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The Effect of Diabetes Education on Self-Efficacy and Readmission Rates of Diabetic Patients

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The Effect of Diabetes Education on Self-Efficacy and Readmission Rates of Diabetic Patients

by

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Abstract

The purpose of this study was to determine the effect of a diabetes education program on self-efficacy and readmission rates of diabetic patients. All participants were recruited based on their current enrollment with one of the largest primary care physician's practices in the Southeastern United States. Qualifying criteria included the diagnosis of being either diabetic type I or II and commitment to attend a five-week diabetes educational workshop. Participants were given the Diabetes Self-Efficacy Survey at the initial start of the diabetes educational program and also at the end of the five-week workshop to evaluate the effectiveness of the diabetes educational program. The results of this study showed a strong, positive correlation between diabetes education and improvements in self-efficacy and readmission rates. This study was limited in its sample size; however, is congruent with the current body of knowledge regarding diabetes education programs.

Keywords: diabetes, self-care, self-efficacy, readmissions, self-management, diabetes education.

Acknowledgments

I would like to sincerely thank Dr. Tracy Arnold who has been more than patient with me throughout my journey by offering her valuable expertise and sincere words of encouragement along the way. Also, I would like to thank my two beautiful children Mohammed and Sara, who have faced their own challenges along with mine during this educational endeavor. They have inspired me to become who I am today and reminded me daily of how strong I really am as not only a student, but as their loving mother. I would like to also thank my family members who have literally taken this difficult journey with me and offered words of encouragement as well. I was inspired by my family members to focus on diabetes education, and one of the main purposes for my thesis was because my mother, in particularly, has proven that diabetes self-efficacy can be achieved through determination, motivation, and simple lifestyle changes. My mother walks 11 miles per day, has controlled her diabetic condition with diet and exercise, and has had diabetes since she was 42 years old and now she is 65 years old. I would most importantly like to thank my God who has not just helped me through, but carried me literally through all my days and nights of despair, frustrations, hopelessness, anxiety, insomnia, sadness, and desperation. God has granted me the energy and ability to reach my goals. Even when I felt like giving up, God lifted me higher and gave me the spirit to spread my wings and soar. I am forever appreciative for all the many blessings I have been granted in my life and will continue to persevere to make a difference in the lives of diabetic patients in this ever changing world who need caring nurses who are dedicated and passionate about this chronic condition.

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CHAPTER I

Introduction

Diabetes has become an increasing issue in healthcare, not only with the adult population, but also with youth and adolescents. Diabetes is the sixth leading cause of death in the United States as of 2002 and is becoming a pandemic globally. Newly, diagnosed patients are projected to rise from 2.8 million to 344 million by 2030. According to the American Diabetes Association, "in 2012, diagnosed diabetes cases cost $245 million dollars just in the United States alone". Many complications result from uncontrolled diabetes such as neuropathy, renal disease, heart disease, or death. The risk of death doubles in diabetics compared to those in the population without diabetes.

Problem Statement

Historically, patients were treated for acute conditions with the notion of seek to cure and early discharge, while chronic conditions seemed to be diluted during the acute illness. It is important to focus on chronic conditions because most acute conditions occur secondary to those chronic conditions. People with chronic conditions face many challenges on a daily basis due to physical and social factors. Also, diabetic patients face many barriers when attempting to self-manage their chronic condition. When a patient receives the diagnosis of diabetes, there can be feelings of failure, confusion, uncertainty, anxiety, depression, anger, worry, frustration, and possibly denial that can lead to patient noncompliance. Some physicians fail to effectively communicate with their patients, which leads to lack of knowledge, noncompliance, and a disassociation with self-management, but yet the physician or healthcare staff will question the patient on compliance or follow-up visits without considering barriers a patient may face.

Healthcare teams becoming proactive in offering a structured program for diabetes education can prove to be most effective for patients by helping them to set long term goals, identify social barriers, obtain assistance with medication management, and provides encouragement for the patient and their support system.

Justification of the Research

Diabetes is the most self-manageable chronic disease, but this can only be achieved based on the knowledge and removal of barriers that large portions of the diabetic population face. Barriers to self-management of diabetes include culture, language, religious practices, health literacy, and social factors. Each of these factors can influence a person's ability to comprehend diabetes education. Research suggests that patients who overcome these barriers and are able to self-manage their diabetes have improved through diabetes education programs. These programs are designed to focus on complications that most commonly occur in uncontrolled diabetes management. There has been evidence-based research which supports the diabetes education programs being effective in blood glucose control, diabetic screenings for retinopathy, neuropathy, follow-up labs for blood glucose HgbA1C, and lipid panels.

Diabetic educational programs were implemented throughout the healthcare setting, including hospital and community-based programs, employer-based programs, and outpatient physician practices. Healthcare costs are increasing in billions each year due to complications from uncontrolled diabetes and/or noncompliance. However, there has been a huge decrease in medical costs associated with diabetic education during patient hospitalization, through the outpatient transitional diabetic education process, and on-going support such as community care management organizations, support groups,

and routine primary provider follow-up visits. Diabetes education consists of information that will allow the patient, along with the diabetic educator, to formulate a care plan based on the patients' knowledge level. Diabetes education allows the patient to identify the most important short and long term goals which are then set by the patient. Outcomes are also evaluated by the diabetic educator and patient. New goals are set if original goals are met and if not, then the diabetic educator helps the patient to identify any barriers to achieving those goals.

Diabetes education usually consists of content covering basic information based mainly on the American Diabetes Association (ADA) standards for diabetes and on important subject matter for the chronic condition itself, diabetes, in addition to information on physical activity, nutrition and healthy eating habits, proper foot care, completing all follow-up appointments while communicating effectively with healthcare team, eye examinations, blood glucose monitoring, and medication management. Patients participating in diabetic education programs are more likely to have a higher-level of self-efficacy than patients that do not participate in these programs. "Self-efficacy makes a difference in how people feel, think and act, self-efficacy levels can enhance or impede the motivation to act" (Swartzer & Fuchs, 1981, p.10). When patients are provided the proper information that is presented according to their learning capacity, then self-efficacy will be achieved. Wangberg (2007) defines self-efficacy as "the degree to which an individual perceives that he or she can perform a particular behavior" (p. 171).

Purpose

The purpose of this study was to determine the effect of a diabetes education program on self-efficacy and readmission rates of diabetic patients within the community who are considered "high-risk" with noncompliance issues and previous increased readmission rates. Through this research, results can be analyzed and then allow healthcare teams, who are closely working with diabetic patients, to help these patients have successful outcomes long term. Most lower socioeconomic diabetic patients lack the proper education on diet, exercise, medications, and diabetes itself as a chronic condition, which prevents those patients from being able to achieve their goals.

