate estimated compliance with exercise, diet, oral medications and insulin on a scale from one (low estimated compliance) to three (high estimated compliance). The results showed the rating for exercise to be the lowest (1.6) with diet rating somewhat better at 1.95. Oral medications and insulin topped the list with scores of 2.5 and 2.75 respectively.

Meigs and Stafford (2000) examined the likelihood of cardiovascular prevention services being given during a visit to clients with and without diabetes. They found that the presence of diabetes made it moderately more likely for patients to receive some cardiovascular prevention services during an office visit (2000). The researchers found a

significant difference ( $p=0.01$ ) in the counseling process around exercise; 21.7 percent of visits compared to 12.8 percent of visits for clients without diabetes received this information. As well, younger patients and male patients were generally more likely to receive prevention services as well as patients residing outside metropolitan areas.

Chakravarthy, Joyner and Booth (2002) suggest there is “encouraging evidence that intensive and repeated counseling by health professionals can cause patients to become more physically active” (p.165). However, they also concluded that brief and sporadic counseling during routine office visits was not an effective means of producing sustained increases in physical activity. In agreement, Perri, Sears and Clarks’ results showed that weight loss in clients with Type II diabetes was more effectively maintained in groups with more health professional contact in both frequency and duration (1993).

The clients’ ability to manage stress and the amount of family and social support available to them impact their ability to manage their diabetes (Demers, Neale, Wenzloff, Gronsman, & Jaber, 1989; Garay-Sevilla, Nava, Malacara, Huerta, Diaz de Leon, Mena, & Fajardo, 1995; Handron, & Leggett-Frazier, 1994; Schafer, McCaul, & Glasgow, 1986; Toljamo & Hentinen, 2001). The study by Demers and colleagues’ (1989) of diabetes control and stress showed a strong correlation between high amounts of stress and poor diabetes control. The researchers then suggested that sustained stress may contribute to poor glucose control. In addition, Demers and colleagues suggest that the detection of increases in stress should lead health providers to prescribe stress- lowering activities rather than changes in diet or medication regimens. Garay-Sevilla and colleagues (2000) found the perceived level of stress was associated with increased

percentage of body fat and with poor diabetes control. In addition, they found that perceived stress had no association with adherence to treatment.

Handron and Leggett-Frazier (1994) identified individual psychosocial stressors that impact the patient's ability to comply with their self-care regimens. The three main factors seen in their participants were a sense of isolation from family members, co-dependency and the experience of loss. Handron and Leggett-Frazier's study found that typically the patients "were coping with many secondary stressors beyond that of chronic illness. For example, financial concerns, death of a family member, marital discord and serious health conditions affecting their spouse often influenced the patient's diabetes management" (p.518). This led Handron and Leggett-Frazier to suggest increased sensitivity to the patient's individual situation and increased awareness of the patient's perception of personal loss. That is, health care professionals should encourage clients to use healthy strategies to cope with high levels of stress and anxiety.

In writing about stress, Vallis (1998) stated the following:

Diabetes can be a psychologically stressful condition that can greatly burden an individual. The adequate management of diabetes rests primarily on the behavior of the individual. As such, psychosocial factors that interfere with an individual's ability to manage his or her diabetes will have significant medical implications. Psychosocial factors associated with the adjustment to, and management of, diabetes are increasingly recognized as important to assess and manage in the clinical care of individuals with diabetes. (p. 14)

Garay-Sevilla and colleagues (1995) examined the relationship between adherence to treatments and social support and family functioning and found that stronger

social support is related to better adherence to both medication and diet treatments. Toljamo and Hentinen (2001) found similar evidence of the relationship between social support, specifically that of family and friends, and adherence to self-care. Additionally, the study by Garay-Sevilla and colleagues (1995) suggests that some specific aspects of the family such as age of spouse and the degree of controlling behaviour within the family were also associated with adherence. In conclusion, these authors suggest that better strategies to improve social support and family functioning are needed in programs oriented to the management of diabetes.

Perri, Sears and Clark (1993) examined factors associated with maintaining weight loss in clients with Type II diabetes. These authors suggest a multifaceted program comprised of health professional contact, skills training [in diet and stress reduction], social support, and exercise as the most beneficial combination for maintaining weight loss. Sprague and colleagues (1999) studied diabetes educators in regards to the perceived difficulty of self-management skills for people with diabetes. They found that for Type II patients, most educators reported a moderate to high level of [perceived] difficulty in the self-management areas of exercise (86%), diet (84%), managing stress (78%) and maintaining a daily routine (71%). Problem solving skills were also reported by many of the educators as being at least moderately difficult for Type II patients (p. 912).

Although it may not be clear what importance level clients attribute to diet, exercise, medications, psycho-social support, stress reduction techniques, and physician or health professional contact, the literature does suggest that the services and recommendations in these areas are not adhered to or utilized by clients to the degree that

health professionals and physicians would desire. In addition, the literature suggests that all of these factors play a role in the complex and challenging care of a chronic disease such as Type II Diabetes. Any additional insight on the clients' experiences and what messages they receive from education efforts will be potentially beneficial to all health professionals and physicians providing services or recommendations to these clients.

## Methodology

### *Participants*

This study chose clients from the Chinook Health Region's Diabetes and Lipids Education Centre Client database. The database identified all clients who have been booked for diabetes education from January 1, 2003 to February 28, 2003. Clients who cancelled their appointment or did not show up at their appointment time were removed from the list of potential participants. Of the remaining clients, each of their charts was briefly reviewed to determine the type of diabetes that each of the clients' had. A color coded system was used within the Diabetes and Lipid Centre to identify clients with different types of diabetes. The first 200 participants with Type II diabetes on this list were chosen for this study. All of the sample group had received their education locally, within the Chinook Health Region. All of the sample population had received formal diabetes education during the January and February of 2003. Some clients may have or may not have received further education during the time between their appointment in January or February and when they received the study's survey.

By using the Diabetes and Lipid Centre Database, the sample population will be limited to clients who have accessed this mode of education and will not necessarily represent the whole population of people with Type II diabetes living in the Chinook Health Region. The Coordinator of the Diabetes and Lipid Education Centre estimates that only 30 percent of the people with Type II diabetes access their center (Balon-Lyon, 2002). The population will include clients from the city of Lethbridge, surrounding towns, and rural areas.

The Chinook Health Region's Research and Ethics committee approved the research proposal and survey. The University of Lethbridge Human Subject Research Committee also approved the project.

### *Instrument*

Because the sample population resides in a variety of areas and has a variety of lifestyles, a written survey was considered easier for the population than a focus group or a telephone survey. In addition, I did not want participants to feel compelled to rate the nutrition portion of the survey higher because they were speaking with a dietitian or to feel that they could not be critical of the Diabetes and Lipids Education Services if needed. The written survey gives an additional degree of anonymity to the participants.

