

EFFECTS OF SOCIAL SUPPORT ON SELF-CARE ADHERENCE AMONG
DIABETIC PATIENTS

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BY

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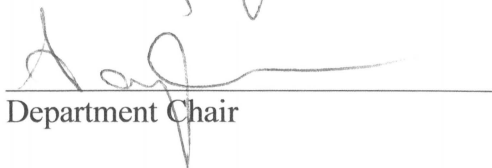
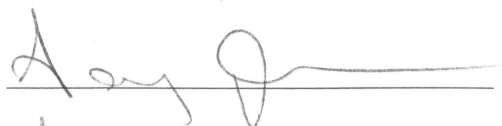
To the Dean of the Graduate School:

I am submitting herewith a dissertation written by Tasha Joshua entitled "Effects of Social Support on Self-Care Adherence Among Diabetic Patients." I have examined this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science with a major in Health Studies.

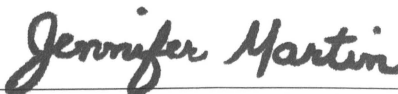


Anna Love, Ph.D., Major Professor

We have read this thesis and recommend its acceptance:


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Accepted:



Dean of the Graduate School

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ABSTRACT

TASHA JOSHUA

EFFECTS OF SOCIAL SUPPORT ON SELF-CARE ADHERENCE AMONG DIABETIC PATIENTS

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The purpose of this study was to determine the effects of perceived social support on self-reported adherence rates of self-care activities among patients in Baylor Healthcare System's outpatient Diabetes Self-Management Education Program (DSME). A convenience sample of 96 patients, ranging in age from 26 to 86 years ($M=52.04$, $SD=12.32$), participated in this study, by completing a demographic survey, Social Support Inventory, and Self-Care Inventory. Sixty-one females (63.5%) and 35 males (36.5%) participated in this study, and the average time since diagnosis was 29.53 ($SD=70.12$) months. Relationships and differences among social support, self-care activities, and demographic variables were examined.

Non-Caucasian participants scored higher on total social support and all the kinds of support, however, only the emotional support score was significantly higher than Caucasian participants ($t=2.83$, $p<0.01$). Overall self-care ($t=2.12$, $p=0.04$), insulin and food regulation ($t=2.06$, $p<0.05$) and blood glucose regulation ($t=2.15$, $p<0.05$) reached a significance difference among the two ethnicities. Men scored higher on all self-care activities, but the difference was not significant.

Social support did not predict adherence to self-care activities, nor did social support have a significant relationship with overall self-care adherence. Network support was a negative predictor of exercise self-care ($Beta=-0.63$, $p<0.05$). Caucasian ethnicity was a negative predictor of overall self-care ($Beta=0.18$, $p<0.05$) (Table 14) and blood glucose regulation ($Beta=-0.24$, $p<0.05$) (Table 15). Total Social Support was found to be a negative predictor of emergency precaution ($Beta=-0.26$, $p<0.05$). Having church/synagogues as a source of support was a negative predictor of adhering to the exercise component of self-care ($Beta=0.39$, $p=0.01$).

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CHAPTER I

INTRODUCTION

The life threatening disease of diabetes affects over 16 million Americans (Trief, Ploutz-Snyder, Britton, & Weinstock, 2004). This growing health concern can result in complex medical care regimens, medical complications and financial burdens (Williams & Bond, 2002). Strong commitment to medical treatment and self care activities, such as appropriate food choices, physical activity, medications, glucose monitoring, and symptom management, is necessary to prevent morbidity and mortality among diabetic patients (Weinger, Butler, Welch, & La Greca, 2005). Social support has some evidence of increasing adherence to these complex routines required to manage diabetes (Jackson, 2006). The definition of social support varies within the literature. Social support is defined by Lin, Ensel, Simeone, and Kuo (1979) as support an individual gains through social ties with other individuals, groups and the community. Hirsh (1981) defines social support as support occurring through interpersonal relationships with other people. Five kinds of social support have been established by Cooke, Rossman, McCubbin, and Patterson (1988): (a) emotional support, (b) esteem support, (c) network support, (d) appraisal support, and (e) altruistic support. According to Cooke et al. (1988), social support must be perceived to be useful and is only effective to the extent it is perceived. The number of people that one feels close to, or the perceived size of their social support,

has been observed to influence successful health goal attainment (Vondras & Madey, 2004).

Purpose

The purpose of this study is to determine the effects of perceived social support as measured by the Social Support Inventory (Cooke et al., 1988), on self reported adherence rates of self-care activities, measured by the Self-Care Inventory, among patients in Baylor Healthcare System's outpatient Diabetes Self-Management Education Program (DSME).

Research Questions

1. How does self-care adherence and perceived social support differ among diabetic patients of different ethnicities?
2. How does self-care adherence and perceived social support differ among diabetic patients of different genders?
3. How does self-care adherence and perceived social support differ among type 1, type 2 and pre-diabetic patients?

Hypotheses

1. The perceived total social support will have a significant relationship with overall adherence of prescribed self-care activities.
2. Adherence of prescribed self-care activities will be predicted by perceived social support (total support, kinds of support, and sources of support).
3. The time since diagnosis will have a significant negative relationship with overall adherence of prescribed self-care activities.

4. The time since diagnosis will have a significant negative relationship with perceived total social support.

Delimitations

The researcher has established the following delimitations for this study:

1. The study will not attempt to determine or predict goal achievement in Diabetes Self-Management Education programs.
2. The study will not attempt to provide treatment for, diagnosis or evaluate disease state.
3. The participants will be limited to outpatients over the age of eighteen years old enrolled in the Baylor Health System's Diabetes Self-Management Education program on the Irving and Grapevine campuses.
4. Pregnant patients will not be included in the study.

Limitations

The researcher has established the following limitations for this study:

1. The results of this study may only be applied to similar populations therefore the extent to which results may be generalized to other populations is limited.
2. Adherence expectations will be explained by a medical professional to all participants.

Assumptions

The researcher will make the following assumptions for this study:

1. All patients will be able to read and understand English.
2. The participants will understand the expectations of the Diabetes Self-Management Education program.
3. Participants will be at differing medical stages of diabetes which could influence their adherence rates.

Definition of Terms

Social support- “support accessible to an individual through social ties to other individuals, groups, and the larger community” (Lin et al., 1979, p. 109). For the purpose of this study, will be measured by the Social Support Inventory. Total social support will be determined by the total score on the Social Support Inventory.

Adherence- “the extent to which a person’s behavior coincides with medical or health advice” (McNabb, 1997, p. 3). Overall adherence scores will be determined by the total score of the questions related to monitoring blood glucose, food regulations, exercise, and safety precautions on the Self-Care Inventory.

Self-care activities- daily regimen activities that individuals perform to manage diabetes (Weinger, Butler, Welch, & La Greca, 2005), including monitoring blood glucose, insulin use, food regulations, exercise, and safety precautions.

Diabetes Self-Education Management Program- educational, evidence-based programs developed by the American Diabetes Association, that incorporates multiple

levels of care to educate and interact with the patient to assist in them gaining knowledge, skill and ability for self-management of diabetes (Mensing et al., 2006).

CHAPTER II

REVIEW OF LITERATURE

Introduction of Diabetes

“Diabetes is a group of metabolic diseases characterized by hyperglycemia resulting from defects in insulin secretion, insulin action, or both” (American Diabetes Association, 2008a). Long-term damage, dysfunction, and failure of various organs, such as eyes, kidneys, heart, and blood vessels may develop from chronic hyperglycemia resulting from diabetes (American Diabetes Association, 2008c). Diabetes may involve long-term risk to complications such as nephropathy, retinopathy, macrovascular diseases, and polyneuropathy (Aalto, Uutela, & Aro, 1997; Keers et al., 2004). Diabetic complications and deteriorating physical functioning have been proven to lead to lower health-related quality of life (Aalto et al., 1997; Trief, Ploutz-Snyder, Britton, & Weinstock, 2004).

The goal of diabetic treatment is to delay or avoid the complications associated with diabetes by achieving and maintaining normal blood glucose levels (Aalto, Uutela, & Aro, 1997; Sigurdardottir, 2005). Fasting plasma glucose test is the preferred test for diagnosing diabetes. This test measures blood glucose after fasting for at least eight hours. Plasma blood glucose levels of 99mg/dL or below are considered normal, while levels of 100-125mg/dL are considered pre-diabetes and 125mg/dL or above are considered diabetes. The plasma glucose levels must be confirmed by repeating the test

on a different day to be diagnosed with the disease. The presence of symptoms such as increased urination, increased thirst, blurred vision, sores that do not heal or unexplained weight loss, with a random blood glucose level of 200mg/dL or above could be diabetes, but has to be confirmed by a physician using a fasting plasma glucose test or oral glucose tolerance test (National Diabetes Information Clearinghouse, 2008)

Environmental and genetic factors contribute to the development of diabetes, but the cause is unknown. Over 20 million Americans are estimated to have diabetes, while only two-thirds of these people have been diagnosed (American Diabetes Association, 2008a). The death rate of diabetes has almost doubled since 1987, making it the fifth deadliest disease in the U.S. (American Diabetes Association, 2008a). In 2002, the total economic cost of diabetes was \$132 billion, which is one out of every ten American healthcare dollars spent (American Diabetes Association, 2007). Diabetes is prevalent in approximately 13.1 million White Americans, 3.2 million African Americans, and 2.5 million Hispanic/Latino Americans. African Americans are 1.8 times more likely to have diabetes as White Americans and Hispanic/Latino Americans are 1.7 times more likely to have diabetes than White Americans (American Diabetes Association, 2008b). There are three major types of diabetes: pre-diabetes, type 1, and type 2.

Pre-Diabetes

Pre-diabetes, also called impaired fasting glucose or impaired glucose tolerance, occurs when a person's blood glucose levels are higher than normal, but not high enough to be diagnosed with diabetes (American Diabetes Association, 2007d). Over 54 million Americans have pre-diabetes, which can contribute to long term health consequences,

especially to the heart and circulatory system (American Diabetes Association, 2007), such as heart disease and stroke (National Diabetes Information Clearinghouse, 2008). Managing blood glucose levels at the pre-diabetes stage can delay or prevent the onset of type 2 diabetes, which usually occurs within ten years (American Diabetes Association, 2008a). Even after being diagnosed with pre-diabetes, the development of type 2 diabetes may be prevented with low fat, low calorie diet, modest weight loss (if overweight), and regular physical activity (National Diabetes Information Clearinghouse, 2008).

Type 1 Diabetes

Type 1 diabetes is an autoimmune disease in which the body does not produce insulin. Type 1 diabetes accounts for 5-10% of those with (American Diabetes Association, 2008a). Ten percent of Americans have type 1 diabetes, previously known as juvenile diabetes and insulin dependent diabetes (American Diabetes Association, 2007). While this type of diabetes commonly is diagnosed in children and young adults, type 1 diabetes may occur at any age. Those at highest risk for developing type 1 diabetes include siblings and children of those with type 1 diabetes (American Diabetes Association, 2008a).

Patients with type 1 diabetes have an increased risk of cardiovascular disease and are prone to other autoimmune disorders such as Grave's disease, Hashimoto's thyroiditis, Addison's disease, vitiligo, celiac sprue, autoimmune hepatitis, myasthenia gravis, and pernicious anemia (American Diabetes Association, 2008). Those with type 1 diabetes may eventually become dependent on insulin for survival (American Diabetes

Association, 2008). Short term complications of type 1 diabetes include hyperglycemia, hypoglycemia and diabetic ketoacidosis (American Diabetes Association, 2008c). If left untreated, these short term complications may result in seizures and even comas. Long term complications include heart and blood vessel disease, neuropathy, nephropathy, foot damage, skin and mouth conditions, and osteoporosis (American Diabetes Association, 2008c).

Type 2 Diabetes

Type 2 diabetes, previously referred to as non-insulin-dependent and adult onset diabetes, is the most common type of diabetes accounting for an estimated 90-95% of all cases of diabetes (American Diabetes Association, 2008a). This is the condition in which the body either does not produce or does not absorb sufficient amounts of insulin. Individuals with type 2 diabetes do not initially, and often throughout their lifetime, do not need insulin treatment to survive, but may use insulin to control blood glucose levels (American Diabetes Association, 2008a). This type of diabetes may go undiagnosed for years because hyperglycemia develops gradually and may not display any classic diabetes symptoms in early stages. African Americans are 2 times more likely, Hispanic/Latino Americans are 1.5 times more likely, Native Americans are 2.3 times more likely while Asian/Pacific Islander Americans are 2 more times likely to develop type 2 diabetes compared to White Americans (Office of Minority Health, 2008).

Those that develop type 2 diabetes early or do not control their blood glucose levels are at greater risks of developing complications (American Diabetes Association, 2008c). Generally, people with type 2 diabetes are more likely to develop coronary heart

disease than those without diabetes and the disease is more severe and more likely to result in death (Barr, Myslinski, & Scarborough, 2008). Type 2 diabetic patients are also at higher risk of developing retinopathy, neuropathy, and nephropathy (American Diabetes Association, 2007c; Barr, et al., 2008). Patients with type 2 diabetes are known to have severe skin problems, such as ulcers and infections, which can sometimes be the first signs of diabetes (Barr, et al., 2008). Several musculoskeletal conditions and joint stiffness and contracture may occur more with type 2 diabetic patients and may contribute to diabetes-related functional limitations, while neuropathy may contribute to altered pressure distribution and gait patterns (Barr, et al., 2008).

Diabetes Self-Management Education

Patients with diabetes and other chronic diseases must manage their illnesses on a daily basis over a lifetime to maintain functional health (Jack, 2003; Keers, Groen, Sluiter, Bouma & Links, 2005; McNabb, 1997). Self-management is a collective term that describes the lifestyle changes that diabetic patients include in their self-care regimen to help control their diabetes. Self-management places patients at “the center of their self-care regimen,” while diabetes healthcare professionals simply provide guidance (Asimakopoulou & Hampson, 2005, p. 305). The most important self-management decisions affecting the diabetic patient’s health and well-being are made by the patient, not the healthcare professional (Sigurdardottir, 2005).