Research Questions

The following research questions were developed for this study:

1. What is the effect of a diabetes educational program on self-efficacy of diabetic patients?
2. What is the effect of a diabetes educational program on the hospital readmission rate of diabetic patients?

Theoretical or Conceptual Framework

Orem's Theory of Self-Care served as the theoretical framework for this study. Orem's Theory of Self-Care suggests several different points to her theory, such as people should be self-sufficient in the care of themselves and family members, that people are unique individuals, successful outcomes can only result from education in self-care in relation to health prevention and wellness, and that nursing plays a vital role in helping to facilitate care between patients and their family members. Orem's Theory of Self-Care concepts include nursing as an art. It focuses on a person as a whole human

being, environment in which the person lives, individualized care of the nursing client, focuses on a nursing problem utilizing the nursing process and nursing therapeutics with a deliberate, purposeful action. Orem's theory is divided into three parts with the theory of self-care, self-care deficit, and the theory of the nursing system.

For the purposes of this study, Orem's concepts of self-care and self-care agent were utilized. Self-care was defined as "individuals taking a deliberate action on behalf of one's self; actions taken that are essential to the maintenance of life, health, and well-being" (Depue, Nestle, & Sarns, 2012). This was measured by the participant's level of self-efficacy reported on the Diabetes Self-Efficacy Scale. Self-care agency was defined as "… the provider of self-care having the ability to prevent disease processes and injuries, as well as making judgments and decisions about what to do and perform care measures to meet specific self-care requisites in time and over time" (Orem & Taylor, 1986, p.52). This was measured by participant's hospital readmission rate following participation in a five-week diabetes education workshop. These concepts are diagrammed in the Conceptual, Theoretical and Empirical (CTE) structure in Figure 1.

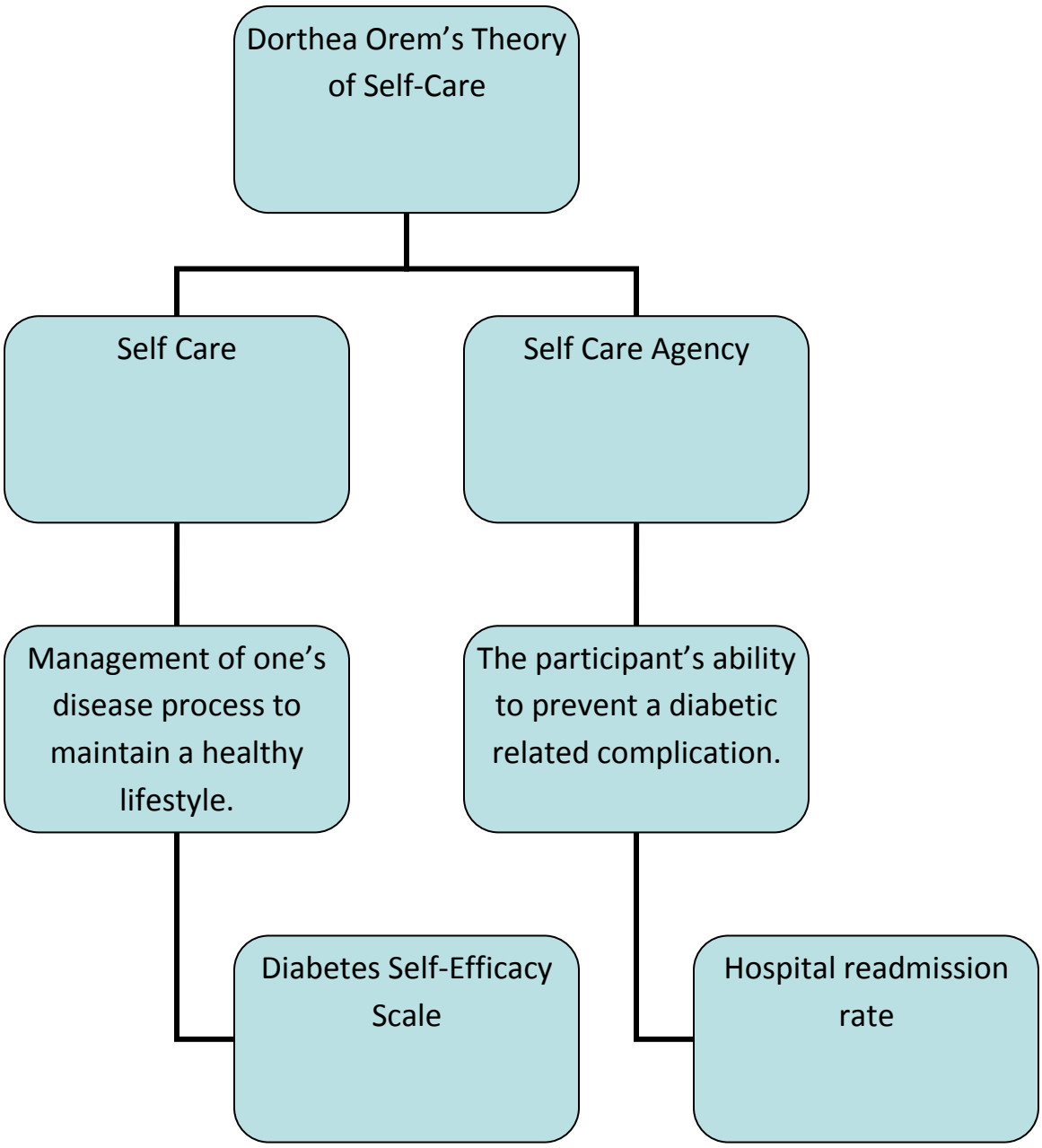

Figure 1. Dorthea Orem's Theory of Self Care.

Definition of Terms

- Diabetes is defined as a condition that occurs when the body cannot use glucose normally due to inadequate amounts of the hormone insulin that is made by the pancreas. This results in blood glucose levels increasing which lead to symptoms

such as excessive urination, extreme thirst, and unexplained weight loss (Gale Encyclopedia of Medicine, 2008).