The first section of the survey determined what level of importance clients attach to each different care area rather than determining whether or not these clients were adhering to specific parts of their routines. For example, the results indicated on average how important clients feel exercise is in their diabetes management, not whether they use exercise as part of their routine. This section of the survey used a 4-point rating scale from "Very Important" to "Not Important at All" with a space for "Not applicable" included. Next, the survey included two broad open response questions asking participants what else is important to their diabetes management and what else can the local Diabetes and Lipid Centre provide for them. Lastly, basic demographic information was requested. This included what type of area the clients resided in; their gender; their age; the number of years with diabetes; and whether or not they use insulin or oral medications. This information was gathered by having participants check the most appropriate choice from the given options.

To begin the study, the draft survey was reviewed for clarity and ease of completion by two groups of 10 or more clients with Type II Diabetes. This was done at the end of an education class at the Diabetes and Lipid Education Centre. These participants were not be asked to fill out the survey but to comment on the questions or format. These participants were then excluded from the sample population because they have participated in clarifying the survey. From this feedback, the survey was not revised before being sent out.

An introductory letter (Appendix A), final survey (Appendix B), consent form (Appendix C), and self-addressed stamped envelope was sent to each participant. Participants were asked to complete the survey, return it in the self-addressed stamped envelope, and indicate if they wish to see the summarized results. The letter specified what was requested and indicated that the survey results were confidential and in no way would impact their future diabetes care within the Chinook Health Region. For tracking the returned surveys, each participant was assigned a number. This number was placed on the bottom of the survey, consent form and the self-addressed stamped envelope. The first 140 surveys were sent out on August 19, 2003. Due to secretarial workload within the health region, the last 60 surveys were not sent out until October 29, 2003. All responses received by November 30, 2003 were included in the data analysis and the final research report.

#### *Data Storage*

All data from this project is stored in a locked file cabinet within a locked office within the CHR. Ten years from the date that the final written project is accepted by the University of Lethbridge, all original data will be destroyed by document shredding.

*Budget*

The Chinook Health Region provided in-kind secretarial support for addressing the self-addressed envelopes and the ones for the study participants. The researcher covered the cost of photocopying and postage for the surveys and return envelopes. My work address and contact information was used for the survey.

## Results

Two hundred surveys were mailed out; 63 completed surveys with consent forms were returned, a response rate of 32 percent. An additional three packages were returned but were missing either the consent form or the actual survey. Two additional surveys were received after the data analysis was completed and were not included in the results.

The maximum possible rating for each aspect of care was four, where one equals a rating of “Not Important at All” to managing their diabetes and four equals a rating of “Very Important” to managing their diabetes. Table 1 and Figure 1 present the minimums, maximums, means, and standard deviations of participant ratings of all aspects of care included in the survey. Response rates were 95 percent or above for all aspects of care except for reducing stress where only 81 percent responded and for medications where only 90 percent responded.

Table 1. Aspects of Diabetes Care

	N	Minimum	Maximum	Mean	Std. Deviation
Food choices	62	2	4	3.73	.485
Physical activity	61	1	4	3.41	.716
Reducing stress	51	1	4	2.33	1.033
Medications	57	1	4	3.51	.782
Supportive family	61	2	4	3.39	.690
Supportive friends	60	1	4	2.95	.999
Follow-up with doctor	60	1	4	3.60	.694
Follow-up with nurse or dietitian	61	1	4	3.30	.715

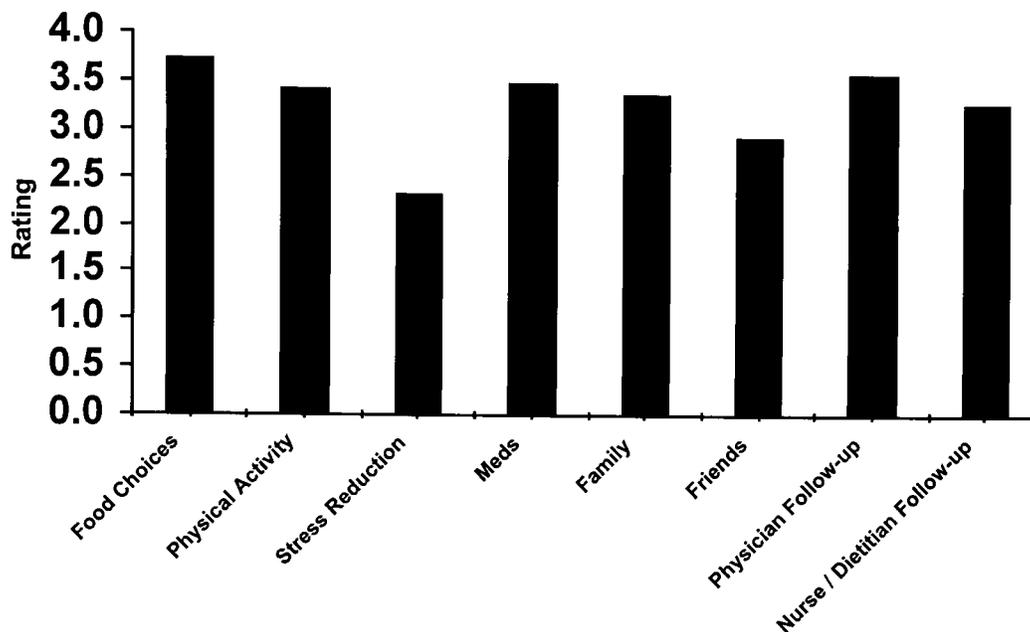


Figure 1. Aspects of Diabetes Care

All aspects of care received a mean rating of 3.0 or higher for importance with the exception of two aspects of care. Reducing stress had a mean of 2.33 (s.d., 1.033) and supportive friends a mean of 2.95 (s.d., 0.999). These two also had the largest standard deviations which can be seen as representing more variation within responses. Food choices had the highest mean (3.73), the lowest standard deviation (0.485) and one of the smallest minimum and maximum ranges, indicating little variation in these responses.

Of the completed returned surveys, 44 (71%) of respondents resided in Lethbridge, 12 (19%) described their residence as a small town, and the remaining 6 (10%) stated a rural area as their area of residence. Table 2 presents the means and standard deviations of participant ratings of all aspects of care separated into area of residence. Means and standard deviations separated by area of residence showed few differences, with similar means and small deviations.