Diabetes self-management consists of components such as blood glucose monitoring, proper medications, regular exercise and balanced nutrition, and understanding interrelationships between these aspects, which may be influenced by the

patients' social network (Connell, Fisher, & Houston, 1992; Hill-Briggs, 2003; Sprague, Shultz, & Branen, 2006). "Living with diabetes has been described as a difficult process whereby individuals attempt to find balance between the self-management demands and their preferred lifestyles" (Whittemore, Melkus, & Grey, 2005, p. 196). Understanding of self-care regimens is crucial as self-care is often carried out by the patients and their families (Toljamo & Hentinen, 2001). Patients should be properly educated and provided with adequate information on self-care routines to prevent complications (Sakamaki, Ikeda, Ikegami, Norimoto, & Moriwaki, 2006), maintain glycemic control, and achieve subjective wellbeing and a sense of control over diabetes (Toljamo & Hentinen, 2001). Diabetes education is considered important for patients to reach optimal glycemic control and increase knowledge of self-management skills and principles.

The Diabetes Self-Management Education (DSME) program is an educational, evidence-based program developed by the American Diabetes Association that incorporates multiple levels of care to educate and interact with the patient to assist in them gaining knowledge, skill and ability for self-management of diabetes (Mensing et al., 2006). "The ultimate goal of the [diabetes] self-management education is maximum patient glycemic control through implementation of the diabetic self-care regimen" (Temple, 2003, p 129). The DSME is essential in teaching patients problem solving skills based on real-life experiences (Jack, 2003). When developed and delivered appropriately, according to Jack (2003), DSME's may help patients become educated about managing medications, managing emotions, and adjusting to new life roles by focusing on diabetes knowledge as well as psychological and behavioral measures.

Effectiveness of Diabetes Self-Management Education

Diabetes educational programs have been proven to broadly benefit emotional well-being and significantly reduce anxiety and depression when aimed at improving adjustments to self-care activities (Sigurdardotir, 2005). “Diabetes self-management is influenced by more than the biological characteristics of the disease and individual patient characteristics, it is also affected by the family and social networks, provider-patients relationship, community characteristics and the social and physical environments” (Jack, 2003, p. 417). Improved outcomes may be obtained if those with low levels of social support for performing diabetes self-care activities are identified and assisted through diabetes programs (Wilson et al., 1986).

Temple (2003) found that patients who received Diabetes Self-Management Education demonstrated improvements from pretest and posttest assessments in the areas of diet ($F=63.13$, $df=1/88$, $p<0.001$) and exercise ($F=12.15$, $df=1/88$, $p<0.001$) self-care activities. The DSME was directly linked to more desirable practices in diet and exercise self-care activities. Also in this study, self-efficacy emerged as a key outcome, with a significant difference between patients that were enrolled and those not enrolled in the DSME. Total self-efficacy, general self-efficacy and self-efficacy in the self-care areas of diet, exercise, and medication taking were positively influenced by DSME (Temple, 2003).

Beneficial results have been obtained from educational programs that focus on increasing confidence in self-care activities (Rost, Flavin, Cole & McGill, 1991). Rost et al. found that following an educational program, patients demonstrated more decision-

making behaviors during the discharge interview than control patients that had not been enrolled in the educational program (2.4 versus 0.9 respectively, $p=0.08$). The educated group also demonstrated significantly better functioning than the control group ($F=5.63$, $p=0.02$) (Rost, et al.).

Self-Care and Adherence to Diabetic Regimen

“Whether the message is in relation to illness prevention, to health promotion or to managing chronic illness, we are urged to stop smoking, eat more fruit and vegetables, eat less fat, exercise regularly and limit alcohol consumption” (Rapley & Fruin, 1999). Changes in lifestyle may be just as difficult for people who consider themselves healthy as for those with a chronic illness. Non-compliance may be contributed to the person trying to manage their chronic illness within their pre-existing lifestyle, according to their personal values and beliefs about the condition. Successful management of chronic illnesses relies on the individual being able to adhere to recommended regimens to control symptoms and avoid acute or chronic complications (Rapley & Fruin, 1999).

Self-Care

Self-care is crucial for diabetic patients and may involve drastic changes in daily behaviors and adherence to complex regimens (Toljamo & Hentinen, 2001b; Toljamo & Hentinen, 2001a). A diabetic self-care regimen is considered to be dynamic, requiring adjustments with different situations and comprised of mostly “if then” instructions instead of a standard set of medical prescriptions. There is no standard behavioral or medical prescription that would be beneficial to all patients with diabetes (McNabb, 1997). Diabetic self-management recommendations are difficult to incorporate to

existing lifestyles and are met with individualized barriers (Whittemore, Melkus, & Grey, 2005). If a patient with diabetes does not personally find diabetic control important, it is unlikely that they will adhere to the daily sacrifices that are involved in the diabetic regimen. Diabetic complications may interfere with adherence to a self-care regimen. Vision problems make it difficult to monitor blood sugar; similarly physical limitations resulting from diabetic complications may result in difficulties with exercise (Burke, Earley, Dixon, Wilke, & Puczynski, 2006).

Components of self-care.

To optimize their health, individuals with diabetes may be advised regarding diet and exercise, frequent medical examinations, annual specialized examinations of their eyes and feet, and for many, prescribed multiple oral medications every day. Until there is a cure, these behaviors must be sustained for a lifetime. (Schechter & Walker, 2002)

Studies have shown that habitual physical activity by diabetic patients is associated with lower cardiovascular and overall mortality (Sigal et al., 2004). The amount of exercise recommended for diabetic patients varies according to specific individualized goals. To improve glycemic control, aide in weight management, and reduce risk for cardiovascular disease, it's recommended to get at least 150 minutes a week of moderate intensity aerobic exercise or at least 90 minutes a week of vigorous aerobic exercise. Resistance training is shown to have similar benefits as aerobic exercise on glycemic control and is recommended for diabetic patients when possible. A resistance program should include all major muscle groups and consist of three sets of 8-

10 repetitions of the heaviest weight that can be lifted 8-10 times near fatigue (Sigal et al., 2002).

Diabetic patients with physical limitations or other conditions that might put them at greater risk for injury or medical complications with exercise, such as neuropathy, impaired thermoregulation, impaired vision, and gastroparesis, should consult their medical treatment team before beginning a physical activity regimen. The physical activity component of diabetic self-care should be considered when planning for the medication and nutrition component of self-care, as physical activity may contribute to hypoglycemia if insulin doses and/or nutrition are not altered.

The nutrition prescription for the diabetic patient is determined by the treatment goals and lifestyle changes the patient is willing to adapt, while being based on scientific evidence. Goals of medical nutrition therapy for diabetic patients include attaining and maintaining optimal metabolic outcomes, preventing and treating the chronic complications of diabetes, improving health through healthy food choices and physical activity, and addressing individual needs, taking into consideration personal and cultural preferences and life-style while respecting the individual's wishes and willingness to change (Franz et al., 2002).

Perceived expectations versus outcomes of self-care. The increased use of the word "adherence" in medical practice has increased healthcare providers' awareness of patients' decision-making processes and independence. Patients and healthcare providers tend to use different information within interactions; healthcare providers tend to refer to facts and technical knowledge, while patients tend to use more personal information

pertaining to their experience (Lutfey & Wishner, 1999). Heisler et al. (2003) found that patients' assessments of their own self-management were significantly associated with their glycemic control, but did not provide supporting statistics.

It is not always clear if patients actually receive more health information than they report in some interventions. Higher income, longer time since diagnosis, and speaking English were linked to receiving more information about monitoring blood glucose levels, medication use and diet recommendations (Fisher et al., 2004).

Practitioners often have confidence that diabetic patients may live “normal” lives with the disease, while patients do not always consider the planning and effort required from self-management to be “normal” (Carbone et al., 2006).

Adherence

Adherence is defined in the literature as “the extent to which a person’s behavior coincides with medical or health advice” and incorporates comparing a patient’s self-care behavior to a known standard (McNabb, 1997, p. 3). Adherence to a diabetes self-care regimen often requires dramatic lifestyle changes (Trief et al., 2004). Adjusting diets, monitoring blood glucose, exercising and adjusting medications are all daily aspects of self-care (Keers, Groen, Sluiter, Buoma, & Links, 2005). This regimen is very challenging, demanding “much effort, discipline, skill and knowledge” (Keers et al., 2004, p. 151), resulting in adherence rates varying among aspects of diabetic care.

Karter et al. (2000) found in a study of over 40,000 participants with diabetes, that most reported some level of self-monitoring blood glucose but 60% of those with type 1 diabetes and 67% of those with type 2 diabetes reported monitoring under the American

Diabetes Association's recommendations. American Diabetes Association recommends that patients with type 1 diabetes monitor blood glucose at least three times a day and that patients with type 2 diabetes monitor blood glucose at least once daily. "Estimates of adherence to dietary recommendations is approximately 65%, to recommended exercise is 19%-30%, to recommended blood glucose testing regimens is 57%-70%, and to insulin injection routine 20%-80%" (McNabb, 1997, p. 2). Only 7% of people with diabetes are estimated to be fully adherent with all aspects of their diabetic regimen (McNabb). While psychological factors such as cognitive levels, motivation and health habits have been found to be correlated with adherence, education and socioeconomic status have not had a consistent relationship with adherence (Trief et al.). Procedural problems in adherence research, such as lack of clearly defined set of self-care standard behaviors within a diabetic regimen and lack of a reliable and valid measurement of adherence have contributed to difficulty interpreting and implying results (McNabb).

Toljamo and Hentinen (2001b) define adherence to self-care as "an active, responsible and flexible process of self-care, in which the patient works to maintain their health in close collaboration with health care staff, instead of simply following rules that are prescribed" (2001a, p 619). Statistics on diabetic self-care adherence varies widely (Toljamo & Hentinen, 2001a). Toljamo and Hentinen (2001a) found that adherence rates vary in research from 30% to 80% depending on the statistical analyses and interventions used in the studies; with diet and exercise routines being the aspect that is least likely to be followed. Asimakopoulou and Hampson (2005) report that patients' self-reports on their diabetic self-care regimen over the recent past may be prone to biases, specifically

in dietary aspects. Atypical deviations from proper nutrition may lead patients to respond that they may have been less adherent to recommended diets (Asimakopoulou & Hampson, 2005).

Measuring adherence to diabetic regimen. The definition of adherence is commonly debated and because of this, there is not a gold standard of measuring adherence to a diabetes care regimen (McNabb, 1997; Toljamo & Hentinen, 2001b). “The breadth of the gap between providers’ recommendations and those behaviors patients choose to adopt, observed in either research or clinical practice, depends in large part on how it is assessed; estimates range widely as a result” (Schechter & Walker, 2002). One common method of measuring adherence is to ask the patients to recall self-care activities. Self-reports rely on patients’ own interpretation and memory of advice and guidelines given and responses may be fabricated to please the healthcare provider or avoid embarrassment. Pill counts, food diaries and self glucose monitoring logs are all methods of self-report adherence. Indirect measurement of adherence can sometimes be accomplished through biological measurements such as drug or metabolite levels in body tissue, weight gain or loss, nutrient components of food, and assays for inert tracers incorporated into compounded medications. These results may not always be reliable, as there is “substantial” biological variability among people in drug levels that will be achieved with the same levels of medication or amount of weight lost with adherence to a given diet. Also, the results are typically “influenced by” recent behaviors, not behaviors over time.

One popular biological measurement is HbA1C, glycation of hemoglobin, which is used to assess the level of glycemia in patients with diabetes. HbA1C has become the laboratory marker for increased risk for long term complications from diabetes (Jeffcoate, 2003).

Barriers to and promoters of adherence to diabetic regimen. Aalto et al. (1997) found that if the diabetic person does not perceive the benefits of diabetic control for their quality of life, it may negatively affect the efforts that they put forth to maintaining self-care. Poor adherence may be contributed to psychological problems, negative attitudes and coping difficulties among diabetic patients (Peyrot, et al., 2005). Peyrot et al. (2005) state that some healthcare professionals lack confidence to provide support for diabetic patients with psychological problems, thus these problems continue to be key barriers in improving care of patients.

In a study of male and female adult outpatients with diabetes, Toljamo and Hentinen (2001a) distinguished four kinds of adherence: flexible self-care (46%), strictly regimen-adherent self-care (16%), self-planned self-care (19%), and neglect of self-care (19%). Flexible, strictly adherent and self-planned self-care patients are all regarded to have positive modes of self-care and these patients considered their health regimens as part of a lifestyle. Self-planned self-care patients followed their regimen with more freedom but still keeping the health regimens in mind most of the time. Neglect to self-care regimens was significantly related to the likelihood of poor metabolic control, as defined by HbA1C ($p=0.003$), smoking status ($p=0.009$) and living alone ($p=0.014$). Male gender and having diabetic complications increased the risk of neglecting self-care

regimens but not significantly. Living alone was a predictor of neglect to self-care ($p=0.014$) with an odds ratio of 2.9, emphasizing the significance of social support (Toljamo & Hentinen, 2001b). These authors found, in a different study, that adherence was related to perceived difficulties in completing daily self-care, however no significance was reported and these authors suggested that patients that had difficulty adhering to one aspect of self-care usually had difficulties adhering to some other aspect, except in the case of weight management (2001a). Difficulty managing weight did not necessarily relate to difficulties with any other aspect of self-care.