- Self-Efficacy " according to Bandura, a person's attitudes, abilities, and cognitive skills comprise what is known as the self-system. This system plays a major role in how we perceive situations and how we behave in response to different situations. Self-efficacy plays an essential part of this self-system" (Cherry, 2013).
- Self-care is "activities that an individual undertakes in promotion of their own health such as prevention of disease, limited illnesses, and/or restoring their own health" (Levin & Idler, 1983, p.181).
- Self-management is "the ongoing process of facilitating knowledge, skill, and ability necessary for diabetes self-care. This process incorporates the needs, goals, and life experiences of the person with diabetes and is guided by evidence-based standards" (Funnell …Weiss, 2008, p.1). Self-management of one's health is by taking responsibility for one's own behaviors and well-being.
- Readmissions are defined by the Mayo Foundation (2013), as "… patient admissions to a hospital within 30 days after being discharged from an earlier hospital stay" (par 3).
- Diabetes education is a specialized form of education for diabetic patients focusing on self-management by a facilitator discussing diabetic education in relation to nutrition, exercise, disease process, medication management, and prevention and assisting the patient in setting achievable short and long term goals.

Summary

Self-efficacy is important in promoting self-care behaviors for diabetic patients. Thorough diabetic education can assist in assessing a patients' knowledge, level of learning, and identify barriers to healthcare access. It also gives insight to the disease process and psychosocial needs of the patient. In addition, a diabetic educator can assist or guide the patient in setting reasonable and achievable short and long term goals which allows the patient and their support system to become more actively involved in the decision-making process. This will empower the patient by helping to build self confidence, recognize lifestyle changes, issues, or concerns that need to be addressed while becoming self efficient. This empowerment will lead to better control of their diabetes which reinforces self-efficacy and can demonstrate improved health outcomes, lower readmission rates, and reduced healthcare costs.

CHAPTER II

Literature Review

The purpose of this study was to evaluate the effects diabetes education has on self-efficacy and readmission rates. This chapter will focus on the review of literature surrounding this topic. The researcher's data was collected from various resources such as the Cumulative Index for Nursing and Allied Health Literature (CINAHL), BioMed Central database, and the search engine Google. The literature reviewed in this chapter included topics from self-efficacy and self-management for the type II diabetic population, diabetes education, community-based diabetes education, type II diabetes patient empowerment, and Orem's Theory of Self-Care.

Conceptual Literature Review

Self-Efficacy

Atak, Gurkan, and Kose (2004) evaluated the effects of diabetes education on knowledge, self-management behaviors, and self-efficacy in patients with Type II diabetes. A randomized single blind controlled study was designed to assess the hypothesis using a pre and post-test design. Eighty patients with Type II diabetes were randomly assigned to either an intervention or a control group by a recruitment number. A diabetes education program was delivered to the intervention group and then before and after the end of the education class. Knowledge and self-management behaviors were then assessed. The self-efficacy results were evaluated and analyzed by mean scores of the diabetes Type II patients, and the control group received routine treatments. Any improvements were evidenced by action plans that were set by the participants themselves, and goals that were met were measured by a knowledge test to assess

improvements in diabetes, and then the self-efficacy results were analyzed by the Stanford Self-Efficacy scale by the mean scores. The measurements reported significant differences in the intervention and control groups with noticeable improvements in nutrition, exercise, body mass index (BMI), blood glucose levels, and self-efficacy mean scores. The final results conclude that there is very little effect on patient knowledge or self-management behaviors, but there was a significant effect on self-efficacy with Type II diabetic patients. Diabetes education and follow-up with patients to assess their learning levels, and to help patients to perform self-management behaviors can prevent future readmissions in the long- term.

King et al., (2010) questioned the association between the psychosocial and social-environmental, diabetes self-management, and diabetes control. Baseline data was analyzed from 463 patients with Type II diabetes and an increased BMI. Patients were asked to complete the Lorig's Diabetes Self-Efficacy Scale and Positive Transfer of Past Experience from the Diabetes Problem Solving Scale. Staff was asked to complete the Patient Assessment of Chronic Illness Care survey.

Participants in the study with an average age of 60, a BMI of at least 34.8, and a mean HgbA1C of 8.1% revealed moderate self-efficacy confidence and a large variability. Medication compliance, moderate result of variability for physical activity, high-fat intake, and low amounts of fruits and vegetables intake were all areas of concern. Self-efficacy and problem solving factors were associated with some self-management outcomes, with healthy eating and physical activity mostly correlated with behavioral specific self-efficacy and social-environmental supporting the variables. Problem solving and behavioral self-efficacy were highly associated with self-management behaviors such

as decreased BMI due to increased physical activity, healthy eating, and improvements in HgbA1C and lipid ratios.

Gleeson-Kreig (2006) analyzed the effects of physical activity on self-efficacy of 58 participants with Type II diabetes. Participants, ages 40-65 years of age, kept daily physical activity records for a total of six weeks and submitted records via mail to the researcher every two weeks for validation. Data collection was obtained by administering the Habitual Physical Activity Index, the Self-efficacy for Exercise Scale, and the Perceived Feasibility Checklist. The physical activity intervention resulted in increased self-efficacy among participants in both the control and intervention group. There were noted differences between the control group and the intervention group, with improved outcomes for exercise, diet, and monitoring of daily blood glucose levels.

Vahid, Alehe, and Faranak (2008) evaluated the effectiveness of a diabetes empowerment program on self-efficacy. Thirty participants between the ages of 18-70 years of age with any type of diabetes participated in the study. Most of the participants had previously attended a diabetes education program and did not have any psychosocial disorders present at the time the study was conducted. Participants were divided into a control group and experimental group. Participants in the control group were asked to complete the Diabetes Empowerment Scale and then after a month and a half, to accomplish their self-set or self-designed goal, and then they were asked to complete the Diabetes Empowerment Scale again at the end of the study. Participants in the intervention group completed the Diabetes Empowerment Scale, participated in the empowerment program, and were then asked to complete the Diabetes Empowerment Scale. This study showed there were no differences between the control and intervention

group before the education program, but after going through the empowerment educational program during six weeks, the patients in the intervention group did exhibit positive outcomes in correlation with the self-efficacy scales and their subscales.

At the end of the empowerment study, there were improvements in psychosocial self-efficacy scales. The Empowerment model did prove to have an effect on psychosocial self-efficacy which improves quality of life and health outcomes.

Wangberg (2007) used a pretest, posttest design to explore the effect of internet-based interventions on self-efficacy and increasing diabetes self-care behaviors. Sixty-four participants with either Type I or Type II diabetes participated in the study. Participants were divided into one of two groups. One group received an intervention on self-care such as blood glucose monitoring, dietary habits, or physical activity where self-efficacy was the lowest. The second group received an intervention of self-care where self-efficacy was reported the highest. Questionnaires were delivered to participants online assessing self-reported self-care behaviors and self-efficacy. Informative articles were presented on the website on health risks, self-care reducing the amount of barriers to lifestyle changes, and general information on diabetes. Also quizzes with feedback were used to facilitate learning, and videos of peers who have previously overcome barriers to self-care were available along with videos from healthcare personnel.