Table 2. Area of Residence and Aspects of Care

Area of Residence		Food choices	Physical activity	Reducing stress	Medications	Supportive family	Supportive friends	Follow-up with doctor	Follow-up with nurse or dietitian
Lethbridge	Mean	3.77	3.42	2.17	3.51	3.39	2.81	3.55	3.19
	N	44	43	36	39	44	43	42	43
	Std. Deviation	.424	.763	.971	.790	.689	1.006	.772	.764
Small town	Mean	3.67	3.33	3.11	3.58	3.45	3.36	3.83	3.58
	N	12	12	9	12	11	11	12	12
	Std. Deviation	.492	.651	1.054	.515	.688	1.027	.389	.515
Rural area	Mean	3.50	3.50	2.17	3.33	3.33	3.17	3.50	3.50
	N	6	6	6	6	6	6	6	6
	Std. Deviation	.837	.548	.983	1.211	.816	.753	.548	.548
Total	Mean	3.73	3.41	2.33	3.51	3.39	2.95	3.60	3.30
	N	62	61	51	57	61	60	60	61
	Std. Deviation	.485	.716	1.033	.782	.690	.999	.694	.715

Figure 2 presents the means of all aspects of care.

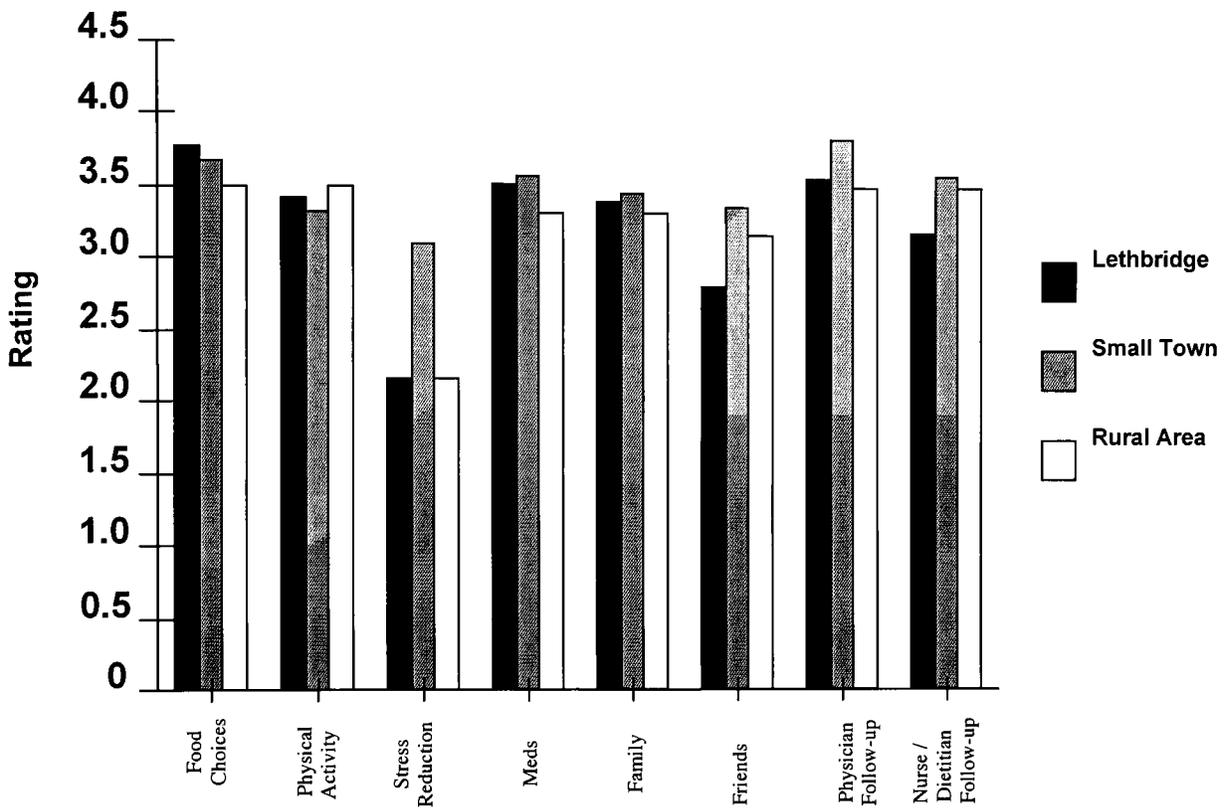


Figure 2. Area of Residence and Aspects of Care

Of the returned surveys, 29 (46%) of respondents were female and 34 (54%) were male. Table 3 presents the means and standard deviations of participant ratings of all aspects of care by their gender. Figure 3 presents the means of all aspects of care.

Table 3. Sex and Aspects of Care

Gender		Food choices	Physical activity	Reducing stress	Medications	Supportive family	Supportive friends	Follow-up with doctor	Follow-up with nurse or dietitian
Female	Mean	3.82	3.41	2.78	3.54	3.57	3.43	3.67	3.45
	N	28	27	23	26	28	28	27	29
	Std. Deviation	.390	.636	1.126	.811	.690	.879	.679	.686
Male	Mean	3.65	3.41	1.96	3.48	3.24	2.53	3.55	3.16
	N	34	34	28	31	33	32	33	32
	Std. Deviation	.544	.783	.793	.769	.663	.915	.711	.723
Total	Mean	3.73	3.41	2.33	3.51	3.39	2.95	3.60	3.30
	N	62	61	51	57	61	60	60	61
	Std. Deviation	.485	.716	1.033	.782	.690	.999	.694	.715