In a qualitative study by Burns and Skelly (2005), a group of African American women, diagnosed with Type 2 Diabetes, claimed inadequate preparation for self-care from healthcare providers. The participants did not feel like their healthcare providers took the time to talk with them about self-care expectations or the disease itself. On the other hand, many felt a sense of ill-preparation and depression when first diagnosed. Participants stated that when initially diagnosed, they were not ready to hear how to manage the disease, as they were in denial. Cost of proper foods, cooking for their families, and responding correctly to low blood glucose were also listed as barriers to adhering to self-care regimens (Burns & Skelly, 2005). Health beliefs of the participants, perceived cost (monetary and inconvenience), and lack of perceived benefits were all cited as barriers to blood glucose testing (Shenolikar et al., 2006; Tu & Barchard, 1993). In the same study, participants reported insatiable hunger and enjoyment of food as barriers to dietary regimen. Barriers to exercise were complications of diabetes, such as neuropathy and other foot disorders.

Karter et al. (2000) found that predictors of monitoring less frequently than recommended varied between diabetes types. Among type 1 diabetic participants, it was found that male gender (1.3 (1.1-1.6), $p<0.05$), Asian/Pacific Islander ancestry (1.8 (1.0-3.3), $p<0.05$), living in the most impoverished neighborhoods, taking fewer insulin injections (14.5 (9.2-23.0), $p<0.05$, for one injection), and smoking (1.6 (1.2-2.2), $p<0.05$) significantly increased the odds of monitoring less frequently than recommended. Participants with type 2 diabetes were less likely to monitor as recommended if they were treated with insulin, male gender, greater than 40 years old, belong to a minority group (excluding Native American), education not exceeding high school, language difficulties, paying high out of pocket expenditures, duration of greater than ten years, taking more than three daily insulin injections, and excessive alcohol consumption.

Gender differences in adherence. In one study, women's attitudes toward compliance were significantly correlated ($r=0.25$, $p=0.05$) with adherence to the physical activity component of diabetic self-care regimens, but the same was not found with men (Navuluri, 2000). Navuluri also presented that adherence to self-care activities among men may be associated with their personality traits. Men who believe "that they should do what they are told to do by healthcare professionals" may be more likely to adhere to the dietary and medication components of a regimen, while men who possess more of a commitment/challenge trait may be more likely to adhere to the physical activity component. Women were not found to have an association with personality traits and adherence (Navuluri, 2000). Aalto and Uutela (1997) reported that women participants in

their study were more active with and perceived greater benefits in self-blood glucose monitoring and higher threats of complications associated with diabetes.

Wilson et al. (1986) did not find a significant relationship with degree of adherence to age or gender. According to Conn, Taylor, and Abele (1991) found no gender difference in adherence to exercise ($p=0.0001$, -0.37 , -0.23), diet ($p=0.73$, 0.06 , -0.09), and medication ($p=0.24$, -0.02 , -0.09) components of the cardiac regimen when men were compared to women.

Ethnic and cultural differences in adherence. In one study, African Americans reported more perceived barriers with diet and exercise aspects of self-care, while Caucasian Americans reported more barriers to the medication aspects (Wierenga & Wuethrich, 1995). Trinacty et al. (2007) found African Americans to be less adherent to self monitoring blood glucose levels than White Americans. Less than 1% of African Americans compared to less than 10% of White Americans were reaching the American Diabetic Association's standard of self-monitoring, of three or more strips per day for those using insulin or combination therapy and one or more strips per day for those on oral hypoglycemic medications. African American patients had a lower average of adherence to medication after six months of initiation (72.7%, $p<0.0001$) and after twelve months of adherence (71.7%, $p<0.0001$) compared to White Americans (78.3% at six months and 77.6%, $p<0.0001$; Adams et al., 2008). Heisler et al. (2005) found that Latino participants in their study had lower self reported understanding of their diabetes care and reported less adherence to diet aspect of self-care.

Effect of time since diagnosis on adherence. Toljamo and Hentinen (2001b) did not find any significant association with adherence to self-care and age or duration of diabetes. However, Aalto and Uutela (1997) found that a longer duration of diabetes was associated with higher perceived threat of complications ($r=0.15$ $p<0.05$). Thoolen et al. (2006) also found that perceived vulnerability is higher with a longer duration of diabetes ($F=14.3$, $p<0.001$). Thoolen et al. also suggests that more confrontations with diabetic complications and having to deal with the disease over longer periods of time can make the disease seem more threatening, increasing adherence rates.

Adherence has been found to occur at very low levels early in the course of diabetic self-care or treatment (Schechter & Walker, 2002). Longer duration of diabetes seems to increase the awareness of threat that the chronic illness may have on diabetic patients' health (Schechter & Walker, 2002). Patients that were diagnosed at an early stage of the disease showed high self-efficacy shortly following diagnosis, but low self management adherence, suggesting that they may be overly confident in their ability to manage the disease and may not fully recognize the difficulties of living with diabetes (Schechter & Walker, 2002). Patients with shorter time since diagnosis may not fully recognize the difficulties associated with living with diabetes (Sarkar, Fisher, and Schillinger, 2006; Thoolen et al., 2006). Trinacty et al. (2007) found substantial drops in self-monitoring blood glucose prevalence during the initial year after being diagnosed with diabetes.

Social Support and Managing Diabetes

The definition of social support varies within the research; it's a "concept that everyone understands in a general sense but it gives rise to many conflicting definitions and ideas when you get down to the specifics" (House, 1981). Social support has been defined as support "provided by other people and arises within the context of interpersonal relationships" (Hirsch, 1981), and by Lin et al. (1979, p. 109) as "support accessible to other individuals, groups, and the larger community." Due to the variety of definitions used in the literature, some researchers have expressed difficulties in interpreting the results of and measuring social support research (Connell, 1992; Toljamo & Hentinen, 2001). Social support is often used in a broad sense, referring to any process through which social relationships might promote health and well-being (Cohen, Underwood & Gottlieb, 2000). "A minimal condition for experiencing social support, then, is to have one or more stable relationships" (House, 1981, p 29).

According to Jackson (2006), social support is consistently and well documented to have favorable effects on health and health practices. Research has identified diet, exercise, smoking habits and adherence to medical regimens to be influenced by social support (Jackson). Trief et al. (2004, p. 148) identified that "behavioral changes patients with diabetes must make occur within a social context," stating that social support has potential importance in helping patients positively alter and maintain changes. House (1981) suggests that social support improves health through reduction of the exposure to stress, improving the ability of individual to adapt to stress, or directly improving health.

Spousal involvement in diabetes education may improve outcomes with diabetic patients (Trief, et al.). Conversely, according to Connell, Fisher & Houston (1992), contradictory results have been obtained in the relationship between social support, adherence, self-care behaviors and metabolic control. They found diabetes specific social support to have a weak, but significant predictive of self-care behavior in men only ($r^2=0.412$, $p<0.001$), but was not a significant predictor of metabolic control as measured by GHb ($r^2=-0.039$, $p<0.05$). The authors contribute this inconsistency to the “interchangeable use of the term social support for these conceptually distinct measures” increasing the difficulty of interpretation (Connell et al., p. 79).

Social controls and peer pressures of a social network influence normative behaviors such as diet and exercise. Social networks are generalized to provide a positive affect, increase stability and predictability, and reduce despair with demonstrated ability to meet normative expectations (Cohen et al., 2000). The larger the social network, the greater the possibility of varied sources of information that could possibly influence health behavior (Cohen, Underwood, & Gottlieb, 2000). One study determined that individuals may receive positive and negative social support and that the quality of support is just as important as the quantity of support in determining the effects of the support (Wong, Gucciardi, Li, & Grace, 2005)

Wilson et al. (1986) found that participants reported greatest social support and belief in effectiveness, with least amount of discomfort for the medication taking aspect of self-care, but reported lowest social support, comfort, and belief of effectiveness in

exercise. Diet and glucose monitoring were reported to be accompanied by intermediate social support and health beliefs (Wilson et al.).

In a study of families of acute care heart patients, Tarkka et al. (2003) found that the most common form of social support was emotional support and the least frequent was concrete aid, referring to spending time in assisting someone with concrete acts. A small percentage, 30% of the participants responded that they did not receive adequate emotional support. The age of the patient had an association with the social support received, with family members of older patients reporting higher levels of emotional support than those of younger patients ($r^2=0.21$) (Tarkka, Paavilainen, Lehti, & Astedt-Kurki, 2003). Tarkka et al. (2003) also reported that the better the family structure, the higher the level of received social support ($r^2=0.21$). Schafer, McCaul & Glasgow (1986) noted that negative family behaviors were associated with lower adherence rates, suggesting that social support's "absence may be inhibiting."

Types and Kinds of Social Support

House (1981) offered four *classes* of social support: emotional support, instrumental support, informational support and appraisal support; suggesting that social support is a "flow of emotional concern, instrumental aid, and or appraisal between people" (p 26). Emotional support, which House stated as the most important class, consists of providing an individual with empathy, caring, love and trust. Instrumental support comes when an individual gets direct help with a specific need or problem. Informational support occurs when a person is provided information to use in coping with personal and environmental problems. Appraisal support involves the transmission of

information relevant to self-evaluation, without the affect or aid involved in emotional and instrumental support. House established that the relevance of sources and classes of support vary on the specific problem that the individual faces. Similar to House, Langford also defines the four components as attributes of social support, also including emotional support, instrumental support, informational support, and appraisal support.

Toljamo and Hentinen (2001a) identify five *types* of social support: informational support, emotional instrumental support, peer support, financial support and negative support. They also discovered that age and gender had statistically significant correlations with: emotional and instrumental support ($r=0.21$ $p<0.05$, $r=0.13$, respectively), informational support ($r=0.16$, $r=0.10$, respectively), peer support ($r=0.19$ $p<0.05$, $r=0.07$, respectively), financial support ($r=0.13$, $r=0.04$, respectively), and negative support ($r=0.12$, $r=0.21$, $p<0.01$, respectively). Patients between the ages of 30 and 49 reported that they perceived less support from family and friends than those in the younger and older age ranges. Older patients perceived more informational ($r=0.16$, $p<0.01$) and peer ($r=0.19$, $p<0.01$) support than younger patients. More men than women report receiving negative support. There was no statistically significant relationship found between perceived social support and duration of diabetes or co-morbidities by these researchers (Toljamo & Hentinen, 2001a).

Cooke, Rossman, McCubbin, and Patterson (1988) suggests using a “revised definition of kinds of social support.” While using some of the same kinds that House defined in earlier literature, the authors combined those that they found to be important in other literature and in their own study to reformulate the kinds of support. These authors

found that the kinds of social support should be labeled as emotional, esteem, network, appraisal, and altruistic. Emotional support is information which leads you to believe that you are cared for and loved as a person. Esteem support is information which leads you to believe that you are valued and respected for who and what you are and what you do. Network support is information which leads you to believe that you receive a sense of trust and security for belonging to a group of whom you are also obligated. Appraisal support is information which provides you with feedback about how you are doing and ideas for resolving difficulties. Altruistic support is information which leads you to believe that you are worthwhile because of what you have done with and for others.

Sources of Social Support

Members of social networks are found to be subject to social controls and peer pressures that can influence normative behaviors such as diet and exercise habits, provide generalized positive affects and senses of predictability and stability (Cohen et al., 2000). The larger the social network, the greater probability of multiple sources of information that could possibly influence health-related behavior (Cohen et al., 2000).

Cohen et al. (2000) suggest that isolation causes disease rather than social integration protecting or enhancing health, although there *is* convincing evidence that social networks and support do influence our health. Isolation may decrease feelings of control and self-esteem and interfere with performance of health behaviors (Cohen et al., 2000). Heaney and Israel (2002) suggest that risky health behaviors are indeed more strongly related to negative interpersonal interactions, such as mistrust, criticism, too many demands, and possibly isolation, than lack of social support. It is also proposed

that there is a minimal amount of social support required to be beneficial. After this threshold is reached, supplemental social support does not provide any greater benefits (Cohen et al., 2000).

In the life long challenge of battling diabetes, “it is good to be able to share emotions and feelings with somebody, or to receive concrete help in everyday life” (Toljamo & Hentinen, 2001b, p. 784). When an individual experiences life changes, the need for social support increases. This social support has been found to have a positive effect on the individual’s coping skills (Tarkka, Paavilainen, Lethi, & Astedt-Kurki, 2003). Friedman et al. (2005) found that the number of social supports inversely affected depression levels in female home health patients ($\beta=0.29$, $p<0.05$). It was also found that women with multiple health concerns had more difficulty adjusting to the demand of diabetic self-care activities and may be more vulnerable to psychological distress related to diabetes due to the finding that perceived general health is a predictor of psychological adjustment (Friedman et al., 2005).

Social support is not typically provided by health professionals (Whittemore, Melkus, & Grey, 2005). Burns and Skelly (2005) found that participants in their study cited internet, friends with diabetes, and family members as sources of information.

Measuring Social Support

Most studies ask the participants to rate how much support that they are receiving, this is known as subjective or perceived support. Support is likely to only be effective to the extent in which it is perceived (House, 1981). Cooke, Rossman, McCubbin, and

Patterson (1988) developed the Social Support Inventory to measure the social support that is perceived and the sources of this support.

Social support is a “broad, multidimensional construct” with no standard definition, making it hard to have a set standard of measuring it. Challenges arise in developing a psychometrically sound instrument to measure social support due to the operationalized definitions set in research. Many studies will, instead of using an established measurement tool, devise their own measures of social support. Existing social support measurement tools do not get subjected to further study or evaluation (Chronister, Johnson, & Berven, 2006).