The results concluded that self-care did increase in both groups, but there was a higher increase of self-care in the group with a higher level of self-efficacy. This study also suggests that self-efficacy levels have a greater value to predict better glucose control, but some patients were noted to have improved self-care behaviors and then the self-efficacy decreased slightly. “While those patients who are more self-efficacious tend

to have higher levels of self-care, the people who had the lowest self-care tended to have the most improvements after the educational interventions and behavioral changes support self-efficacy" (Wangberg, 2008, p.176).

Self-Management

Lorig and Gonzalez (2000) conducted a three month, community-based, peer-led diabetes self-management study with 109 Spanish-speaking diabetic patients. Participants were given a pretest questionnaire to assess their level of understanding and knowledge of their disease, and then given a posttest to evaluate improvements in outcomes after completing a six-week diabetes self-management program. The diabetes self-management program was led by 19 peer educators recruited from the community with flyers, announcements, churches, announcements at their clinic, or just word of mouth in the Hispanic population. Diabetic educators and nutritionists collaborated together to assist in the education. Patient education consisted of weekly meetings to discuss topics such as nutrition, physical activity, stress management, and behavior modification. Patients developed weekly action plans that were used to assess accountability. The study demonstrated an improvement in health behaviors such as healthy eating, foot self-exams, healthcare examinations, foot care, communication skills, blood glucose monitoring, and self-efficacy. The improvements from this study demonstrated physiological measures may not even be associated with improvements from quality of life. Future research is needed with a more diverse group of Spanish-speaking patients.

Literature Related to Theoretical Framework

A literature review was conducted by searching a variety of databases and search engines to identify studies utilizing Oren's theory related to self-efficacy and self-management of diabetes. These databases included Cumulative Index to Nursing and Allied Health (CINAHL), BioMed Central database, and the search engine Google. One study was identified that utilized the concepts of Orem's theory: Navuluri (2001).

Navuluri (2001) used a descriptive, correlational study to evaluate and determine if there was a relationship between patient attitudes towards being compliant and self-care adherence to physical activity in adults with diabetes. One hundred and fifty-five adults with either Type I or Type II diabetes participated in the study. Participants were asked to complete a demographic questionnaire, the health-related hardiness instrument, attitude toward compliance scale, and self-care adherence scale. This study concluded that there was a significant relationship between health related hardiness; however, there was not a significant relationship between control and self care adherence.

Orem's Theory of Self- Care served as the theoretical framework for this study and explored Orem's concepts of self-care and hardiness. Both concepts have been reported as being related to health status. The researcher predicated the two concepts were interrelated and results of the study supported the researcher's hypothesis.

Strengths and Limitations of Literature

A review of the literature demonstrates there is still an ongoing need for further research on diabetes education and its relationship to self-efficacy and readmission rates. Various methods have been used to evaluate self-efficacy, self-management, and self-care behaviors including diabetes educational workshops, questionnaires and surveys to

evaluate knowledge and lifestyle behaviors, computer and telephonic-based evaluations of self-efficacy, but little evidence exist exploring readmission rates after various interventions have been implemented.

Time limits of many of the studies reviewed restricted ongoing follow up with patients. Follow up usually consisted of a few months to a year to assess level of knowledge and any needs for improvement. Some literature provided insight to cultural aspects of diabetes self-management which can be helpful in improving diabetes interventions in certain populations.

Further research is needed on factors that affect hospital readmission rates of the diabetic population. Self-efficacy can prove to have positive outcomes for diabetic patients by empowering patients to become motivated to self-management, but over a period of time, there has not been enough research to assess the correlation between self-efficacy and hospital readmission rates.

Summary

Diabetes is an increasing chronic illness affecting many individuals worldwide and does not discriminate against cultural, racial, socioeconomic status, or gender. Diabetes education whether provided within a group setting, individual one-on-one setting, internet-based, or telephonically, can improve self-management outcomes by allowing the individual to communicate with healthcare staff, gain support from others who mutually share the same chronic condition, provide an outlet to various emotional factors that can hinder learning, and provide empowerment and confidence to improve diabetes self-management behaviors. Supportive environments where one shares a commonality can also encourage active participation due to a sharing of ideas, group

brainstorming on solutions for diabetes self-care management, sharing of personal experiences, and emotions can help to reduce fears and anxiety as well. The healthcare team and patient with an ongoing and trustworthy rapport of communication which encourages the individual to recognize need for change and future goals in diabetes self-management. Patients who are held accountable for their care tend to be more compliant and motivated in their own care and goal setting. Patients, who have an established, regular ongoing relationship with their provider, tend to have their healthcare needs addressed with an office visit which in turn will reduce readmission rates.

CHAPTER III

Methodology

The purpose of this study was to determine the effect of a diabetes education program on self-efficacy and readmission rates of diabetic patients. This chapter outlines the methodology and process used for recruitment of participants, assessment, implementation of interventions, and evaluation of the effectiveness that diabetes education has on self-efficacy along with outcomes in regards to readmission rates.

Research Design

This research study used a descriptive design to examine the effect of a diabetes education program on self-efficacy and hospital readmission rates of diabetic patients.

Setting

This study took place in two physician practices located in the Southeastern United States. The physician practices specialized in family medicine with a high enrollment of over 500 diabetic patients mainly from lower socioeconomic areas.

Sample

Twenty participants participated in this study. Participants were recruited by the physician practices based on the following criteria: (a) newly diagnosed diabetes, (b) historically noncompliant with numerous hospital readmission rates, and (c) accessibility and accountability factors of being able to commit to attending the diabetes workshop for five weeks. Most participants were from lower socioeconomic backgrounds with lack of resources that often contributed to accountability and compliance. The practices' provided transportation for patients with transportation issues, if the patient requested the

need for transportation in a timely manner. Only participants that were committed to completing the five week diabetes education course were included.

Protection of Human Subjects

Prior to the study, the researcher obtained permission from the Internal Review Board (IRB) at the University. The physician practices did not require a formal IRB review. Informed consent (Appendix A) was obtained during a thorough explanation of the research topic and diabetes workshop with patients given a detailed description of the research process. Participation in this study was on a voluntary basis and/or commitment. Patients were allowed to opt out of the research process and still attend the diabetes workshop without any conflict between the researcher or the patient.