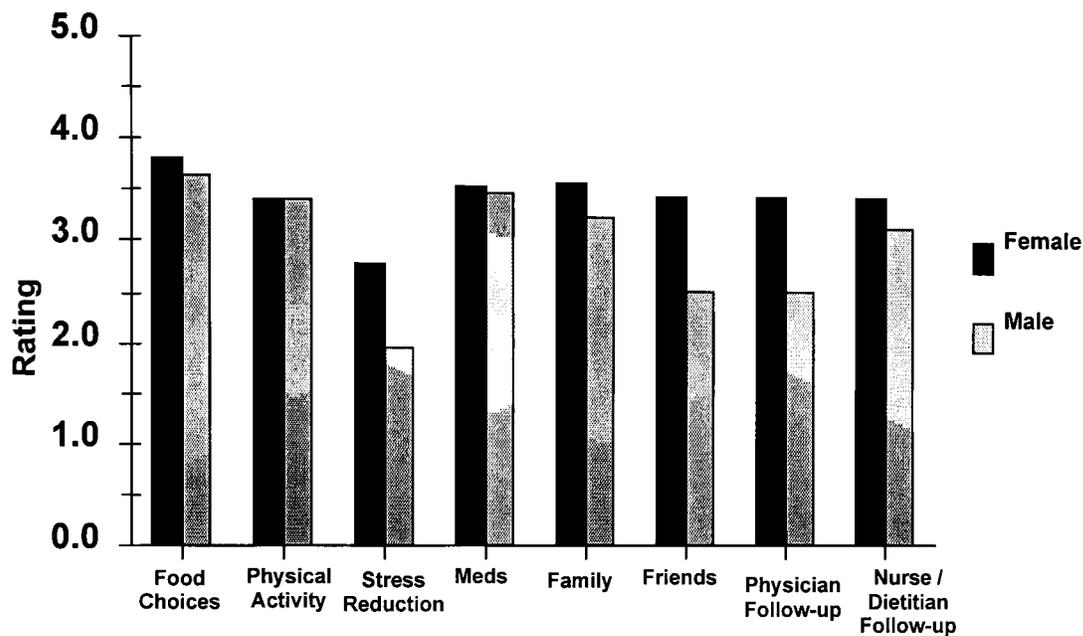


Figure 3. Sex and Aspects of Care

Means for food choices, physical activity, medications and follow-up with their physician varied little between genders. There was less than a 0.18 difference between the female and male respondents. However, means for the importance of a supportive family and follow-up with nurse or dietitian showed an increased difference between genders with a difference of 0.29 and 0.33, respectively. Means for reducing stress and supportive friends showed the most difference by genders with a difference of 0.82 and 0.90, respectively. All aspects of care were rated as having higher importance, thus higher means, by female respondents versus males.

Of the completed surveys returned, two (2%) respondents were age 40 and under; 25 (40%) were between the ages of 41 - 60; 26 (42%) were between the ages of 61 - 79; and 9 (15%) were 80 years old and over. Table 4 presents the means and standard

deviations of participant ratings of all aspects of care by their age. Figure 4 presents the means of all aspects of care.

Table 4. Age and Aspects of Care

Age		Food choices	Physical activity	Reducing stress	Medications	Supportive family	Supportive friends	Follow-up with doctor	Follow-up with nurse or dietitian
40 and under	Mean	4.00	4.00	3.50	2.00	3.00	3.00	2.50	2.50
	N	2	2	2	2	2	2	2	2
	Std. Deviation	.000	.000	.707	1.414	1.414	1.414	2.121	2.121
41-60	Mean	3.72	3.35	2.17	3.54	3.28	2.67	3.60	3.25
	N	25	23	23	24	25	24	25	24
	Std. Deviation	.542	.647	.937	.779	.678	1.007	.500	.532
61-79	Mean	3.69	3.48	2.40	3.57	3.62	3.11	3.72	3.42
	N	26	27	20	23	26	27	25	26
	Std. Deviation	.471	.753	.995	.662	.571	1.013	.542	.758
80 and over	Mean	3.78	3.22	2.33	3.62	3.13	3.29	3.50	3.22
	N	9	9	6	8	8	7	8	9
	Std. Deviation	.441	.833	1.506	.744	.835	.756	1.069	.667
Total	Mean	3.73	3.41	2.33	3.51	3.39	2.95	3.60	3.30
	N	62	61	51	57	61	60	60	61
	Std. Deviation	.485	.716	1.033	.782	.690	.999	.694	.715

The smallest range of means related to the age of respondents existed for food choices, supportive family and supportive friends. The differences between the highest and lowest ratings were only 0.31, 0.62 and 0.60, respectively. Physical activity and follow-up with a nurse or dietitian had means that ranged with 0.78 and 0.92 of each other, respectively. Medications, reducing stress and follow-up with their physician showed the greatest range of means related to age. The differences between the highest and lowest ratings were 1.62, 1.33 and 1.22, respectively.

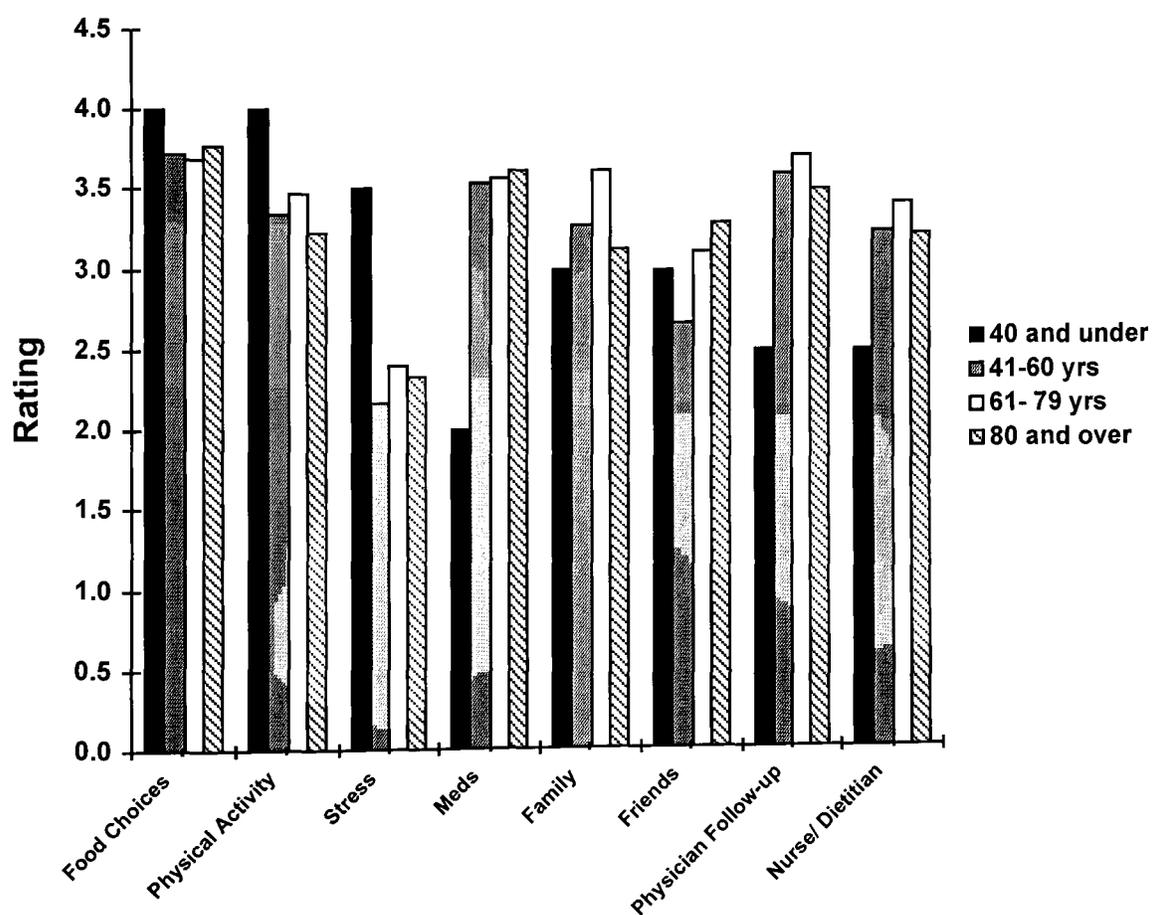


Figure 4. Age and Aspects of Care

On the surveys, 9 (15%) respondents reported having diabetes for less than one year; 28 (46%) for 2-5 years; 11 (18%) for 6-10 years, and 13 (21%) for 11 or more years. Table 5 presents the means and standard deviations of participant ratings of all aspects of care by the numbers of years with diabetes.