Gender Differences in Social Support

Social support sources and functions vary greatly and differ between genders. Traditional gender roles of women, such as caretaking, may counter the effects of social support as perceived by women (Whittemore, Melkus, & Grey, 2005). Wong, Gucciardi, Li, and Grace (2005) found a significant gender difference in responsibility of household activities, with women engaging in meal preparation ($\chi^2(3)=104.64, p<0.001$) and grocery shopping ($\chi^2(3)=88.24, p<0.001$) more than men. Women with diabetes sometimes had to renegotiate their roles and positions in their families, which is complicated by family expectations (Kokanovic & Manderson, 2006). Male participants were more likely to be actively supported by their wives, while wives were more likely to be passively supported by their husbands and seek other sources of support, such as adult children, extended family members, and others with diabetes to provide practical support

and motivation to maintain self-care (Wong, Gucciardi, Li, & Grace, 2005; Kokanovic & Manderson, 2006).

Kokanovic and Manderson (2006) found that women often perceived a lack of understanding of their needs by family members, and offered “invitations” for support. Women often resented their families’ perceptions of self-care failure and expressions of worry. Women were also found to rarely discuss their personal feelings about diabetes with their families, sought solitude, and often felt misunderstood and alone.

Ethnic and Cultural Differences in Social Support

In a study of southern African American women who have been diagnosed with type 2 diabetes for over one year, it was found that church, God, and religious figures were mentioned when describing sources of social support. Fellow church members, pastors, and spirituality were also listed as sources of emotional support that contributed to life satisfaction and positive stimuli on health choices (Samuel-Hodge et al., 2000). Daughters and other adult female family members were mentioned frequently as sources of instrumental support related to diabetes care by the participants, assisting with transportation to appointments and reminders to follow diabetic regimen. The roles of the church and religious figures were also identified as improving self-care management in southern and rural African American women (Samuel-Hodge et al., 2000). In a study by Wierrenga and Wuethrich (1995), African Americans reported receiving more social support with following diet and exercise than Caucasian Americans.

Wallhagen (1999) wrote on the cultural aspect of social support, citing in some cultures, such as African American and Mexican cultures, the roles of women affected

their self-care regimen adherence and glucose control. The woman's role is affected by societal norms, obligations and responsibilities. Wallhagen describes that women in these cultures are expected to contribute to maintenance of the home, especially cooking and child care. The wives are often expected to be responsible for structuring the day and managing dietary requirements (Wallhagen). The women identified their roles in terms of cooking and providing for the family first, taking care of their health came last. The men had less dietary adherence problems due to the dependence on the wives or females to prepare meals and because of the men's perception of adherence.

Effect of Time Since Diagnosis on Social Supports

In a study of men and women experiencing a first acute myocardial infarction (AMI), after one month, women reported wanting more social support than men (3.4 vs. 3.0), while no significant difference in the amount of support sought was reported between genders or over time. Men reported wanting more support than they received and their satisfaction with support decreased over time (Riegel & Gocka, 1995). The perceived amount of emotional support was significantly higher in women than in men at both one (4.3 vs. 3.7) and four (3.9 vs. 3.5) months and decreased for both genders over time. The amount of perceived informational support did not differ between genders. Women reported giving significantly more support than the men at both one (3.6 vs. 3.1) and four (3.3 vs. 3.1) months, but the support given by women decreased over time. Stress associated with the support did not differ between genders, but did increase significantly over time (1.7 and 1.9 at one month and 1.9 and 2.1 at four months for women and men respectively) (Riegel & Gocka).

Social Support's Effects on Diabetic Self-Care Adherence

Researchers have recognized and documented for decades the positive relationships and the benefits of social support on health and risk of mortality (Jackson, 2006; Langford, Bowsher, Maloney, & Lillis, 1997). Higher levels of social support have been found to have a weak but significant correlation with adherence to self-care regimens such as taking medications, diet, testing glucose, and exercise (Glasgow & Toobert, 1988; Wilson, Biglan, Glasgow, Toobert, & Campbell, 1986). Diabetes-specific social support measure was more significantly associated with self-care behavior ($r=0.45$ and $r=0.41$) than was the more general interpersonal support ($r=0.21$ and $r=0.14$) for diet and exercise, respectively ($p<0.001$; Wilson et al., 1986). Support and confidence in living with diabetes was found to be the most consistent factors related to dietary self-management ($r=0.56$, $p<0.05$) and psychosocial adjustment to diabetes related distress ($r=0.49$, $p<0.05$; Whittemore, Melkus, & Grey, 2005).

Family members may interfere or facilitate self-care adherence due to the facts that family members often share responsibility of implementing self-care regimens and family routines are often changed by diabetes self-care regimens (Schafer, McCaul, & Glasgow, 1986). Family and wider social networks have been shown to have a greater affect on sustained adherence of diabetes care than clinical support (Kokanovic & Manderson, 2006). Schafer et al. (1986) also concluded that negative family support and interaction has a greater effect on metabolic control and self-care behavior than positive support or interaction among adults. Trief et al. (2004) provided support that better marital relationships may predict diabetic regimen adherence. The data of their study

suggests that a relationship exists between marital factors and adherence to several aspects of the diabetes self-care regimen.

According to Toljamo and Hentinen (2001a), patients that flexibly or strictly adhered to self-care reported receiving significantly more social support from family and friends than those who neglected self-care ($F=7.4$, $p<0.001$). The researchers did not find any significant correlations between other types of social support and self-care adherence however, they found that not perceiving any emotional or instrumental support was related to neglect of self-care ($p=0.009$). From this, it was concluded that emotional and instrumental support had a protective or buffering affect against neglect to self-care (Toljamo & Hentinen, 2001a).

Gender Differences in Social Support's Effects on Self-Care Activities

According to Wong, Gucciardi, Li, and Grace (2005), although social support is shown to have positive effects on adjusting to the demands of a diabetic regimen, it seems to have negative effects on adherence with females. Women “struggled to gain support from others to adhere to medical advice regarding behavioral and lifestyle changes, while avoiding pressure, intrusive responses, and conflict (Kokanovic & Manderson, 2006, p 298).” Attitudes of family members and health care professional seem to have a role in adherence rates, preventing complications, and renegotiation of social roles and identities. Birgitta and Rosenqvist (1993) found similar results, finding that males that perceived high social support had better fasting blood glucose values than females perceiving high social support ($p<0.01$). Women with lower perceived support

had better food knowledge than men with lower perceived support (Student's t-test= 2.26, $p>0.05$).

Aalto et al. (1997) reported that diabetic patients reporting strong self-care related support from significant others also reported better well-being in perceived health and mental health. Connell et al. (1992) found that married individuals reported higher levels of self-care behavior than unmarried individuals. Diabetes-specific support and perceived availability of general support were significantly correlated with self-care behavior ($p<0.05$; Connell). Connell also showed that social support variables and self-care behavior differed between men and women. Desired diabetes-specific social support was significantly correlated to self-care behavior among both sexes while received diabetes-specific social support and perceived availability of social integration was significantly related among men and desired diabetes-specific social support, the perceived availability of the opportunity for nurturance was correlated with self-care behavior among women (Connell).

Nagelkerk, Reick, and Meengs (2005) found that diabetic patients with strong social networks were more likely to have a proactive attitude towards self-management. Proactive patients were more likely to engage in searching for materials to better understand and manage their diabetes. The researchers noticed a reoccurring theme that social support was important in promoting self-management among the diabetic patients.

Ethnic Differences in Social Support's Effects on Self-Care Activities

Latino/Hispanic Americans are faced with "traditional gender roles" that make increase the difficulty of changing dietary behaviors. Women are traditionally put in the

role of taking care of the meal preparation for the spouse and children, and food choices and preparation are often influenced by family's satisfaction. Male patients had little dominance in the cooking role, therefore was often subject to the wife's food preparation. This cultural centrality of the family creates obstacles in daily management, as they place their family and their environment as both key barriers and facilitators to self-care management (Carbone et al., 2007). Social support was noticed during focus groups with these groups of Latin Americans diabetic patients, as they stated that turning to other in times of need, collective strength they drew from family and friends, and spending time with others as reoccurring themes throughout the groups. Along with family and friends as assistance, community and church groups were also mentioned as a form of support. The patients also attributed positive behaviors to spirituality and faith, stating that comfort was received from saying prayers and giving thanks to God (Carbone et al.).

In a study by Tang et al. (2008), positive support was found to be a predictor of healthy diets ($r=0.28$, $p>0.02$) and exercising ($r=0.296$, $p<0.14$) among African American participants with type 2 diabetes. Satisfaction of support was a predictor of frequency of blood glucose monitoring over the past week, while negative support was a predictor of not taking medication ($r=0.348$, $p<0.001$). Chesla et al. (2004) also found similar results, that family structure of African American patients with type 2 diabetes did influence diabetes self-care adherence. The "practical and emotional strains" associated with the diabetes self-care regimen may be eased with the presence of a supportive family structure. Supportive relationships have been documented in other conditions that require an extensive self-care regimen, such as the human immunodeficiency virus (HIV). In a

study conducted with southern African American women with HIV, supportive relationships with family members enhanced their medication adherence. The participants emphasized the importance and value of emotional and instrumental support, stating that affirmations and reassurance reduced stress and fear levels. Unstable relationships were also noted as a barrier to medication adherence among this same group of women (Edwards, 2006).

Differences Between Times Since Diagnosis

Little exists in the literature on duration of diabetes and the effects of social support on diabetic adherence to a self-care regimen. Although time since diagnosis is sometimes reported, it's most often seen in demographics without further analysis (Aalto & Uutela, 1997; Temple, 2003). Social support has been studied with other conditions, such as heart disease and the human immunodeficiency virus (HIV), which have a similarly demanding self-care regimen. Patients with heart disease showed significantly higher self-care behavior, compared to their baseline scores, after one month from discharge from the intervention ($t=6.1, p<0.001$; $t=11.4, p<0.001$; Jaarsma et al., 2000). In a study of women patients with HIV, patients' perception of support and attitudes differed with time since diagnosis. Patients, with a more recent diagnosis, more frequently perceived healthcare professionals to be more supportive (ANOVA, $p=0.028$). These patients, with the shorter time since diagnosis, were also more likely to adhere to the prescribed medication regimen (ANOVA, $p=0.002$; Segurado, Miranda, & Latorre, 2003).

Relationship with Theory

Although, various models and theories may guide research towards the relationship between social relationships and health, there is no theory that concisely explains the linkage between the two (Heaney & Israel, 2002). Social support is often said to have a buffering affect that can affect health behaviors and choices. When people experience stressors, such as the demands of diabetes and its self-care regimen, having enhanced resources from others or their community, increases the likelihood that the individual will be able to cope in a healthy way and may reduce short term and long term health consequences (Heaney & Israel). The stress-buffering hypothesis predicts that social support will have a more positive effect on adjustment as the stressor becomes more intense or persistent, as the available resources may have direct health-enhancing effect and may diminish the negative effects on health from the stressors (Wenzel, Glanz, & Lerman, 2002).

The Interdependence Theory, developed from the Social Exchange Theory, emphasizes patterns of outcomes that interacting partners, or social dyads, experience and how these patterns are influenced by relationships (Heaney & Israel, 2002). One key concept of this theory is interdependence, which is the process by which people influence each other's experience or the effects an individual exerts on another person's motives, preferences, behavior and outcomes. According to this theory, health behavior is partially determined by one's own characteristics, by the beliefs, values, and behaviors of one's partner, and by the reciprocal or joint influence of both people in an interaction. Another key concept of Interdependence Theory is correspondence of outcomes, when

partners agree on what determines a desired behavior. This concept helps focus attention on important motivations, values and barriers in behavioral change (Heaney & Israel).

Adequate perceived self-efficacy in diabetes self-care is related to better perceived health, mental health and social functioning. Sarkur, Fisher, and Schillinger (2006) found an association between self-efficacy and self management (OR=0.16(0.075-0.24), $p<0.05$ for diet; OR=0.10(0.02-0.19), $p<0.05$ for exercise; OR=1.14 (1.04), $p<0.05$ for self-monitoring blood glucose; OR=1.27 (1.13-1.45), $p<0.05$ for foot care) with regard to diet, exercise, self monitoring blood glucose, and foot care, but not medication adherence. Social support is considered by some researchers to be a form of an external motivator that contributes to expectations of reinforcement and improved self efficacy (Williams & Bond, 2002). In a study by Gillibrand and Stevenson (2006), participants reported lower scores of diabetes specific family support compared to those of similar ages in similar studies, but reported significantly higher internal locus of control than compared to external locus of control in the form of powerful others ($t=18.83$, $df=117$, $p<0.001$) and chance ($t=17.786$, $df=117$, $p<0.001$), with respect to their diabetes. In contrast, Chlebowy and Garvin (2006) found no significant relationship between self-efficacy and self-care behaviors.

Aalto and Uutela (1997) found, as supported by the Health Belief Model, that the higher perceived benefits of adherence were directly related to greater adherence to self-monitoring blood glucose and diet among diabetic patients. The researchers also found that in order to perceive the benefits of adherence, the patients must believe that diabetes is a “controllable” disease and have confidence in themselves to manage the demands of

the self-care regimen. Patients with a stronger belief in “controllability” and social support perceived diabetes as less threatening. However, Aalto and Uutela, also found that perceived threats of diabetes did not increase adherence. Supportive participation from significant others in self-care adherence was related to diet adherence and internal cues related to self monitoring blood glucose ($r=0.356$, $p<0.001$). As predicted by the Health Belief Model, Aalto and Uutela (1997) found that stronger self-efficacy was related to higher perceived benefits and more frequent self-monitoring blood glucose.

CHAPTER III

METHODOLOGY

This chapter describes the recruitment and participant protection procedures. The surveys included in this study, demographic survey, Social Support Inventory, and Self-Care Inventory, are also described. Statistical analysis procedures are identified in this chapter.