Due to the pretest/posttest design of this study, it was necessary for the researcher to know the identity of the participants. Confidentiality was maintained by creating a numbering system. Every participant was given an assigned number in the sequence of 1 to 10 and 1A to 10A, allowing for differentiation between the two physician practice locations. The coding system also allowed correlation of the survey cover sheet, demographic tool, survey tool, and consent form. The participant signed the cover sheet (Appendix B) with the number. This cover sheet was removed from the survey upon the participant signing their name on the cover sheet for the purpose of creating a master list of all assigned numbers and participant's names. The master list was stored separate from the surveys and completed surveys, and any identifying data were kept under lock within the researcher's home during the entire data collection process.

This study posed no risk to any of the participants. Those who chose not to participate in the study were in no way treated differently by facilitator of the Diabetes

Conversational Map workshop, received the same level of diabetes education, and their relationship with their primary care provider was not affected. Future educational offerings or other health services were not impacted by the participant's decision to participate or not to participate.

Instruments

The Stanford Diabetes Self-Efficacy Survey (Appendix C) was used as the evaluation scale for the research study. This is an eight-item scale developed as part of the Stanford Diabetes Self-Management study. The survey assessed current confidence level of self-management with diabetes such as physical activity, current dietary habits, blood glucose monitoring, and the patients' current perception of diabetes.

The Stanford Diabetes Self-Efficacy Survey has been a part of chronic disease research for over two decades in development and testing of self-administered scales. The National Institute of Research funds the use of these self-administered scales to the public at no charge. The Stanford Diabetes Self-Efficacy Survey is provided as a means in which research can help assist patients with diabetes to take control of their lives by gaining self-confidence to self-manage their condition.

The demographic tool (Appendix D) used was created by the researcher to gather additional information about individual participants. The main questions on the demographic tool consisted of race, age, gender, time frame of being diagnosed with diabetes, type of diabetes (Type I or II), management techniques currently used to control diabetes, support systems involved if any, physical activity level, and current dietary habits.

Data Collection

Participants were enrolled in a five-week series of diabetes education classes using the Diabetes Conversational Map by Merck. On day one of the classes, participants were asked by the researcher to complete the consent form, demographic tool, and the Stanford Diabetes Self-Efficacy Scale. Upon completion of the five-week diabetes education classes, participants were asked to repeat the Stanford Diabetes Self-Efficacy Scale.

Following completion of the five-week diabetes education classes, the researcher released the participants from the study. The researcher then continued to track the participants' readmission rates to the hospital for the next 30 days for a diabetes related illness utilizing the Case Management Informatics System.

Data Analysis

Data analysis was completed by using the Statistical Packages for the Social Sciences 16.0 © (SPSS). Descriptive statistics, paired sample t-test, and independent samples t-test was used to analyze the collected data.

Summary

This research study was designed to evaluate the effect of a diabetes education program on self-efficacy and readmission rates of diabetic patients. All participants were recruited on a voluntary basis. Patients completed an informed consent form, demographic tool, and the Stanford Diabetes Self-Efficacy Survey upon initiation of the workshop and then at completion of the five-week workshop.

Additional purposes of this research were to help diabetic patients gain confidence and improved self-management skills in order to achieve positive outcomes,

prevent future complications, fill communication gaps between patient and provider, promote best practices for diabetic patients, and to reduce future diabetes healthcare related costs.

CHAPTER IV

Results

The purpose of this study was to determine the effect of a diabetes education program on self-efficacy and readmission rates of diabetic patients. Data was collected by the researcher in a confidential and controlled manner from a small, sample of 20 diabetic patients ranging in ages from 32 years old to 88 years old. This study was intended to support that there is improvement in self-efficacy and decreased readmission rates through effective diabetes educational programs.

Sample Characteristics

The final sample for the study was 20 diabetic patients who voluntarily agreed, through signed consent, to participate in this study. Patients included in this study were receiving care from a primary care provider within a major, healthcare clinic in the Southeastern United States. Of the 20 patients, two (10%) attended only two out of the five workshops provided and discontinued participation by withdrawing without further obligation and/or contact with the researcher.

The study participants' mean age was 60.15 (*sd* = 14.47) years old. The participants had been diagnosed with diabetes for a mean of 9.3 (*sd* = 9.57) years. The participants reported they exercised an average of 2.3 (*sd* = 2.47) times a week for an average of 29.75 (*sd* = 52.63) minutes. Results are displayed in Table 1. Hemoglobin A1C results were available for 18 of the 20 participants, with a mean score of 7.91 (*sd* = 2.51).

Table 1

Demographic Data for the Sample

	Range	M	SD
Age	32-88	60.15	14.47
Length of illness	1-38	9.30	9.57
Exercise times per week	0-7	2.30	2.47
Exercise minutes per week	0-240	29.75	52.63

Eight (40%) of the participants were male and 12 (60%) were female. The majority of participants were African American (*n* =14, 70%) with Type II diabetes (*n* = 19, 95%). Other races included Caucasian (*n* = 5, 25%) and Other (*n* = 1, 5%). Sixteen (80%) participants stated they had support within their home compared to four (20%) that reported that they did not have support in their home. Six (30%) participants reported they were the only one living in their home with diabetes compared to 14 (70%) that reported there were other people living in their home with diabetes. The majority of the participants, (*n* = 13, 65%) reported they were responsible for their own meal preparation and cooked at home. Results are displayed in Table 2.

Table 2

Demographic Characteristics of the Sample

	Frequency	Percent
Gender		
Male	8	40.0
Female	12	60.0
Race		
African American	14	70.0
Caucasian	5	25.0
Other	1	5.0
Type of Diabetes		
Type 1	1	5.0
Type 2	19	95.0
Support at Home		
Yes	16	80.0
No	4	20.0
Others with Diabetes		
Yes	6	30.0
No	14	70.0
Cook at Home		
Self	13	65.0
Spouse	6	30.0
Other family/friends	5	5.0

Research Question 1

Descriptive and inferential statistics were used to determine the effect of a diabetes educational program on self-efficacy of diabetic patients. Results from the pretest and posttest scores of the Diabetes Self-Efficacy Scale were analyzed.

A paired samples *t*-test was conducted to evaluate whether patients' level of self-efficacy increased following the six week diabetes workshops. The results indicated a statistically significant difference in all questions except one. Table 3 summarizes the results of the paired samples *t*-test.