Table 5. Years with Diabetes and Aspects of Care

Number of years with diabetes		Food choices	Physical activity	Reducing stress	Medications	Supportive family	Supportive friends	Follow-up with doctor	Follow-up with nurse or dietitian
Less than 1 year	Mean	3.89	3.11	2.33	2.89	3.63	3.11	3.78	3.11
	N	9	9	9	9	8	9	9	9
	Std. Deviation	.333	.782	1.118	1.167	.518	.782	.441	.782
2 - 5 years	Mean	3.82	3.44	2.23	3.54	3.33	2.96	3.54	3.22
	N	28	27	22	24	27	27	28	27
	Std. Deviation	.390	.641	.973	.588	.734	1.055	.744	.641
6 - 10 years	Mean	3.45	3.70	2.33	3.70	3.27	2.50	3.60	3.36
	N	11	10	9	10	11	10	10	11
	Std. Deviation	.688	.483	1.000	.483	.647	.972	.516	.674
11 + years	Mean	3.62	3.29	2.50	3.92	3.57	3.23	3.83	3.69
	N	13	14	10	13	14	13	12	13
	Std. Deviation	.506	.914	1.269	.277	.646	1.013	.389	.480
Total	Mean	3.72	3.40	2.32	3.55	3.42	2.97	3.64	3.33
	N	61	60	50	56	60	59	59	60
	Std. Deviation	.488	.718	1.039	.711	.671	.999	.609	.655

Participants with diabetes for less than one year presented with the highest means for the importance of food choices and supportive families, 3.89 and 3.63 respectively. The same participants also presented the lowest means for the importance given to physical activity and medications, 3.11 and 2.89 respectively. Both medications and follow-up with nurse or dietitian showed a trend of increasing importance with increasing years of diabetes diagnosis. This indicates that, as the number of years with diabetes increases, the importance and perhaps the amount of medications increase, as well as the importance of using members of their health care team for assistance in managing diabetes. Means for the importance of reducing stress had the smallest range (0.27) and all standard deviations were greater than 0.973. Supportive family, supportive friends and follow-up with their doctor all showed a pattern of being high for participants with diabetes for less than one year and then dropping in importance for those participants having had diabetes for between 2 and 10 years. However, these three all showed a tendency to increase once again in participants having had diabetes at least 11 years.

Figure 5 presents the means of participant ratings of all aspects of care by the numbers of years with diabetes.

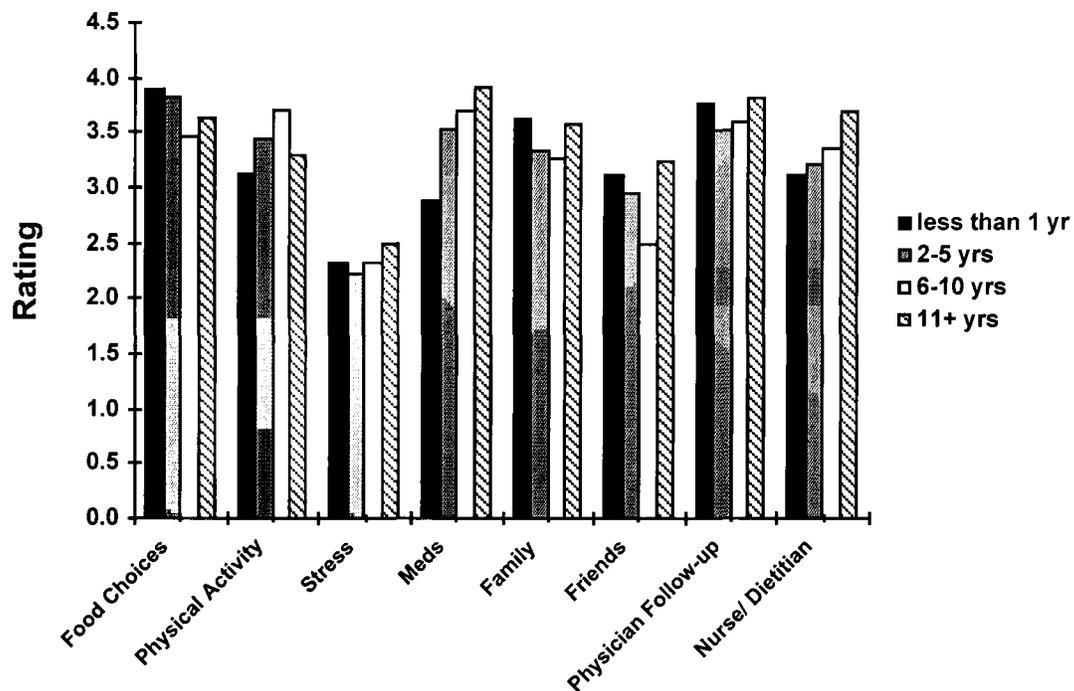


Figure 5. Years with Diabetes and Aspects of Care

Of the completed, returned surveys, 16 (26%) of respondents reported using insulin and 46 (74%) responded no to insulin use. Table 6 presents the means and standard deviations of participant ratings of all aspects of care separated by whether or not they reported using insulin.

Table 6. Insulin Use and Aspects of Care

Take insulin?		Food choices	Physical activity	Reducing stress	Medications	Supportive family	Supportive friends	Follow-up with doctor	Follow-up with nurse or dietitian
Yes	Mean	3.62	3.38	2.91	3.75	3.41	3.00	3.60	3.67
	N	16	16	11	16	17	16	15	15
	Std. Deviation	.500	.885	1.221	.447	.618	1.155	.632	.617
No	Mean	3.76	3.42	2.17	3.41	3.39	2.93	3.60	3.17
	N	46	45	40	41	44	44	45	46
	Std. Deviation	.480	.657	.931	.865	.722	.950	.720	.709
Total	Mean	3.73	3.41	2.33	3.51	3.39	2.95	3.60	3.30
	N	62	61	51	57	61	60	60	61
	Std. Deviation	.485	.716	1.033	.782	.690	.999	.694	.715

Figure 6 presents the means of participant ratings of all aspects of care separated by whether or not they reported using insulin.