Population and Sample

A cross-sectional study design was used with a convenience sample of 96 patients from Baylor Healthcare System's Diabetes Self-Education Management Education (DSME) programs at Irving, TX and Grapevine, TX locations . This program consists of an initial assessment followed by five educational classes, covering various topics on diabetes management through exercise, stress management, medicine, meal planning and blood glucose monitoring. After IRB approval, all patients attending the class one and the initial assessment in the DSME program, except those who are pregnant, were given details of the study and asked to participate during their initial assessments by the diabetes educator. Patients were given an explanation of the purpose of the study and that participation did not have any effects on their medical care, treatment or reimbursement. The right to refuse to participate or discontinue participation at any time without any consequences was included on the instruction sheet and verbally explained to each participant. Those who were willing to participate picked up an envelope from the

waiting area, which contained written instructions including the study's purpose, how to discontinue participation of the study and contact information of the primary investigator and research advisor, a demographic survey, the Social Support Inventory and the Self-care Inventory. Participants were given the opportunity to read instructions and complete the surveys between their initial assessment and the first educational class, which followed the initial assessment, during breaks in the first class, and immediately after the first class.

Protection of Human Participants

No personal health information was collected or searched. Potential participants were obtained from patients enrolled in Diabetes Self-Management Education Program of Baylor Healthcare System's Irving, TX and Grapevine, TX locations. There were no identifying sections or material on the surveys, but all packets of surveys contained a de-identified participant number. Due to the informed consent statement of "The return of your completed surveys constitutes your informed consent to act as a participant in this research study included in the instruction sheet, a separate informed consent form was not used.

Data Collection Procedures

Participants returned the surveys in the envelopes to the designated box located in the waiting area in the DSME department. All participants were recruited the same day of their initial assessment and first educational class. Participants, who chose to complete the surveys, had to do so on the day of their initial assessment and first educational class.

Instrumentation

The demographic survey was used to gather participant characteristics such as age, gender, ethnicity, type of diabetes, time since diagnosis, and self-care activities instructed. The Social Support Inventory (SSI) was used in this study to measure the participants' perceived levels of social support. The SSI is a 60-item survey that identifies five kinds of social support and eleven potential sources of social support (Cooke et al., 1988). The SSI was developed from interviews with first time parents, but found to be applicable for measuring general social support of an individual, in other circumstances and stages of life (Cooke). Content validity was established through a comparison of literature on social support to analysis of ethnographic interviews with first time parents and evaluated by the researchers of the study. The parents that were originally interviewed were also asked to complete the SSI and two family life specialists determined that there was 80% accuracy in a correlation with the interviews and the results of the inventory. A test-retest coefficient of stability for the Social Support inventory was found to be 0.81 with original parents that were interviewed and 0.79 with a group of educators, which established reliability (Cooke). It is also important to state that social support is dynamic and complex, affecting the reliability of an instrument that is meant to measure it. To obtain the scores of the SSI, a mean was calculated for each source, kind, and total support.

The Self-Care Inventory (SCI) was used in this study to measure the participants' perceptions of adherence to prescribed self-care activities. The SCI is a self reported questionnaire of 15 questions with a five point Likert scale, that addresses the patients'

monitoring of blood glucose, insulin use, food regulations, exercise, and emergency precautions over the past one to two months. It allows for the various self-care regimens of diabetic people (Weinger, Butler, Welch, & La Greca, 2005). Weinger et al. found support for the reliability, concurrent and convergent validity, and responsiveness to treatment for type 1 and type 2 diabetic patients of the SCI. The SCI was compared to previously published and validated diabetic self-care behavior measuring instruments to establish moderate to high correlations for concurrent and convergent validity (Weinger), with $r = 0.63$ when compared with the Summary of Diabetes Self-Care Activities instrument. To score the SCI, 7 items are used to calculate the overall self-care and corresponding subscales, proper self-care in these areas are linked to better diabetes control and management.

Data Analysis

The data was analyzed using SPSS software (Version 15.0). For hypothesis 1, Pearson Product Correlations were used to examine the relationship between self-care adherence and perceived social support. For hypothesis 2, one-tailed multiple regressions were performed to determine predictions of self-care adherence. For hypotheses 3 and 4, analysis of variance (ANOVA) were performed to test the differences among self-care adherence or social support and time since diagnosis.

Summary

A convenience sample of 96 patients enrolled in Baylor Healthcare System's Diabetes Self-Management Education Program participated in this study. All participants

completed the three surveys in the survey packet, including the demographic survey, Social Support Inventory, and Self-Care Inventory.

CHAPTER IV

RESULTS

The purpose of this study was to determine the effects of social support on self-reported adherence rates of self-care activities among patients in Baylor Healthcare System's outpatient Diabetes Self-Management Education Program (DSME). Patients were asked to complete a survey packet, which consisted of three surveys, the demographic survey, the Social Support Inventory (SSI), and the Self-Care Inventory (SCI). A total of 96 diabetic patients participated in this study by completing the survey packet.

Demographic Characteristics

The participants were asked to complete a short demographic survey. In this survey, the participants were asked to provide their age, gender, ethnicity, major type of diabetes, length of time since diagnosis, and aspects of self-care on which they had been instructed. Out of the total 96 participants, 94 provided their age. The participants ranged in age from 26 to 86 years, with an average age of 52.04 (SD=12.32) years (Table 1). Ninety-three (96.9%) patients reported their time since diagnosis. The average time since diagnosis was 29.53 (SD=70.12) months, with the longest time since diagnosis being 528 months (Table 1). There was a significant difference between age and time since diagnosis of diabetes ($t=2.56$, $p<0.05$). Older patients tended to report having been diagnosed with diabetes for longer time periods. There were no other significant

differences in demographic variables for gender, ethnicity, type of diabetes, and time since diagnosis.

Table 1

Descriptive Statistics of Patients' Age and Time Since Diagnosis

	Mean	SD	Min	Max
Age	52.04	12.32	26	86
Time Since Diagnosis (in months)	29.53	70.12	0	528

Note. n=94 for Age, n=93 for Time Since Diagnosis.

Sixty-one females (63.5%) and 35 males (36.5%) participated in this study. Over two-thirds of the participants indicated that they were Caucasian (n=66). African-Americans accounted for 15.6% of the participants, while Asian Americans and self-labeled "Other" each made up 1% of the study population. For further analysis, ethnicity will be recoded into two categories, Caucasian and Non-Caucasian. A majority of the participants, 90.6%, had been diagnosed with type 2 diabetes, while 5.2% were diagnosed with pre-diabetes, and 2.1% diagnosed with type 1 diabetes (Table 2). At almost one third of participants (32.3%) had been diagnosed with diabetes for less than one month, while 28.1% had been diagnosed for 1 to 11 months, and 36.5% of participants had been diagnosed for a year or longer. Time since diagnosis was recoded into three evenly distributed categories of less than one month, 1-11 months, and 12 months or longer

(Table 2). A majority of the participants had been instructed on proper diet (62.5%), glucose monitoring (63.5%), exercise (59.4%), and medicine administration (51.0%), while less than a fifth of the participants had been instructed on addressing low glucose levels (19.8%).

Table 2

Frequencies and Percentages of Patients' Gender, Ethnicity, Type of Diabetes, and Time Since Diagnosis

	n	%
Gender	96.0	100.0
Male	35.0	36.5
Female	61.0	63.5
Ethnicity	95.0	99.0
Caucasian	66.0	68.8
African American	15.0	15.6
Latino/Hispanic	12.0	12.5
Asian/Pacific Islander	1.0	1.0
Other	1.0	1.0
Type of Diabetes	94.0	97.9
Pre-Diabetes	5.0	5.2
Type 1	2.0	2.1
Type 2	87.0	90.6
Time Since Diagnosis	93.0	96.9
Less than one month	31.0	32.3
One to eleven months	27.0	28.1
Twelve months or more	35.0	36.5
Self-Care Activities Instructed	96.0	100.0
Diet	60.0	62.5
Glucose Monitoring	61.0	63.5
Exercise	57.0	59.4
Addressing low glucose levels	19.0	19.8
Medicine Administration	49.0	51.0

Social Support Analysis

The Social Support Inventory contained questions on perceived sources and kinds of social support. The SSI was completed by 100% of the participants (n=96). All questions left blank was scored as a “no” response. As presented in Table 3, all participants in the study reported that pamphlets, radio, books, and/or television as a source of social support. Almost all participants indicated that they received social support from relatives (92.7%), spiritual beliefs/faith (91.7%), close friends (89.6%), and professional or service providers (88.5%). More participants cited their children (72.9%) or co-workers (70.8%) as a source of support than their spouse/partner (66.8%). Although almost all of the study participants reported spiritual beliefs/faith as a source of support, only a little over half cited church/synagogue as a source of support. Almost two-thirds of the participants reported that community/neighborhood groups were not a source of support. Only 13% of the participants cited special groups as a source of social support.

Table 3

Frequencies and Percentages of Sources of Social Support

Sources	Yes		No/Blank	
	n	%	n	%
Spouse/Partner	64	66.8	32	33.3
Children	70	72.9	26	27.1
Relatives	89	92.7	7	7.3
Close Friends	86	89.6	10	10.4
Co-Workers	68	70.8	28	29.2
Church/Synagogue	55	57.3	41	42.7
Spiritual Beliefs /Faith	88	91.7	8	8.3
Community/Neighborhood Groups	37	38.5	59	61.6
Professionals or Service Providers	85	88.5	11	11.5
Special Groups	13	13.5	83	86.5
Pamphlets, Radio, Books or TV	96	100	0	0.0

Across the participants, the mean score for other relatives as a sources of support was the highest at 1.22 (SD= 0.58). The mean of close friends was 1.20 (SD=0.52), spouse/partner was 1.12 (SD= 0.82), children was 1.08 (SD=0.76), spiritual beliefs/faith was 1.06 (SD=0.62), co-workers was 0.81 (SD= 0.55), church/synagogue was 0.74 (SD= 0.65), and professionals or service providers was 0.70 (SD= 0.49). The lowest mean scores across the participants included pamphlets, radio books, or TV at 0.59 (SD=0.56),

special groups at 0.40 (SD=0.57), community/neighborhood groups at 0.38 (SD= 0.51), and Other at 0.13 (SD= 0.13), with no participants filling in the blank to specify what Other sources of support they perceived. All mean scores for sources of support ranged from 0 to 2 (Table 4).

Table 4

Descriptive Statistics of Sources of Support

	Mean	SD	Min	Max
Spouse/Partner	1.12	0.82	0	2
Children	1.08	0.76	0	2
Other Relatives	1.22	0.58	0	2
Close Friends	1.20	0.52	0	2
Co-Workers	0.81	0.55	0	2
Church/Synagogue	0.74	0.65	0	2
Spiritual Beliefs/Faith	1.06	0.62	0	2
Community/Neighborhood Groups	0.38	0.51	0	2
Professionals or Service Providers	0.70	0.49	0	2
Special Groups	0.40	0.57	0	2
Pamphlets, Radio, Books or TV	0.59	0.56	0	2
Other	0.13	0.32	0	2

Note. n=96; 0="no", 1="yes", 2="yes, a lot."

The total social support score was 9.40 (SD= 4.31), with a range of 2 to 22.40 (Table 5). The kind of social support that yielded the highest mean score of 0.92 (SD= 0.24) was altruistic support, with a range of 0.17 to 2. The mean score of esteem support subscale was 0.79 (SD=0.40), and ranged from 0.17 to 2. The mean score of emotional support subscale was 0.78 (SD=0.33) with a range was 0.17 to 1.67. Network support ranged from 0 to 2 with a mean of 0.78 (SD=0.38). Across the participants, appraisal support subscale, with a mean score of 0.65 (SD= 0.38), was the lowest, which ranged from 0 to 1.83 (Table 5). Total social support demonstrated moderate to strong significant relationships ($p<0.01$) with the kinds of social support, meaning that participants with a high score on one subscale had high scores on the other subscales (Table 6). All kinds of support were strongly related to total social support. The strongest relationship to total social support was network support ($r=0.95$, $p<0.01$), followed by esteem support ($r= 0.94$, $p<0.01$), appraisal support ($r=0.93$, $p<0.01$), emotional support ($r=0.92$, $p<0.01$) followed by altruistic support ($r =0.88$, $p<0.01$).

Table 5

Descriptive Statistics for Total and Kinds of Social Support

	Mean	SD	Min	Max
Total Social Support	9.40	4.31	2.00	22.40
Emotional	0.78	0.33	0.17	1.67
Esteem	0.79	0.40	0.17	2.00
Network	0.78	0.38	0.0	2.00
Appraisal	0.65	0.38	0.0	1.83
Altruistic	0.92	0.45	0.17	2.00

Note. n=96

Table 6

Pearson's Product Moment Correlation Between Total and Kinds of Social Support

Variables	1	2	3	4	5	6
1. Total Social Support	1	0.92**	0.94**	0.95**	0.93**	0.88**
2. Emotional Support	-	1	0.86**	0.88**	0.82**	0.76**
3. Esteem Support	-	-	1	0.90**	0.86**	0.75**
4. Network Support	-	-	-	1	0.86**	0.78**
5. Appraisal Support	-	-	-	-	1	0.78**
6. Altruistic Support	-	-	-	-	-	1

Note. n=96; significance set at $p < 0.05$; ** $p < .01$.

Self-Care Inventory Analysis

The Self-Care Inventory contained questions on self-care activities of blood glucose regulation, insulin and food regulation, exercise, and emergency precautions. The Self-Care Inventory was completed by 93 of the 96 participants included in the study. All scores on self-care activities ranged from 1 to 5 and all had 93 participants except for emergency precautions with 89 participants. The overall self-care mean score was 2.74 (SD=0.73), with a range of 1 to 4.14 (Table 7). Eighty-nine patients averaged a score on emergency precautions of 3.65 (SD=1.14). Blood glucose regulation had a mean score of 3.14 (SD=1.01). The mean score on insulin and food regulation was 2.81 (SD= 0.85).

The exercise mean score was the lowest of all self-care activities at 2.15 (SD=0.84).