Table 3

Pretest and Posttest Scores of Self-Efficacy

	Pretest M(SD)	Posttest M(SD)	*p*
Question # 1: How confident do you feel that you can eat your meals every 4-5 hours every day, including breakfast every day?	5.83 (2.81)	7.33 (1.84)	.002
Question #2: How confident do you feel that you can follow your diet when you have to prepare or share food with other people who do not have diabetes?	6.17 (2.83)	7.28 (1.90)	0.42
Question # 3: How confident do you feel that you can choose the appropriate foods to eat when you are hungry (for example, snacks)?	6.00 (2.45)	7.44 (1.79)	.005
Question # 4: How confident do you feel that you can exercise 15-30 minutes, 4-5 times a week?	5.83 (2.85)	6.78 (1.93)	.049
Question # 5: How confident do you feel that you can do something to prevent your blood sugar level from dropping when you exercise?	7.39 (2.17)	7.83 (1.43)	.354
Question # 6: How confident do you feel that you know what to do when your blood sugar level goes higher or lower than it should be?	7.39 (2.38)	8.72 (1.53)	.001
Question # 7: How confident do you feel that you can judge when the changes in your illness mean you should visit the doctor?	7.50 (2.62)	8.67 (1.61)	.005
Question # 8: How confident do you feel that you can control your diabetes so that it does not interfere with the things you want to do?	6.83 (2.57)	8.17 (1.62)	.006

Although only two patients were readmitted 30 days following the diabetes education workshop, an independent samples *t*-test was conducted to evaluate whether there was a difference in non-readmitted and readmitted patients' level of self-efficacy utilizing pre self-efficacy scores for each question. Table 4 summarizes the results of the independent samples t-test for the difference in readmitted and non-readmitted patient's pretest self-efficacy scores.

Table 4

Results of Paired Samples t-test for Pretest Scores for Readmitted and Non-readmitted Patients

	Readmitted Pretest Scores M(SD)	Non-readmitted Pretest Scores M(SD)	*p*
Question #1: How confident do you feel that you can eat your meals every 4-5 hours every day, including breakfast every day?	5.83 (2.81)	1.0 (0)	.029
Question #2: How confident do you feel that you can follow your diet when you have to prepare or share food with other people who do not have diabetes?	6.17 (2.83)	1.0 (0)	.759
Question # 3: How confident do you feel that you can choose the appropriate foods to eat when you are hungry (for example, snacks)?	6.00 (2.45)	1.0 (0)	.011
Question # 4: How confident do you feel that you can exercise 15-30 minutes, 4-5 times a week?	5.83 (2.85)	1.0 (0)	.051
Question # 5: How confident do you feel that you can do something to prevent your blood sugar level from dropping when you exercise?	7.39 (2.17)	1.0 (0)	.027
Question # 6: How confident do you feel that you know what to do when your blood sugar level goes higher or lower than it should be?	7.39 (2.38)	-1.0 (0)	.537
Question # 7: How confident do you feel that you can judge when the changes in your illness mean you should visit the doctor?	7.50 (2.62)	-1.0 (0)	.204
Question # 8: How confident do you feel that you can control your diabetes so that it does not interfere with the things you want to do?	6.83 (2.57)	-1.0 (0)	.264

Research Question 2

Descriptive statistics were used to determine the effect of a diabetes educational program on readmission rates. Of the 20 participants, 10% (n = 2) were readmitted to the hospital, compared to the 90% (n = 18) that were not readmitted. Both of the participants that were readmitted to the hospital within 30 days with diabetes-related complications due to noncompliance with medications and follow-up visits with their primary care provider failed to complete all the diabetic workshop sessions. Results are displayed in Table 5.

Table 5

Readmission Rate for the Sample

Readmission	Frequency	Percent
No	18	90%
Yes	2	10%

CHAPTER V

Discussion

The purpose of this study was to determine the effect of a diabetes education program on self-efficacy and readmission rates of diabetic patients. The results of this study demonstrated that diabetic patients participating in a diabetes education workshop had a statistically significantly improvement in self-efficacy related their confidence level in relation to knowledge about how to respond to times of illness with their diabetes, changes in lifestyle, and wanting to continue to live healthy with their chronic condition.

Many of the participants demonstrated a commitment to self-management through verbalizing the importance of establishing and maintaining a working relationship with their healthcare provider by keeping communication mutual between patient and their healthcare provider. Participants reported a strong confidence level in self-managing changes in blood sugar levels and being able to decipher when blood sugar levels are low compared to high and the appropriate actions to take when this occurs.

The two patients that were readmitted to the hospital for diabetic complications failed to complete the five-week diabetic education program.

Implication of Findings

The effects of diabetes education on self-efficiency and readmission rates can be influenced by multidisciplinary community care teams and support systems of the patient. It is known that healthcare teams are made up of family physicians, diabetes specialist and educators, nurses, pharmacist, and dieticians and these teams can increase the level of positive outcomes among diabetic patients. Evidence-based analysis demonstrates that the collaboration of these professionals, the patient, and the physician presents a more cost effective method for diabetes management. Prior literature demonstrates that simply

involving the physician in the management of a patient's diabetes results in low compliance with self-management.

Diabetes education on a continual basis provides positive reinforcements for diabetic patients, reduces readmission rates and at the same time, improves the patients' overall well-being by increasing life expectancies. Evidence shows that patients that were involved in educational programs demonstrated a higher level of self-management than the patients that did not. Furthermore, the impact of self-management with the multidisciplinary team has become successful in controlling other serious complications associated with diabetes which results in decreased admissions for other disease processes.

Application to Theoretical/Conceptual Framework

Orem's Theory of Self-Care served as the theoretical framework for this study. Orem's Theory of Self-Care suggests people should be self-sufficient in the care of self and family members, recognizes that people are unique individuals, and that successful outcomes can only result from education in self-care in relation to health prevention and wellness. Orem's theory also shares that nursing plays a vital role in helping to facilitate care between patients and their family members.

Orem's theory promotes self-care through self-management of diabetes and encourages the patient to set their own goals and evaluate their own self-managed progress. Orem's Self-Care theory encapsulates all the major concepts of self-care, self-management, self-care deficit, the self-care agency and the nursing system which support diabetes self-management, self-efficacy, and the vital role that diabetic patients play in their own self-management.

The diabetic patient must learn to possess the motivating factors that will self-guide them into applying themselves into the self-care role. Orem's theory also supports that in self-care, one cannot be forced or coerced into their self-care role, but actively take the initiative to perform their own self-care. Orem's theory of nursing systems describes a sequence of actions that a nurse must initiate in order to meet the patients' self-care demands and proves to help direct the proper execution of interventions that can produce positive and successful outcomes for the diabetic patient.