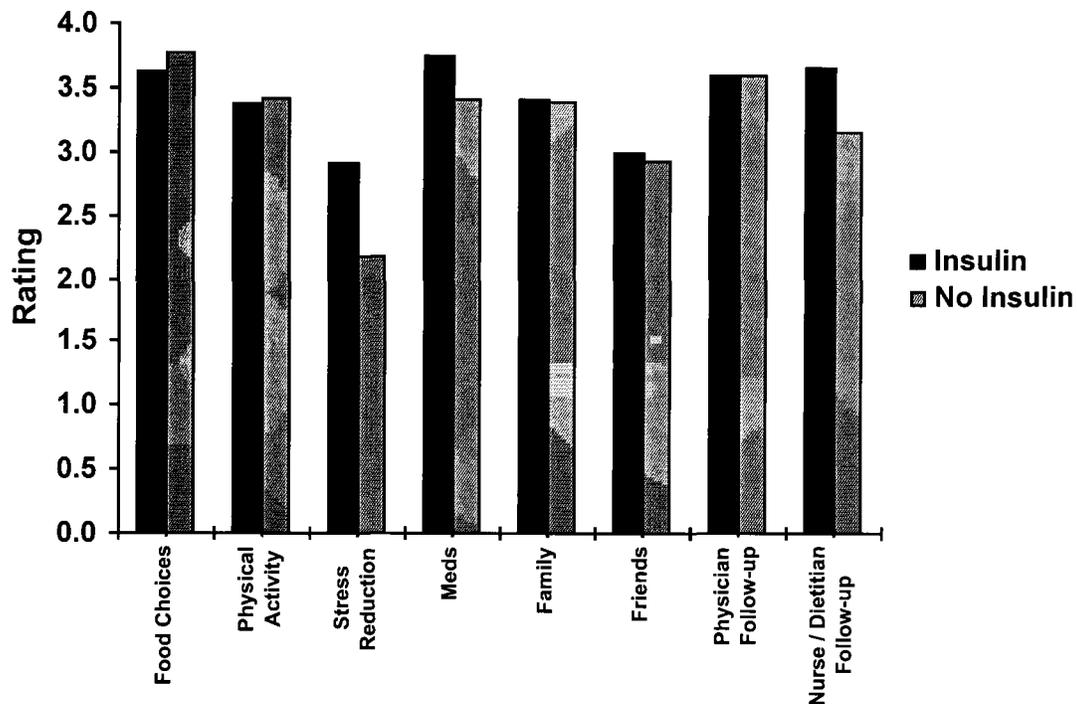


Figure 6. Insulin Use and Aspects of Care

There were very small differences between the means scores for food choices, physical activity, supportive family, supportive friends and follow-up with their doctor related to whether or not the participant reported using insulin. The differences were less than or equal to 0.14 all of the above aspects of care. Reducing stress, follow-up with nurse or dietitian and medications had greater differences between the means between participants reporting insulin use or no insulin use. The differences were 0.74, 0.50, and 0.34 respectively for the above aspects of care. In addition, the tendency was for participants who reported using insulin to give higher importance to these three areas

(reducing stress, follow-up with nurse or dietitian and medications) versus their non-insulin using counterparts.

Of the completed, returned surveys, 40 (66%) of respondents reported using oral medications and 21 (34%) responded no to the use of oral medications. Table 7 presents the means and standard deviations of participant ratings of all aspects of care separated by whether or not they reported using oral medications.

Table 7. Oral Medication Use and Aspects of Care

Take oral medication?		Food choices	Physical activity	Reducing stress	Medications	Supportive family	Supportive friends	Follow-up with doctor	Follow-up with nurse or dietitian
Yes	Mean	3.72	3.38	2.32	3.77	3.36	2.97	3.69	3.45
	N	40	39	34	40	39	38	39	40
	Std. Deviation	.506	.673	.945	.480	.707	1.000	.468	.597
No	Mean	3.76	3.48	2.35	2.88	3.48	3.00	3.45	3.00
	N	21	21	17	16	21	21	20	20
	Std. Deviation	.436	.814	1.222	1.025	.680	.949	.999	.858
Total	Mean	3.74	3.42	2.33	3.52	3.40	2.98	3.61	3.30
	N	61	60	51	56	60	59	59	60
	Std. Deviation	.480	.720	1.033	.786	.694	.974	.695	.720

Figure 7 presents the means of participant ratings of all aspects of care separated by whether or not they reported using oral medications.

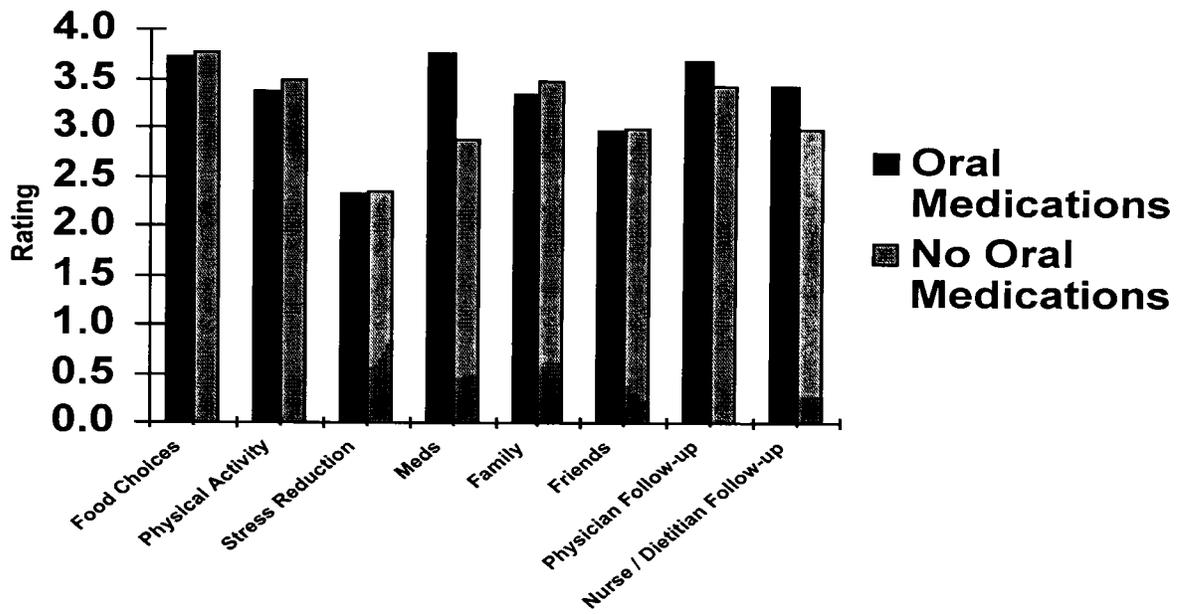


Figure 7. Oral Medication Use and Aspects of Care

There were very small differences between the means scores for food choices, physical activity, reducing stress, supportive family and supportive friends related to whether or not the participant reported using oral medications. The differences were less than or equal to 0.12 all of the above aspects of care. Medications, follow-up with nurse or dietitian and follow-up with their physician had greater differences for the means between participants reporting oral medication use or no oral medication use. The differences were 0.89, 0.45, and 0.34 respectively for the above aspects of care. In addition, the tendency was for participants who reported using oral medications to give higher importance to these three areas (medications, follow-up with nurse or dietitian and follow-up with their physician) versus their non-oral medication using counterparts.