Most of the Self-Care Inventory subscales were significantly related (Table 8), suggesting that patients with a high score on one subscale also had high scores on other subscales (Table 8). Those with strong correlations to overall self-care activities included blood glucose regulation ($r=0.89$, $p<0.01$) and insulin and food regulation ($r=0.77$, $p<0.01$). Exercise, in fact, was the only subscale not significantly related to blood glucose regulation ($r=0.1$, $p=0.34$) or insulin regulation ($r=0.1$, $p=0.32$).

Table 7

Descriptive Statistics for Self-Care Activities

	Mean	SD	Min	Max
Overall Self-Care	2.74	0.73	1	4.14
Blood Glucose Regulation	3.14	1.01	1	5
Insulin and Food Regulation	2.81	0.85	1	5
Exercise	2.15	0.84	1	5
Emergency Precautions	3.65	1.14	1	5

Note. $n=93$ for blood glucose regulation, insulin and food regulation, and exercise; $n=91$ or emergency precautions, and $n=89$ for overall self-care.

Table 8

Pearson's Product Moment Correlation Between Self-Care Inventory

Variables	1	2	3	4	5
1. Blood Glucose Regulation	1	0.37**	0.1	0.30**	0.89**
2. Insulin and Food Regulation	-	1	0.1	0.47**	0.77**
3. Exercise	-	-	1	0.26*	0.25*
4. Emergency Precautions	-	-	-	1	0.45**
5. Overall Self-Care	-	-	-	-	1

Note. n=96 for Mean Blood Glucose Regulation, Mean Insulin and Food Regulation, and Mean Exercise; n=91 for Mean Emergency Precautions; significance set at $p < 0.05$;

* $p < 0.05$; ** $p < .01$.

Research Questions

Research Question 1: How does self-care adherence and perceived social support differ among diabetic patients of different ethnicities?

Sources of social support by ethnicity showed no significant relationship using cross tabulations. To determine if a significant difference exists, an independent t-test was also performed on sources of social support and ethnicity (Table 9). There was not a significant difference between ethnicities on esteem support ($t = -1.66$, $p = 0.10$), network

support ($t=-1.10$, $p=0.27$), appraisal support ($t=-1.16$, $p=0.25$), or altruistic support ($t=-1.32$, $p=0.19$). However, emotional support did have a significant difference by ethnicity ($t=2.83$, $p<0.01$). Non-Caucasian participants scored significantly higher on emotional support than Caucasian participants (Table 9).

Independent t-tests were conducted to determine differences in self-care adherence between ethnicities. As presented in table 10, there was a significant difference between ethnicity on overall self-care ($t=2.12$, $p=0.04$), insulin and food regulation ($t=2.06$, $p<0.05$) and blood glucose regulation ($t=2.15$, $p<0.05$), with Caucasian participants scoring significantly higher on these self-care activities. However, there was no significant difference between ethnicities on exercise ($t=-1.48$, $p=0.15$) or emergency precautions ($t=0.98$, $p=0.33$).

Table 9

Independent T-test for Total and Kinds of Social Support by Ethnicity

	<i>N</i>	Mean	<i>SD</i>	<i>t</i>	<i>p</i>
Total Social Support				-1.66	0.10
Caucasian	66	8.96	4.31		
Non-Caucasian	29	10.54	4.18		
Emotional Support				-2.83	0.01*
Caucasian	66	0.72	0.32		
Non-Caucasian	29	0.92	0.31		
Esteem Support				-1.66	0.10
Caucasian	66	0.75	0.38		
Non-Caucasian	29	0.89	0.37		
Network Support				-1.10	0.27
Caucasian	66	0.75	0.41		
Non-Caucasian	29	0.85	0.38		
Appraisal Support				-1.16	0.25
Caucasian	66	0.62	0.39		
Non-Caucasian	29	0.72	0.36		
Altruistic Support				-1.32	0.19
Caucasian	66	0.88	0.44		
Non-Caucasian	29	1.01	0.47		

Note. Significance set at $p < 0.05$; * $p \leq 0.01$.

Table 10

Independent T-test for Self-Care Scales by Ethnicity

	<i>N</i>	Mean	<i>SD</i>	<i>t</i>	<i>p</i>
Overall Self-care				2.12	0.04*
Caucasian	61	2.84	0.77		
Non-Caucasian	27	2.48	0.57		
Blood Glucose Regulation				2.15	0.04*
Caucasian	64	3.28	1.15		
Non-Caucasian	28	2.81	0.88		
Insulin and Food Regulation				2.06	0.04*
Caucasian	64	2.92	0.91		
Non-Caucasian	28	2.53	0.64		
Exercise				-1.48	0.15
Caucasian	64	2.05	0.76		
Non-Caucasian	28	2.36	0.99		
Emergency Precautions				0.98	0.33
Caucasian	64	3.72	1.14		
Non-Caucasian	28	3.46	1.17		

Note. Significance set at $p < 0.05$; * $p < 0.05$.

Research Question 2: How does self-care adherence and perceived social support differ among diabetic patients of different genders?

Independent t-tests were performed to look for a significant difference in self-care activities and sources of social support among patients of different genders. The mean scores for both genders were higher in close relationships such as spouse, children, other relatives, and close friends than any formalized group. Female participants had higher

mean scores for relatives (1.23, SD=0.58), close friends (1.23, SD=0.56), spiritual beliefs/faith (1.12, SD=0.65), church/synagogue (0.79, SD=0.68), co-workers (1.07, SD=0.78), community/neighborhood groups (0.41, SD=0.55), professionals or service providers (0.73, SD=0.54), special groups (0.46, SD=0.63), and other (0.16, SD=0.37). The mean score for other relatives was almost the same for men and women (1.22, SD=0.57 and 1.23, SD=0.58, respectively). Male participants had higher mean scores for spouse/partner and children, but these differences were not significant (Table 11), however none of these relationships were significant. The only significant difference was that pamphlets, radio, books, and/or TV were used by significantly more women ($t=-2.78$, $p=0.01$).

Table 11

Independent T-test for Social Support Sources by Gender

	Mean	SD	<i>t</i>	<i>p</i>
Spouse			2.28	0.25
Male	1.36	0.76		
Female	0.97	0.83		
Children			0.10	0.92
Male	1.09	0.73		
Female	1.07	0.78		
Other Relatives			-0.07	0.94
Male	1.22	0.57		
Female	1.23	0.58		
Close Friends			-0.83	0.41
Male	1.14	0.45		
Females	1.23	0.56		
Coworkers			-0.26	0.79
Male	0.79	0.51		
Female	0.82	0.58		
Church/Synagogue			-0.26	0.28
Male	0.64	0.59		
Female	0.79	0.68		
Spiritual Beliefs/Faith			-1.44	0.15
Male	0.94	0.55		
Female	1.12	0.65		

Table 11 (Continued)

Independent T-test for Social Support Sources by Gender

	Mean	SD	<i>t</i>	<i>p</i>
Community/Neighborhood Groups			-0.87	0.39
Male	0.32	0.42		
Female	0.41	0.55		
Professional or Service Providers			-0.84	0.40
Male	0.64	0.39		
Female	0.73	0.54		
Special Groups			-1.36	0.18
Male	0.29	0.44		
Female	0.46	0.63		
Pamphlets, Radio, Books, and/or TV			-2.78	0.01*
Male	0.39	0.42		
Female	0.70	0.59		
Other			-1.15	0.25
Male	0.08	0.20		
Female	0.16	0.37		

Note. n= 35 for males, n=61 for females; significance set at $p<0.05$; * $p\leq 0.01$.

Independent t-tests were performed on self care adherence scores to determine if a significant difference existed between genders. Men scored higher on all self-care activities, but the differences were not significant. There were also no significant differences found between mean self-care scores of blood glucose regulation ($t=1.74$), insulin and food regulation ($t=1.26$), exercise ($t=0.56$), and emergency precautions ($t=1.45$) by gender (Table 12).

Table 12

Independent T-test for Self-Care Scales by Gender

	<i>N</i>	Mean	<i>SD</i>	<i>t</i>	<i>p</i>
Blood Glucose Regulation				1.74	0.10
Male	35	3.39	1.17		
Female	58	2.99	1.01		
Insulin and Food Regulation				1.26	0.18
Male	35	2.95	0.7		
Female	58	2.72	0.92		
Exercise				0.56	0.58
Male	35	2.21	0.86		
Female	58	2.11	0.84		
Emergency Precautions				1.45	0.13
Male	35	3.87	0.97		
Female	56	3.52	1.22		
Overall Self-Care				1.95	0.06
Male	33	2.93	0.78		
Female	56	2.62	0.69		

Note. Significance set at $p<0.05$.

Research Question 3: How does self-care adherence and perceived social support differ among type 1, type 2, and pre-diabetic patients?

Due to the lack of distribution in the type of diabetes among participants (90.6% of participants were type 2 diabetes), no analyses were possible.

Hypotheses

Research Hypothesis 1

It was hypothesized that perceived total social support will have a significant relationship with overall adherence of prescribed self-care activities. A Pearson's Product Moment Correlation was performed on self-care and social support subscales. Only one self care activity reached significance. There was a significant inverse relationship between emergency precautions and total social support ($r=-0.28$, $p<0.01$) (Table 13). The subscale for emergency precautions had a weak but significant inverse relationship to all kinds of social support, except altruistic support ($r=-0.17$): emotional support ($r=-0.24$, $p<0.05$), esteem support ($t=-25$, $p<0.05$), network support ($r=-0.28$, $p<0.01$), and appraisal support ($r=-0.31$, $p<0.01$). Although some relationships existed between subscales of social support and self-care activities, total social support and overall self-care activities had no significant relationship. Therefore, hypothesis 1 was rejected.

These data did not indicate that increased total social support was related to enhanced overall self-care adherence. In fact for the self care activity of emergency precautions, as total social support increased adherence decreased. Emergency

precautions, as indicated on the Self-Care Inventory, were behaviors such as wearing a medical alert bracelet and carrying quick acting sugar to treat reactions.

Table 13

Pearson's Product Moment Correlation Between Self-Care Activities and Total and Kinds of Social Support

Variables	Overall Self-Care	Blood Glucose Regulation	Insulin & Food Regulation	Exercise	Emergency Precautions
Total Social Support	0.06	0.14	-0.04	0.04	-0.28**
Emotional Support	0.32	0.13	-0.05	0.04	-0.24*
Esteem Support	0.06	0.14	-0.06	0.05	-0.29*
Network Support	0.05	0.13	-0.02	-0.03	-0.28**
Appraisal Support	0.1	0.17	-0.02	0.45	-0.31**
Altruistic Support	0.05	0.11	-0.05	0.08	-0.17

Note. n=89 for Overall Self-Care; n=93 for Blood Glucose Regulation, Insulin and Food Regulation, and Exercise; n=91 for Emergency Precautions; significance set at $p < 0.05$;

* $p < 0.05$; ** $p < .01$.

Research Hypothesis 2

It was hypothesized that the adherence of prescribed self-care activities will be predicted by perceived social support (total support, kinds of support, and sources of support). Regression models were used to examine predictors of self-care activities. The self-care activity subscales were used as dependent variables and the Social Support Inventory subscales were used as the predictors. Demographic variables were also included in the regression model as predictors. The multiple regression models revealed that while controlling for the other variables, Caucasian ethnicity was a negative predictor of overall self-care ($Beta=0.18$, $p<0.05$; Table 14) and blood glucose regulation ($Beta=-0.24$, $p<0.05$; Table 15). Being of a Non-Caucasian ethnicity predicted higher scores on overall self-care and blood glucose regulations. Total social support was related to blood glucose regulation ($Beta=1.94$, $p=0.06$), but did not reach significance (Table 15).

Table 14

Multiple Regression Analyses Predicting Overall Self-Care from Total Social Support and Demographic Variables

	B	SE	Beta	<i>t</i>	<i>p</i>
Age	-0.00	0.01	-0.02	-0.14	0.89
Female Gender	-0.30	0.17	-0.20	-1.81	0.08
Caucasian Ethnicity	-0.38	0.18	-0.24	-2.11	0.04*
Time Since Diagnosis	0.09	0.10	0.10	0.91	0.37
Total Social Support	0.02	0.02	0.11	0.98	0.33

Note. $R^2 = 0.11$; significance set at $p < 0.05$; * $p < 0.05$.

Table 15

Multiple Regression Analyses Predicting Blood Glucose Regulation Self-Care from Total Social Support and Demographic Variables

	B	SE	Beta	t	p
Age	0.00	0.01	0.04	0.35	0.73
Female Gender	-0.37	0.24	-0.16	-1.52	0.13
Caucasian Ethnicity	-0.59	0.26	-0.24	-2.23	0.03*
Time Since Diagnosis	0.25	0.14	0.19	1.74	0.08
Total Social Support	0.06	0.03	0.21	1.94	0.06

Note. $R^2 = 0.14$, significance set at $p < 0.05$; * $p < 0.05$.

Network support was a negative predictor of exercise self-care ($Beta = -0.63$, $p < 0.05$; Table 16). Having higher amounts of perceived network support predicted lower adherence of exercise self-care. As presented in Table 17, having church/synagogues as a source of support was a negative predictor of adhering to the exercise component of self-care ($Beta = 0.39$, $p = 0.01$). Total Social Support was found to be a negative predictor of emergency precaution ($Beta = -0.26$, $p < 0.05$; Table 18). Higher scores on total social support predicted lower emergency precaution scores. Female gender was borderline

significant ($Beta=-0.21$, $p=0.05$) with predicting emergency precaution self-care (Table 18).

Table 16

Multiple Regression Analyses Predicting Exercise Self-Care from Kinds of Social Support

	B	SE	Beta	t	p
Emotional Support	0.34	0.61	0.13	0.56	0.57
Esteem Support	0.70	0.60	0.31	1.15	0.25
Network Support	-1.34	0.62	-0.63	-2.18	0.03*
Appraisal Support	0.23	0.52	0.1	0.44	0.66
Altruistic Support	0.30	0.33	0.15	0.89	0.38

Note. $R^2=0.06$, significance set at $p<0.05$; * $p<0.05$.