"Diabetes knowledge is a personal (internal) conditioning factor proposed by Orem. Social support is an environmental (external) conditioning factor proposed by Orem" (Sousa & Zauszniewski, 2005, pg. 63). The responsibility of the diabetic patient is to take the initiative from knowledge that already exists and for deficits that are present, and to possess the motivation from within to change and/or want to improve their self-care management skills. Social support through diabetes support groups, classes, workshops, and education allows the diabetic patient the opportunity to share their personal experiences, emotions, concerns, and fears with others who share the same chronic condition.

Orem's Self-Care Theory does not necessarily focus on chronic conditions, but rather focuses on the activities that patients practice by their own initiative that result in improvements in their health and well-being. "Orem includes aspects of dependent care such as the nature of nursing where nurses promote self-care and assess the self-care demands, abilities and deficits to support patients in their self-care role" (Jaarsma, Riegel, & Stromberg, 2012, p. 194). For example, if a patient has the motivating factors to perform self-care and to actively self-manage their diabetes, they will be successful, but

if there are barriers to their abilities to self-care, then the patients are more likely to become noncompliant and not meet their goals of self-care management and so the nurse will need to provide an effective intervention to help the patient meet their self-care goals. Nurses play a vital role by assisting patients in formulating their own self-care plan, setting short and long term goals, and evaluating their effectiveness in a reasonable time frame.

Orem's Theory affirms the individuals' ability to meet self-care needs to improve health outcomes which are referred to as the self-care agency. In other words, ones' ability to perform self-care is also affected by cultural, social, and physical, as well as mental state. Any barriers in these particular areas can prevent or deter patients from acting as their own self-care agency. If there aren't any barriers, then patients are motivated to perform self-care behaviors including all concepts of self-care management in health and well-being. "Physical activity is a self-care behavior that is initiated by motivated individuals who possess a will to improve their own well-being" (Navuluri, 2012, p.1).

Orem's Self-Care theory supports the need for diabetic patients to have a healthcare team responsible for assessing the patient, providing the environment for empowering and motivating the patient through valuable diabetic education and this will then lead to improved self-care management and optimal outcomes. Her theory also supports researchers by providing a structure that can assist in future research efforts that will further support clinical practices.

Limitations

Limitations in this research study consisted of a small sample of diabetic patients. The sample also consisted mainly of lower, socioeconomic classes with limited health care literacy. This can be a large contributing factor to variances in lifestyles that would bring differences in results reported based on variances in socioeconomic and health literacy classes. There were also limited readmission rates possibly due to the small sample size. The researcher was not able to evaluate a larger, diabetic population within the healthcare providers practice to compare readmission rates.

Only one particular healthcare provider practice clinic was part of the sample during this research study and because of this, differences in providers can be a limitation to this study as well. Follow-up to readmission rates along with diabetes self-management was only included for a 30 day period and not re-evaluated or re-assessed six months or even a year out to get a more accurate picture of diabetes self-management.

The diabetes educational workshops occurred over a five week period. In future research or implementation of diabetes educational workshops should be extended to a longer time frame readmission rates could be evaluated at a more expanded time frame.

Implications for Nursing

Diabetes education is essential in improving health outcomes for diabetic patients by providing support from a diabetes educator and fellow diabetic patients. Diabetic patients can support one another in a setting that will allow them to share their challenges together while working together to find a common goal that works. Providing an effective diabetes educational program is essential because this empowers patients, which

leads to more self-management behaviors due to increased confidence, and also can result in improved health outcomes long term.

Diabetes education is a link between the patient and the provider and/or healthcare team where patients can become more proactive in making their own healthcare decisions, implementing and coordinating their own plan of care, and setting goals that both patient and provider can evaluate its effectiveness and always modify according to patients' needs and condition.

Future healthcare costs are increasing due to diabetes diagnoses which are increasing on an annual basis due to increased hospital readmission rates and unnecessary emergency room visits. Many barriers in healthcare can effect patients and cause patients to become reluctant to schedule follow-up visits with their healthcare provider, or to follow-up on their routine lab work and tests, or to communicate with their healthcare provider. These barriers lead patients to feel their only support is from either an emergency room physician or inpatient hospital system. Diabetic patients who lack healthcare literacy can face many challenges and because of this, lack the knowledge regarding their chronic condition. Diabetic patients may then become confused and fearful due to a lack of social support and healthcare team support. An effective diabetes educational program will allow the patient to address concerns, receive psychosocial support, healthcare support, and a guide to help patients learn the tools needed to self-manage.

Lack of communication between provider, healthcare team, and patient is crucial so that barriers in healthcare can be identified at an early stage and coordination of care can begin early. Diabetes education will empower these patients to have improved self-

efficacy, self-management, and reduced readmission rates if all of patients' needs are being addressed. A patients' confidence level can be increased through effective collaboration between patient and the multidisciplinary healthcare team responsible for providing patients the tools to take the correct steps in managing their condition.

Recommendations

Continued research on diabetes education programs is needed. More specifically, research on diabetes educational program in an inpatient setting for patients is needed. Factors contributing to successful self-management of diabetes should be evaluated in this setting.

In a community setting or outpatient basis, collaboration between the diabetes educator and healthcare provider is needed. Implementation of evidence-based diabetes educational programs on a post-discharge basis from the hospital within the healthcare provider office or "medical home" may assist in empowering patients by increasing their confidence, level of self-efficacy, and self-management behaviors.

Transitional care coordination between hospital staff and a community healthcare team will help strengthen relationships during the transitional care period. Transitional care offers a broad range of time-limited services designed to ensure health care continuity, avoid preventable poor outcomes among at-risk populations, and promote the safe and timely transfer of patients from one level of care to another or from one type of setting to another. The hallmarks of transitional care are the focus on highly vulnerable, chronically ill patients throughout critical transitions in health and health care, the time-limited nature of services, and the emphasis on educating patients and family caregivers

to address root causes of poor outcomes and avoid preventable hospitalizations. (Computer Sciences Corporation, 2012, p. 8).