For the qualitative survey questions, participants were asked to provide other areas that help manage their diabetes and specific ways that the local Diabetes Program could be improved. The first set of responses is summarized in Table 8 with the most frequent responses being listed first. The latter was asked specifically for the Diabetes program and the summary was shared with the programs' management and is not specified in this document.

Table 8. Oral Medication Use and Aspects of Care

Rank	Area Listed	Frequency of Response
1	Checking and Monitoring Blood Sugars	11
2	Information (from magazines, research, people in general and people with diabetes)	10
3	Food Related (timing of meals, having small meals, reading labels, eating less meat and eating more vegetables)	5
4	Adequate Sleep	3
5	Drinking Water	2
5	Controlling Weight	2
6	Using Herbs	1
6	Attending Support Groups	1

Checking and monitoring of blood sugars and obtaining further information on diabetes and health were the two other areas of care with the highest frequency of responses.

## Discussion

Comparing the literature review with the current study's results raises many interesting questions and many connections arise. For example, Hernandez's (1995) work found that teaching done by Diabetes Educators was not a pivotal factor in gaining knowledge and /or control of their diabetes. In the current study, clients did feel that follow-up with a Diabetes Health Care Professional was considered important for their diabetes management. Females tended to rate this aspect of care as more important than males. As the years of living with the diabetes diagnosis increased, the importance of follow-up with a Diabetes Health Care Professional also consistently increased.

Marrero and colleagues (2000) indicated that 78 percent of the physicians in their study had a perception that patients were not interested in regulating their diabetes with nutrition. This current study suggests that clients with Type II diabetes perceive the opposite as true. Overall, participants gave the importance of food choices the highest average rating (3.73 on a 4 point scale), which points the majority of responses towards the rating of "Very Important".

Additionally in Marrero and colleagues' (2000) study, 81% of physicians indicated that they believed that family members were not supportive of nutrition-based therapy. Although the current study does not address why a supportive family had a slightly lower mean for the level of importance it received, it may indicate an area of future exploration. Of similar interest is the rating that supportive friends received. This mean was the second lowest of all eight aspects of care, showing that participants did not feel supportive friends were as important as other aspects. One of the questions remaining about this finding is whether or not supportive friends received a lower rating because

participants had supportive friends but did not find them helpful or because clients did not have what they would consider supportive friends and manage their diabetes without this additional support.

Both Lorenzi (1998) and Chakravarthy, Joyner, and Booth (2002) felt physical activity is one of the cornerstones of treatment with chronic diseases such as diabetes. The current research confirms that clients feel that physical activity is important in diabetes care. This study's participants perceived exercise as important and that there was little confusion around this as suggested by other researchers. For example, Tudor-Locke, Myers, Rodger and Ecclestone's (1998) study found there was confusion around the exercise message given to clients and that health professionals rated compliance with exercise as poor. The current study did not address what clients did to manage their diabetes but rather what they perceived as important for them to do.

Meigs and Stafford's (2000) research showed that clients with diabetes were more likely to receive counseling on exercise. The current study supports this finding in that most participants perceived exercise as "Important", although no conclusions can be drawn about where clients received this message. Meigs and Stafford's (2000) study found that differences between age, gender and area of residence related to receiving exercise services. However, the current study found little difference with these factors. Although a larger sample size, in general and specifically related to the 40 and under age grouping, rural and small town participants would be helpful in determining if any differences in perceptions really existed. The question remains that if this sample finds physical activity important for managing diabetes, how much and how often are these participants physically active?

Demers and Colleagues (1989) and Garay-Sevilla and Colleagues (2000) found a connection between stress and poor diabetes control. It is interesting that participants in the current study did not rate reducing stress as strongly as other aspects of care. Stress received the lowest mean rating, falling closer to the “Somewhat Important” description. Also of interest is that 29 percent of participants did not rate stress at all or marked it as “Not Applicable”. This study’s participants did not indicate that stress reduction was important for their diabetes control. Handron (1994) and Vallis’s (1998) research indicated a high amount of stress was common with chronic health conditions such as diabetes. Thus, the current finding is likely more related to participants’ lack of awareness of stress or of the importance of reducing it than actually having little or no stress. Further examination of the levels of stress present in this population would support or deny this potential conclusion. Equally interesting would be further investigation of what health care professionals and physicians are giving or not giving as far as the importance of stress management in chronic disease care.

Similarly, having the support of family and friends has been related to adherence to both medication and diet treatments (Garay-Sevilla, 1995). Both of these aspects received lower ratings in the current research than many of the other aspects of care, with supportive friends receiving the second lowest mean. These results could indicate that these participants in particular did not find these aspects important. But more likely this shows a lack of understanding and awareness on the participants’ part as to the importance of this connection. This leads back to the messages that health care professionals and physicians are giving. If this is one of the main messages they are trying to share, they do not seem to be doing so successfully.

One of the main purposes of the current study was to examine whether clients with Type II diabetes felt that the same aspects of care were important to them as those identified by physicians, health care professionals and research. Definitely food choices, physical activity, and follow-up with their physician seem to be shared by all as important to managing diabetes. There seems to be less agreement on the clients' part about the importance of supportive family and health care professional follow-up. However, study participants did seem to be receiving this message. Lastly, the areas of stress reduction and supportive friends seem to be perceived as less important to clients than follow-up with health care professionals and physicians. Based on this, work around the awareness and understanding of the importance of all aspects of care needs to continue and be fine-tuned.

## Recommendations

From this study, two sets of recommendations can be made. Firstly, recommendations related to further research in this area and secondly, those related to changes in current diabetes education practice.

### *Further Research*

Many possible areas of further examination were highlighted throughout the discussion section. These include suggestions for further research to answer the following questions:

- Why is having supportive friends and family not rated with the same importance as other areas?
- What level of support do clients with Type II diabetes or other chronic conditions feel they receive from family and friends? Do these perceptions match those of health care professionals and physicians?
- What (if any) relationship does the clients' perceived importance of an area have to how actively the clients make changes to behavior in that area? For example, if food choices are rated as very important, what changes are these clients making in their food choosing behavior? Does clients' perceived importance of an area relate to their success in this area?
- What are the main sources of health messages for clients with chronic disease? How do these sources vary based on the age and place of residence of the client?