Table 17

Multiple Regression Analyses Predicting Emergency Precautions Self-Care from Sources of Social Support

	B	SE	Beta	<i>t</i>	<i>p</i>
Spouse/Partner	-0.2	0.19	-0.15	-1.09	0.28
Children	0.18	0.21	0.12	0.85	0.40
Relatives	-0.26	0.28	-0.13	-0.93	0.36
Close Friends	0.42	0.30	0.19	1.43	0.16
Co-Workers	-0.16	0.25	-0.07	-0.62	0.53
Church/Synagogue	-0.67	0.26	-0.39	-2.53	0.01*
Community/Neighborhood Groups	0.27	0.27	0.14	1.00	0.32
Professionals or Service Providers	0.09	0.33	0.04	0.29	0.78
Special Groups	-0.23	0.32	-0.10	-0.71	0.48
Other	0.37	0.30	0.18	1.22	0.22

Note. $R^2 = 0.25$, significance set at $p < 0.05$; * $p \leq 0.01$.

Table 18

Multiple Regression Analyses Predicting Emergency Precautions Self-Care from Total Social Support and Demographic Variables

	B	SE	Beta	<i>t</i>	<i>p</i>
Age	-0.03	0.01	-0.19	-1.73	0.09
Female Gender	-0.49	0.25	-0.21	-1.99	0.05*
Caucasian Ethnicity	-0.18	0.27	-0.07	-0.66	0.51
Time Since Diagnosis	-0.06	0.15	-0.04	-0.40	0.69
Total Social Support	-0.07	0.03	-0.26	-2.46	0.02*

Note. $R^2 = 0.15$, significance set at $p < 0.05$; * $p \leq 0.05$.

Research Hypothesis 3

It was hypothesized that the time since diagnosis will have a significant negative relationship with overall adherence of prescribed self-care activities.

Due to the large number of participants being diagnosed for less than one month ($n=31$), it was not possible to perform a correlation on the data. The range of time since diagnosis was less than one month to 528 months, with a mean of 29.52 ($SD = 70.12$). Time since diagnosis was recoded, so that there were three equally distributed categories of less than 1 month (32.3%), 1 to 11 months (28.1%), and 12 months or longer (36.5%). An ANOVA was performed to determine the difference in the mean self-care scores across time since diagnosis. Participants diagnosed for less than one month had the

lowest scores glucose regulation, emergency precautions, and overall self-care. However, these newly diagnosed patients scored highest on overall self-care, emergency precautions, insulin regulation; this group also had equal mean scores to those diagnosed for more than 12 months for glucose regulation. Although trends could be seen across groups on time since diagnosis, none of these trends were significant (Table 19).

Table 19

Analysis of Variance (ANOVA) of Self-Care by Time Since Diagnosis

	n	Mean	SD	F	p
Glucose Regulation				0.79	0.46
<1	30	2.93	1.29		
1-11	25	3.28	1.19		
≥12	35	3.28	1.19		
Insulin and Food Regulation				0.86	0.43
<1	30	2.89	1.10		
1-11	25	2.94	0.74		
≥12	35	2.67	0.69		
Exercise				0.42	0.66
<1	30	2.25	0.91		
1-11	25	2.04	0.64		
≥12	35	2.17	0.93		
Emergency Precautions				0.34	0.71
<1	28	3.57	1.21		
1-11	25	3.80	1.35		
≥12	35	3.58	0.89		
Overall Self-Care				0.23	0.79
<1	29	2.67	0.90		
1-11	25	2.81	0.71		
≥12	32	2.75	0.62		

Note. Significance set at $p < 0.05$.

Research Hypothesis 4

It was hypothesized that the time since diagnosis will have a significant negative relationship with perceived total social support.

Due to the large number of participants being diagnosed for less than one month ($n=31$), it was not possible to perform a correlation on the data. The three equally distributed categories of time since diagnosis, less than 1 month (32.3%), 1 to 11 months (28.1%), and 12 months or longer (36.5%), were used in this analysis. To examine the difference in sources of social support across three groups based on time since diagnosis, a one-way ANOVA was performed (Table 20). For all sources of support, the <1 month group scored the highest, followed by 1-11 months, with the > 12 months scoring lowest, though most of these differences did not reach significance. The only two sources to reach a significant difference between the three categories of time since diagnosis were special groups ($F=3.26$, $p<0.05$) and coworkers support ($F=2.82$, $p=0.06$). A Tukey's post hoc analysis revealed that the <1 month group reported higher mean scores for special group support ($M=0.58$, $SD=0.64$) compared to the 1-11 months group ($M=0.43$, $SD=0.43$) and higher mean scores for coworkers ($M=0.98$, $SD=0.51$) compared to the >12 months group ($M=0.66$, $SD=0.56$). To examine difference in kinds of social support across three groups based on time since diagnosis, a one-way ANOVA was performed (Table 21). A similar trend was noticed in this analysis with all kinds of support: the <1 month group scored the highest, followed by 1-11 months, with the > 12 months scoring lowest, though most of these differences did not reach significance. The only kind of support to reach a significant difference between the three groups with the less than one

month group reporting more appraisal support ($F=3.37, p<0.05$).). A Tukey's post hoc analysis revealed that the <1 month group reported higher mean scores for appraisal support ($M=0.78, SD=0.40$) compared to the >12 months group ($M =0.55, SD =0.36$).

Table 20

Analysis of Variance (ANOVA) of Sources of Social Support by Time Since Diagnosis

	N	Mean	SD	F	p
Spouse/Partner				0.46	0.64
<1	31	1.23	0.81		
1-11	27	1.02	0.88		
≥12	35	1.13	0.80		
Children				1.29	0.28
<1	31	1.24	0.80		
1-11	27	1.06	0.76		
≥12	35	0.94	0.75		
Relatives				1.14	0.32
<1	31	1.35	0.53		
1-11	27	1.24	0.51		
≥12	35	1.14	0.64		
Close Friends				1.09	0.34
<1	31	1.26	0.50		
1-11	27	1.25	0.48		
≥12	35	1.09	0.58		
Co-Workers				2.82	0.06
<1	31	0.98	0.51		
1-11	27	0.81	0.56		
≥12	35	0.66	0.56		
Church/Synagogue				0.08	0.92
<1	31	0.77	0.64		
1-11	27	0.76	0.72		
≥12	35	0.71	0.64		

Table 20 (Continued)

Analysis of Variance (ANOVA) of Sources of Social Support by Time Since Diagnosis

	N	Mean	SD	F	p
Spiritual Beliefs/Faith				1.02	0.37
<1	31	1.13	0.70		
1-11	27	1.12	0.56		
≥12	35	0.94	0.56		
Community/Neighborhood Groups				0.19	0.83
<1	31	0.41	0.50		
1-11	27	0.35	0.53		
≥12	35	0.34	0.50		
Professional or Service Providers				2.78	0.07
<1	31	0.82	0.45		
1-11	27	0.75	0.49		
≥12	35	0.55	0.50		
Special Groups				3.26	0.04*
<1	31	0.58	0.64		
1-11	27	0.24	0.43		
≥12	35	0.31	0.54		
Pamphlets, Radio, books, and/or TV				1.48	0.23
<1	31	0.65	0.58		
1-11	27	0.64	0.59		
≥12	35	0.44	0.45		
Other				0.86	0.43
<1	31	0.06	0.18		
1-11	27	0.17	0.45		
≥12	35	0.12	0.26		

Note. Significance set at $p < 0.05$; * $p < 0.05$.

Table 21

Analysis of Variance (ANOVA) of Total and Kinds of Social Support by Time Since Diagnosis

	<i>N</i>	Mean	<i>SD</i>	<i>F</i>	<i>p</i>
Total Social Support				2.03	0.14
<1	31	10.50	4.45		
1-11	27	9.40	4.14		
≥12	35	8.38	4.16		
Emotional Support				1.47	0.24
<1	31	0.83	0.34		
1-11	27	0.81	0.32		
≥12	35	0.70	0.32		
Esteem Support				1.44	0.24
<1	31	0.83	0.41		
1-11	27	0.81	0.37		
≥12	35	0.70	0.36		
Network Support				1.91	0.15
<1	31	0.86	0.42		
1-11	27	0.80	0.41		
≥12	35	0.67	0.39		
Appraisal Support				3.37	0.04*
<1	31	0.78	0.40		
1-11	27	0.69	0.33		
≥12	35	0.55	0.36		
Altruistic Support				1.24	0.30
<1	31	1.01	0.45		
1-11	27	0.92	0.46		
≥12	35	0.84	0.43		

Note. Significance set at $p < 0.05$; * $p < 0.05$.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Summary

The purpose of this study was to determine the effects of social support on self-reported adherence rates of self-care activities among patients in Baylor Healthcare System's outpatient Diabetes Self-Management Education Program (DSME). The sample consisted of 96 patients in Baylor Healthcare System's DSME at the Irving, TX and Grapevine, TX locations. Patients were asked to participate in this study by completing a survey packet consisting of three surveys. The surveys included a demographic survey, Social Support Inventory (SSI), and Self-Care Inventory (SCI). Slightly less than two-thirds of the population was female (63.5%) and slightly over one-third was male (36.5%). The mean age of the participants was 52.04 (SD=12.32) and had been diagnosed with diabetes for a mean of 29.53 (SD= 70.12) months. For all statistical analyses, patients diagnosed with type 2 diabetes were used, as these patients made up 90.6% of total population.

For the Social Support Inventory, the internal consistency among the subscales was high in the current study population. While the instrument was validated with an 80% correlation within its original test population of first time parents and ethnographic interviews with these parents, the subscales were found to have a high inter-class

correlation coefficient for this current study's population. The correlation ranged from $r=0.75-0.95$, $p<0.01$ for total social support and kinds of social support within this study.

Conclusion

How does the self-care adherence and perceived social support differ among diabetic patients of different ethnicities?

Non-Caucasian participants scored higher on total social support and all the kinds of support, however, only the emotional support score was significantly higher than Caucasian participants. Caucasian participants scored higher than Non-Caucasian participants on all self-care activities, except for exercise. Overall self-care, insulin and food regulation, and blood glucose regulation self-care activities reached a significance difference among the two ethnicities.

How does self-care adherence and perceived social support differ among diabetic patient of different genders?

Female participants did have higher mean scores than male participants for all sources of social support, except spouse/partner and children, but there was no significant difference. Men scored higher on all self-care activities, but the difference was not significant.

How does self-care adherence and perceived social support differ among type 1, type 2, and pre-diabetic patients?

No analysis was performed, due to the lack of distribution among type of diabetes in population. Type 2 diabetic patients made up over 90% of the total population.

Table 22

Summary of Hypotheses: Rejected or Not Rejected

Hypothesis	Hypothesis Rejected or Not Rejected
1. The perceived total social support will have a significant relationship with overall adherence of prescribed self-care activities.	Rejected
2. Adherence of prescribed self-care activities will be predicted by perceived social support (total, kinds of support, and sources of support).	Rejected
3. The time since diagnosis will have a significant negative relationship with overall adherence of prescribed self-care activities.	Unable to Test
4. The time since diagnosis will have a significant negative relationship with perceived total social support	Unable to Test

Discussion and Implications

Caucasian participants scored higher on all aspects of self-care, except exercise, and significantly higher for blood glucose regulation and insulin and food regulation. These findings agree with Trinacty et al. (2007), that Caucasian Americans were more likely to be adherent to blood glucose monitoring. The questions on the SCI that related to exercise adherence asked if the participant exercised regularly and they exercised strenuously. Neither the term regularly nor strenuously, as relating to exercise, were

defined on the instrument, and may not be terms used by healthcare providers as they prescribe exercise self-care regimens. Some participants may not have been prescribed or limited to performing the exercise activity of self-care due to complications or physical limitation. Self-reporting may not be accurate if the questions are not completely understood or are not related to prescribed regimen. Heisler et al. (2005) found that more Latino participants reported not understanding their diabetes care routine and were less adherent to the diet aspect to self-care. African Americans reported more social support with following diet and exercise regimens than Caucasian Americans (Wierrenga & Wuethrich, 1995).

Patients diagnosed for less than one month had lower mean scores on all self-care activities, except for exercise. The Self-Care Inventory, which was used to measure self-care adherence as for the participants to respond by how adherent they were to a “prescribed regimen” in the last one to two months. There is a possibility that many of the newly diagnosed patients had not been instructed on or prescribed, by their healthcare professional, a personalized self-care regimen for them, and left it to be explained during the series of DSME classes or follow up appointments with their medical team. Although participants diagnosed for less than one month did not score the lowest on the exercise aspect of self-care, the mean exercise score for all participants was the lowest score for all activities of self-care. This activity of self-care had the lowest adherence rate of all activities. Also, patients with a shorter time since diagnosis may not perceive the threat or vulnerability of complications that result from not being adherent to a self-care regimen (Aalto & Uutela, 1997; Thoolen et al., 2006). Schechter and Walker (2002)

found that very low levels of adherence at the beginning of diabetic regimen and treatment were common.

Non-Caucasian participants scored significantly higher on emotional support than Caucasian participants. In a qualitative study (Samuel-Hodge, Headen, Skelley, et al., 2000), southern African American women often listed forms of emotional support as positive contributions to health choices. These same participants also listed church members, pastors and spirituality as frequent sources of emotional support. These results were not substantiated by the current study.