At the same time, the diabetic population will also begin to have a trustworthy relationship with healthcare staff, especially their provider and their diabetic educator. When communication gaps are filled, barriers to healthcare for patients are identified and then solutions are formed. Communication can be established first by assessing the patients' level of healthcare literacy, willingness to learn and adapt, and agreement to diabetes education program enrollment. Motivational interviewing should be used for difficult or fearful patients. Motivational interviewing has been identified in the past few years as a new, innovative way of communicating between the healthcare staff and patient population. According to Miller and Moyers (2006), "motivational interviewing involved eight steps involving the healthcare professional of engaging the client, client-centered counseling where the client is asked open-ended questions, provided affirmation in a comfortable environment, allowing the client total autonomy in discussion, and the healthcare professional being able to elicit information through effective listening skills and identification of the clients' body language and tone" (para 1). Diabetic educators should facilitate diabetic educational programs allowing patients to assess their own level of understanding of diabetes, providing ongoing support from one another within the diabetes education group, and holding one another accountable each week for measurable action plans set by each participant. Patients who form a "buddy system" through the diabetes workshops will begin feeling a sense of support, while gaining control of their chronic condition.

Summary

This research study found that a diabetes education program was effective in improving self-efficacy and reducing readmission rates. Participants who attended all five workshops did show improvement in self-efficacy and no readmission rates.

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Appendix A

Consent Form

Participant Consent Form

You are being asked to participate in a study regarding the effect of diabetes education on self-management and readmission rates led by Angela Rasheed, BSN, RN. You have been selected for inclusion in this study because you are enrolled in the Diabetes Education workshop being held for the next 5-weeks.

Procedure:
If you agree to participate in the study, you will be asked to complete this consent form, the Diabetes Self-Efficacy Scale, and a demographic tool during the first week of the Diabetes Education workshop. During the last week of the workshop, you will be asked to repeat the Diabetes Self-Efficacy Scale. Following your completion of the 5-week workshop, Angela Rasheed will track any readmissions through the Community Care of North Carolina Network you may have for a diabetic related illness for the next 30 days. Once you have completed all surveys, you will have no further obligations to the study. The primary investigator will track your readmission through the Community Care of North Carolina Network using the Case Management Informatics System.

Participation:
Completion of the survey is confidential and voluntary. You may withdraw from the study at any time. Participation in the study or the decision not to participate in the study will in no way affect your relationship with the facilitator of the Diabetic Education workshop or with your primary care provider. In addition, educational offerings or other health services will not be impacted by your decision to participate or not to participate in the study. If you choose to withdraw, you may request that any of your data which has been collected be destroyed unless it is in a de-identifiable state. There is no compensation for participating in this study.

Confidentiality:
Due to the nature of this study, it will be necessary for the researcher to know your name. At the beginning of the survey, you will be assigned a number. That number will be placed on all surveys that you will be asked to complete. This will allow the researcher to match up the survey you completed during the first and last week of the workshop. The researcher will store your name and corresponding number in a separate location from completed surveys so that no one may identify you. It will be necessary for the researcher to use your name to track any readmissions through the Community Care of North Carolina Network for 30 days; however, your name will not be recorded on any documents. Once all data has been collected, the researcher will destroy any identifying information. All information obtained in this study is strictly confidential unless disclosure is required by law.

Risks:
The Institutional Review Board at Gardner-Webb University has determined that participation in this study poses minimal risk to participants.

If you have questions, want more information or have suggestions, please contact Angela Rasheed, who may be reached at 704-351-1609. You may also contact the principal investigator, Dr. Tracy Arnold at 704-406-4359.
If you have any concerns about your rights, how you are being treated, concerns or complaints about this study or benefits or risks associated with being in this study please contact the Institutional Review Board for Gardner-Webb University's School of Nursing at 704-406-3255.

Benefits:
The perceived benefit of participating in this study is that it:

a) May allow healthcare staff and your physician to better address your healthcare needs in regards to diabetes management.
b) May allow you to learn better coping skills and find a plan that works for you to self-manage your diabetes.
c) May contribute to the body of nursing knowledge regarding diabetic education in the community.

Voluntary Consent by Participant:
By signing this consent form you are agreeing that you read, or it has been read to you, and you fully understand the contents of this document and are openly willing consent to take part in this study. All of your questions concerning this study have been answered. By signing this form, you are agreeing that you are 18 years of age or older and are agreeing to participate in this study described to you by Angela Rasheed.

Signature _____ Date _____

Appendix B

Cover Sheet

Cover Sheet

Name: _____

Survey Number: _____

Appendix C

Diabetes Self-Efficacy Scale

Diabetes Self-Efficacy Scale

Please indicate *how confident* you are in doing certain activities. For each of the following questions, Please choose the number that corresponds to your confidence that you can do the tasks regularly at the present time.

1. How confident do you feel that you can eat your meals every 4 to 5 hours every day, including breakfast every day?

   Not at all confident 1 2 3 4 5 6 7 8 9 10 Totally confident

2. How confident do you feel that you can follow your diet when you have to prepare or share food with other people who do not have diabetes?

   Not at all confident 1 2 3 4 5 6 7 8 9 10 Totally confident

3. How confident do you feel that you can choose the appropriate foods to eat when you are hungry (for example, snacks)?

   Not at all confident 1 2 3 4 5 6 7 8 9 10 Totally confident

4. How confident do you feel that you can exercise 15 to 30 minutes, 4 to 5 times a week?

   Not at all confident 1 2 3 4 5 6 7 8 9 10 Totally confident

5. How confident do you feel that you can do something to prevent your blood sugar level from dropping when you exercise?

   Not at all confident 1 2 3 4 5 6 7 8 9 10 Totally confident

6. How confident do you feel that you know what to do when your blood sugar level goes higher or lower than it should be?

   Not at all confident 1 2 3 4 5 6 7 8 9 10 Totally confident

7. How confident do you feel that you can judge when the changes in your illness mean you should visit the doctor?

Not at all confident	1	2	3	4	5	6	7	8	9	10 Totally confident

8. How confident do you feel that you can control your diabetes so that it does not interfere with the things you want to do?

Not at all confident	1	2	3	4	5	6	7	8	9	10 Totally confident

Appendix D

Demographic Form

Demographic Form

Please select the appropriate answer that most closely resembles your current health status.

1. Age: _____

2. Gender: _____ Male _____ Female

3. Race:
   _____ African American
   _____ Caucasian
   _____ Asian
   _____ Native American
   _____ Other: _____

4. How long have you known you have had Diabetes?

   _____ Year(s)

5. What type of diabetes do you have?
   _____ Type 1
   _____ Type 2

6. How do you manage your Diabetes?
   _____ Oral medications
   _____ Insulin
   _____ Oral medications and insulin
   _____ Diet and exercise

7. Do you have any support systems at home such as family or friends?
   _____ Yes
   _____ No

8. How many times per week do you exercise? _____
   If applicable, how many minutes or hours do you spend exercising each time?
   _____

9. Are there people in your home that are also diabetic? _____ Yes _____ No

10. Who does most of the cooking in the home? _____