- What are the levels of stress commonly associated with this population? How do these levels compare for people with other chronic diseases, and for those without chronic diseases?
- What specific stress reducing techniques are most successful with this population? How are these best introduced or shown to clients?

Many of these research ideas relate back to knowing our clients better and to a further examination of how they perceive things. Research related around physicians and health professionals' perceptions are useful but should be balanced with what the actual clients feel or perceive. This area of research is a relatively new one and leaves much for us to explore.

#### *Current Practice*

Diabetes educators and the centres they work in should focus more attention on the importance of stress reduction and support of family and friends in their clients' disease management. When looking at education offerings, topics that support these aspects should be included. However, the simple inclusion of stress reduction classes is likely not enough to encourage attendance. Clients need to become aware of the importance of and develop an interest in these areas. Involvement with support groups, including the facilitation or/ and encouragement of them, should take an increasingly important role with diabetes education centres and advocates.

The message of the importance of food choices, activity and medications has gotten across to clients. The focus may need to shift from "This is important for you." to "How do you work these things into your life on regular basis?". Less background and more hands-on, skill building and demonstration should be in the forefront around these

issues. Offering things such as shopping tours, cooking classes or clubs, exercise classes, physical activity events, and actual reminders on when to take medications may be some ways to move ahead from awareness. The use of goal setting around actions with these areas of care may also be helpful.

Educators should be cognizant that male clients tend to rate the importance of many aspects of care lower than females. Educators should ensure that the messages are given to all clients regardless of gender. Re-examination of tools and techniques used in teaching with clients may be needed to ensure both genders are receiving the intended message.

Assessment tools should include evaluations of level of stress and the amount of support the client has. In addition, Diabetes Educators should receive further training in how to address these issues with clients. Educators need to be comfortable discussing these issues and also demonstrating stress reduction techniques to clients. Educators should be trained to identify when clients need to be referred on to other health professionals. A closer connection with psychologists and counselors with a chronic disease background may be needed.

Physicians could also benefit their clients by following the above suggestions. Physicians can have a strong influence on what clients perceive as important as well as on encouraging clients to seek out additional support from other professionals and/or support groups.

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## Appendix A

### Survey Request Letter

Dear Diabetes and Lipid Education Centre Client,

My name is Sandra Gugins. I am completing my Masters in Education at the University of Lethbridge. As my final project, I am looking at what areas are the most important to clients in managing their diabetes. I need your help to complete my survey. The survey should only take about five minutes to fill in.

Please help me by completing the attached survey and consent form. You can return them to me in the self-addressed stamped envelope that is included. These surveys will be strictly confidential.

The information gathered from the survey will help health care professionals understand their clients better. As well, this work will provide us with some ideas on how the Diabetes and Lipid Education Centre can better assist their clients.

Thank you for taking time to complete the survey. If you have any questions about the survey, please call me at (403) 382-6148. As well, you can contact my project supervisor Dr. Margret Winzer at the University of Lethbridge at 329- 2461 and/or the Chair of the Faculty of Education Human Subjects Research Committee for further information. The Chairperson of the committee is Dr. Cathy Campbell.

The final report may be published in a journal or presented at a Health Professionals conference. No identifying information will be included in any form of publication. All information gathered in this research project will be stored within a locked file cabinet within a secured office in the CHR for ten years. At this point, all information from this study will be destroyed by shredding.

Sincerely,

Sandra Gugins, Manager Clinical Nutrition  
Nutrition Services, Chinook Health Region  
960 - 19 St. S.  
Lethbridge, Alberta

T1J 1W5

## Appendix B

## Client Survey

1. Please check (✓) the column that best describes the importance of each area to your diabetes management.

Area	1	2	3	4	NA
	not important at all	somewhat important	important	very important	not applicable
Food choices					
Physical activity					
Reducing stress (using yoga, massage, or other methods)					
Medications					
Supportive family					
Supportive friends					
Follow-up with your doctor					
Follow-up with your diabetes health care team members (nurse or dietitian)					

2. List other areas that help you manage your diabetes.

1. \_\_\_\_\_

2. \_\_\_\_\_

3. List ways that the Diabetes and Lipids Education Centre can help you manage your diabetes better.

1. \_\_\_\_\_

\_\_\_\_\_

2. \_\_\_\_\_

\_\_\_\_\_

3. \_\_\_\_\_

\_\_\_\_\_

4. Please select the answer that best describes you.

You live in: \_\_\_\_\_

1. Lethbridge
2. Small Town
3. Rural Area

You are: \_\_\_\_\_

1. Female
2. Male

Your age is: \_\_\_\_\_

1. 40 or under
2. 41 – 60
3. 61 – 79
4. 80 and over

Number of years with diabetes: \_\_\_\_\_

1. Less than 1 year
2. 2 – 5 years
3. 6 – 10 years
4. 11 or more years

Do you take insulin? \_\_\_\_\_

1. Yes
2. No

Do you take oral medications? \_\_\_\_\_

1. Yes
2. No

If you have any questions or need help completing this survey, please call Sandra Gugins, Clinical Nutrition Manager for the Chinook Health Region, at (403) 382-6148.

Please enjoy a cup of tea as my thank-you for completing this survey.

Would you like to receive a copy of the survey results?

No

Yes

If yes, please fill out the following information. This information will be separated from your survey upon arrival.

Name: \_\_\_\_\_

Address:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Please send in your survey and your signed consent form.

All green papers should be returned in the addressed, stamped envelope.

## Appendix C

## Client Consent Form

CONSENT INFORMATION SHEET for: The Areas of Care Important to Clients with Type II Diabetes – Client survey

The purpose of this study is to identify what our clients feel is important in helping them manage their diabetes. This study will help to increase our understanding of our clients and their needs. You are free to agree to be part of the study or to refuse. This decision will not affect the support you receive from the Diabetes and Lipid Education Centre.

This study consists of answering one survey and returning it in the addressed envelope. You may decline to answer any question or stop the survey at any time. All information is confidential. Your name will not be used in the study report. Only the researchers will have access to this information. Your comments are private and protected by the *Freedom of Information and Protection of Privacy Act* and the *Health Information Act*. The report will be made available to the University of Lethbridge and the Chinook Health Region.

You may contact the researcher if you have any questions. For more information, contact: Sandra Gugins, Chinook Health Region [Ph. (403) 382-6148]. You may revoke your consent at any time by contacting Sandra Gugins at 382-6148.

I CONSENT TO DISCLOSING the information I am providing in the attached survey to the parties named above for the purpose of education research and program planning.

\_\_\_\_\_  
Client Signature

Date: \_\_\_\_\_

Please return this consent form with your survey.