All participants reported receiving social support from pamphlets, radio, books, or television. Female participants had higher mean scores than men for all sources of support except spouse/partner and children, but lower mean scores than male participants on all aspects of self-care activities. Wong, Gucciardi, Li, and Grace (2005) found that social support does have positive effects on adjusting to a diabetic regimen, but may have negative effects on adherence with females. Desired diabetes-specific social support was significantly correlated to self-care activities in both women and men in a study by Connell et al. (1992), and this same study also found that received diabetes-specific social support and perceived availability of social integration was related to self-care activities in men only. For women, the perceived availability of the opportunity for nurturance was correlated with self-care roles of women, such as caretaking, may counter the effects of social support perceived by women (Whittemore, Melkus, & Grey, 2005). Women may have social support from family, but may not perceive it or the effects for women may be diminished by family expectations. Women may be exposed to more

interpersonal issues and conflicts due to gender roles, being caretakers, and often being involved in greater social networks (Whittemore, Melkus, & Grey, 2005). Male participants in the current study tended to report family members as sources of social support. In a study by Wong, Gucciardi, Li, and Grace (2005), male participants were more likely to be actively supported by their wives, while wives were more likely to be passively supported by their husbands and seek other sources of support.

Participants who had been diagnosed with diabetes for one month or less had significantly higher scores on appraisal support and special groups as a source of social support compared to those diagnosed for a year or longer. Appraisal support involves transmission of information relevant to self-evaluation (House, 1981). Appraisal support helps affirm the appropriateness of acts or statement (Miller & Davis, 2005), which may be more effective for newly diagnosed patients. Special groups, as defined on the SSI, are designed to help with specific difficulties or responsibilities such as parent groups, groups for handicapped or divorced persons. These special groups could include diabetes or other chronic illness support groups, or the DSME class that they are presently attending.

Network support, information which leads to the perception of a sense of trust and security for belonging to group to whom you are obligated, was a negative predictor of exercise adherence. If the members of the network or group that provides this network support do not share the belief in the importance of maintaining an exercise routine for the control and management of diabetes, the patient may be influenced by these negative views. Members of social networks are found to be subject to social controls and peer

pressures that can influence normative behaviors such as diet and exercise habits. These social networks provide generalized positive affects and senses of predictability and stability (Cohen et al., 2000). Isolation may decrease feelings of control and self-esteem and interfere with performance of health behaviors (Cohen et al., 2000).

There was a significant negative correlation between emergency precautions and the total social support and all kinds of social support, except for altruistic support. Altruistic support is the information which leads you to believe that you are worthwhile because of what you have done for others (Cooke, Roosman, McCubbin, & Patterson, 1988). Altruistic support gives you the satisfaction from caring for others, but not for preparing for aiding yourself in an emergency situation.

Total social support predicted lower emergency precaution adherence. The questions of the SCI that pertained to emergency precautions asked about wearing a medical alert bracelet and carrying substances to treat low blood glucose reactions. Those with more support may assume that their support source, if a person, will be there to react in an advantageous way during any emergent event. The patient may also feel that they will know how to respond in an emergency situation from information that they have obtained from a source of support.

Limitations

The current study did have some limitations of note. First, although all participants had been diagnosed with a type of diabetes and were attending a diabetes self-management class, not all had been instructed on all aspects of self-care regimens for the control of diabetes. As presented in Table 2 of Chapter 4, there was no aspect of self-

care that every participant had been instructed on. Second, participants were asked to complete the survey packet during the first class of the DSME program, which is also when they are required to complete health and insurance information. Patients were not given any incentives for completing the survey packets and had to complete them during the class visit. The length of the three surveys may have also been a deterrent to completion of the packet.

Recommendations

Research on how perceived social support and social networks effect health behavior is an area of much needed growth. A more precise and widely accepted definition of the term social support and its components is first needed for research to be interpreted and measured. After this, instruments may be developed, for specific populations, which may measure social support and social networks accurately. With all participants citing pamphlets, radio, books, or television as a source of support, research is needed on how tailoring these media of education for individuals may produce effective education and positive health behavior change.

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APPENDIX A

Instructions to Participants



TEXAS WOMAN'S UNIVERSITY

Title: Effects of Social Support on Self-Care Adherence Among Diabetic Patients

Investigator: Tasha Joshua, B.S.

(xxx)xxx-xxxx

Advisor: Anna Love, Ph.D.

(940)898-2865

Explanation and Purpose of Study

You are being asked to take part in a research study being done by Tasha Joshua for her thesis at Texas Woman's University. The purpose of this research study is to determine the effects of perceived social support on self-care activity adherence rates among patients enrolled in Baylor Healthcare System's Diabetes Self-Management Education Program at the Irving and Grapevine campuses.

Research Procedures

If you agree to be in the study, you are asked to complete the three surveys (demographic survey, Social Support Inventory, and Self-Care Inventory) included with this letter. Please complete these in their entirety and return in the original pack to the designated box located in the waiting area. The completed surveys must be returned the same day as your initial assessment and first class meeting. Completion of the surveys will take about 25 minutes.

Risks, Benefits and Options

There are no expected risks or benefits to you for being in the study. Your option to being in the study is to simply not complete the surveys.

Participation

Being in this study is completely voluntary. You can stop completing the surveys at any time for any reason. If you decide not to be in the study it will not affect your medical treatment or any other benefit that you have outside of the study.

Questions regarding study

If you have any questions about the research study, you may Tasha Joshua or Anna Love at the numbers listed above. If you have any concerns, complaints or questions about your rights as a subject or simply wish to speak to someone who is not a part of the research team, you may contact Dr. Lawrence R. Schiller, IRB Chair for Baylor Research Institute at 214-820-2687 or the Texas Woman's University Office of Research and Sponsored Programs at (940) 898-3378 or via e-mail at . You may keep this form for future reference.

Consent to Participate

Since we are not collecting any identifiable information from you for this study, we will not ask you to sign a consent form to show your agreement to take part. If you are willing to be in the study, you should complete the surveys and return them as instructed. By completing these surveys you are telling us that you are willing to be in the study.

APPENDIX B

Demographic Survey

What is your age _____

What is your gender? (Please check appropriate box)

- ☐ Male ☐ Female

What is your ethnicity? (Please check appropriate box)

- ☐ Caucasian/White ☐ African American
☐ Latino/Hispanic ☐ Asian/Pacific Islander
☐ Other

Which type of Diabetes have you been diagnosed with (Please check appropriate box)

- ☐ Pre-Diabetes ☐ Type 1 ☐ Type 2

How long have you been diagnosed with Diabetes (Please check appropriate box OR fill in appropriate spaces):

- ☐ Less than one month

_____ Months

_____ Years

Since diagnosis of Diabetes, have you been instructed on self-care activities for (please select all that apply)

- ☐ Diet ☐ Glucose monitoring
☐ Medicine administration ☐ Exercise
☐ Addressing low glucose levels

APPENDIX C

Permission to Use Social Support Inventory



UNIVERSITY OF MINNESOTA
TWIN CITIES

College of Education

Department of Vocational and Technical Education
Office of Special Services
Vocational and Technical Education Building
1954 Buford Avenue, Room 210
St. Paul, Minnesota 55108

(612) 624-1700

TO: Whom It May Concern

FROM: Dr. Marty Rossmann *Marty Rossmann*
Associate Professor and
Director of Special Services

SUBJECT: Social Support Inventory

I'm responding to your recent request for information about the Inventory which was developed by Hamilton McCubbin, Joan Patterson, Betty Cooke and me. I have enclosed one copy of the instrument, information about scoring and means developed thus far.

If you want more copies of the instrument, please contact:
Hamilton I. McCubbin, Dean
School of Family Resources and Consumer Sciences
University of Wisconsin-Madison
1300 Linden Drive,
Madison, WI 53706 phone 608-262-4847

I have two requests if you administer or write about the instrument:

Please credit the authors
Send a description of the group and their scores to us, so that we can continue to develop norms for the scores.

Thanks for your interest. Your comments on changes or additions would be appreciated.

APPENDIX D

Permission to Use Self-Care Inventory

Dear Tasha

Attached is the material you requested.

Annette M. La Greca, Ph.D., ABPP

Cooper Fellow

Professor of Psychology and Pediatrics

Director of Clinical Training

Editor, Journal of Consulting and Clinical Psychology

PO Box 249229

University of Miami

Coral Gables, FL 33123

(305) 284-5222 (ext. 1)

(305) 284-4795 (fax)

email: alagreca@miami.edu

On 1/31/07 11:04 PM, "Tasha Joshua" <xxxxxxxxx@xxxxxxxxx.com> wrote:

Dr. Weinger and Dr. La Greca:

Dr. Weinger and Dr. La Greca:

I am writing you because I have requested permission to use your instrument, the Self-Care Inventory Revised. I have e-mailed two requests, both containing an attachment stating that I would not publish the instrument or use without permission. I am requesting permission to use the instrument and instructions on using and scoring the instrument. I have also included the same attachment to this e-mail. If I need to send anything else to obtain permission, please let me know. Thanks for your assistance, it is greatly appreciated.

Tasha Joshua

APPENDIX E

Baylor Healthcare System's IRB Approval Letter

Research Institute
Affiliated with Baylor Health Care System

1500 East 11th
Suite 501
Dallas, Texas 75201
121418262087
121418262087 Fax
www.BaylorHealth.com

IRB APPROVAL

May 16, 2007

Tasha Joshua, B.S.
Physical Medicine

Re: Effects of Social Support on the Self-Care Adherence Among Diabetic Patients

Project#: 007-110 Protocol#: N/A

Protocol Dt:

Sponsor: None

The following items received expedited review:

- * Research Protocol (Not Dated)
- * Recruiter Script (04/25/2007)
- * Consent Form - Cover Letter (05/16/2007)
- * Education Report (05/07/2007)
- * IRB Form 1 - Application and Project Summary (04/25/2007)
- * IRB Form 18-Review of Scientific and Scholarly Val (04/25/2007)
- * IRB Form 3 - Waiver of Informed Consent (04/25/2007)
- * Questionnaire / Survey
- * Questionnaire / Survey - Self-Care Inventory
- * Questionnaire / Survey - SSI Social Support Inventory

Expedited Approval was granted 05/17/2007 for a period not to exceed 12 months and will expire on 05/16/2008. Your Continuing Review is scheduled for 05/01/2008. This Expedited review will be reported to the fully convened Institutional Review Board ~ Blue on 06/07/2007.

On behalf of the Institutional Review Board, I have reviewed the above referenced research project in accordance with 45 CFR 46 & 164 and 21 CFR 50 & 56. This review was conducted in accordance with the expedited review process as outlined in 45 CFR 46.110(b). Based on the information presented, I have determined that the study meets the criteria specified below:

45 CFR 46.110(b)(1)(7):

(1) some or all of the research appearing on the category list and found by the reviewer(s) to involve no more than minimal risk:

Page 1 of 2

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior), or research employing survey, interview, oral history, focus groups, program evaluation, human factors evaluation, or quality assurance methodologies. (NOTE: some research in this category may be exempt from the HHS regulations for the protection of human subjects 45 CFR 46.101(b)(2) and (b)(3). This listing refers only to research that is not exempt.

Based on this review, the above referenced research project is approved for implementation.

This study was determined to meet the following criteria for waiver of informed consent.

45 CFR 46.117(c)(2) Waiver of Documentation of Informed Consent

(c) An IRB may waive the requirement for the investigator to obtain a signed consent form for some or all subjects if it finds:

(2) That the research presents no more than minimal risk of harm to subjects and involves no procedures for which written consent is normally required outside of the research context.

DHHS and FDA regulations require you to submit periodic and terminal progress reports to Baylor's Institutional Review Board and to receive at least annual approval of your activity from this Committee.

Federal regulations and institutional policies require that the IRB review any and all changes in your research activity. This includes amendments, revisions, administrative changes, advertisements, or ANY other change in the information as presented at initial review. In other words, should your project change, another review by the Board is required.

Failure to comply with any of the above requirements, federal regulations, or institutional policy may result in severe sanctions being placed on the Medical Center and on you as the Principal Investigator. These sanctions could result in your research being permanently terminated for non-compliance.

Receipt of approval does not convey institutional authority to gain additional patient information. It is your responsibility as Principal Investigator to abide by institutional and/or departmental policies regarding confidentiality, access, and release of patient data.

Sincerely,

Lawrence R. Schiller, MD, Chair
Institutional Review Board ~ Blue

APPENDIX F

Texas Woman's University IRB Approval Letter

Texas Woman's University, Denton Campus
Application to Institutional Review Board

Cover Page

Denton Mailing Address: Box 425619, TWU Station, Denton, TX 76204-5619
Denton Campus: Office of Research & Sponsored Programs, ACT 2nd Floor
Phone #: 940-898-3378 Fax #: 940-898-3416 E-mail: IRB@TWU.EDU

Title of Study: Effects of Social Support on Social Support on Self-Care Adherence Among Diabetic Patients

Name of Principal Investigator (PI) Ms. Tasha Joshua Phone: _____

Status of PI: ☐ faculty ☒ student ☐ staff ☐ other : _____ E-mail: _____

Address where correspondence is to be sent: _____

If the Principal Investigator is a student, provide the following student information:

Colleague ID #: _____ Department: Health Studies

Name & Phone # of Research Advisor: Anna Love, PhD 940-898-2865

Estimated beginning date of the study: June 15, 2007

Research being conducted for (check appropriate box): ☒ thesis ☐ student professional paper
☐ dissertation ☐ faculty research
☐ class project ☐ other _____

If this research is, or may be, supported by a grant or an outside sponsor, list name(s) of sponsor(s):

Baylor Healthcare System

Mark the application review level most appropriate for your study. (See the first page of these materials for a description of application review levels.)

Exempt: ☒
Expedited: ☐
Full review: ☐

Required Signatures

Tasha Joshua _____ Date 6-4-07
Principal Investigator

Anna Love _____ Date 6-1-07
Faculty Research Advisor (if applicable)

[Signature] _____ Date 6-1-07
Dean, Department Head, or Program Director

Date application Received by IRB: _____

* If more than one investigator is involved in the project, complete a separate Cover Page for each investigator.