12-2017

Barriers to Goal Attainment in Type Two Diabetics

Virginia Mol

Follow this and additional works at: https://digscholarship.unco.edu/capstones

UNIVERSITY OF NORTHERN COLORADO

Graduate School

Greeley, Colorado

BARRIERS TO GOAL ATTAINMENT IN
TYPE TWO DIABETICS

A Capstone Project Submitted in Partial Fulfillment
of the Requirements for the Degree of
Doctor of Nursing Practice

Virginia Mol

College of Natural and Health Sciences
School of Nursing
Nursing Practice

December 2017

This Capstone Project by: Virginia Mol

Entitled: *Barriers to Goal Attainment in Type Two Diabetics*

Has been approved as meeting the requirement for the Degree of Doctor of Nursing Practice in the College of Natural and Health Sciences in School of Nursing, Program of Nursing Practice

Accepted by the Capstone Research Committee

_____
Kathleen Dunemn, Ph.D., APRN, CNM, Research Advisor

_____
Lory Clukey, Ph.D., Psy.D., RN, CNS, Committee Member

_____
Vicki L. Wilson, Ph.D., RN, Committee Member

Accepted by the Graduate School

_____
Linda L. Black, Ed.D.
Associate Provost and Dean
Graduate School and International Admissions

ABSTRACT

Mol, Virginia. *Barriers to Goal Attainment in Type Two Diabetics*. Unpublished Doctor
   of Nursing Practice capstone project, University of Northern Colorado, 2017.

Type 2 diabetes mellitus (T2DM) is a chronic disease that has reached epidemic

proportions worldwide and is a leading cause of death in the United States. Despite the

significant risk to morbidity and mortality, the most effective diabetes treatment is still

unclear. Implementation of diabetes self-management education (DSME) programs is

one method to address the educational needs of patients with T2DM. Barriers to goal

attainment need to be more fully addressed if these education programs are to be

successful in helping patients make positive behavioral changes. This project

implemented shared medical appointments to provide DSME, address barriers to goal

attainment, and encourage healthy behavior changes including healthy eating, being

active, taking medication, monitoring blood glucose, problem solving, healthy coping,

and reducing risks as outlined by the American Association of Diabetes Educators

(AADE; Mulcahy et al, 2003). Through use of DSME, these behavior changes, AADE7

(AADE, 2017), and the barriers to goal attainment were addressed. The group process

was used during these appointments to allow patients to brainstorm ideas to overcome

barriers and support patient individually setting goals. Initial and final self-efficacy

scores and HbA1Cs were compared to determine if there was an improvement using this

intervention. Both self-efficacy scores and HgA1Cs had statistically significant

improvements with implementation of the project. Barriers identified were perceived as

less following the project. This project provided a new strategy for approaching diabetes education and management. Outcomes from this project supported the continued use of shared medical appointments to provide DSME and development of a template for providers and/or care managers to use for patient education and management.

ACKNOWLEDGEMENTS

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS

AADE   American Association of Diabetic Educators

APN   Advanced Practice Nurse

AACN   American Association of Colleges of Nursing

CBOC   Community Based Outpatient Clinic

CDC   Centers for Disease Control

CDE   Certified Diabetic Educators

DNP   Doctor of Nursing Practice

DSME   Diabetes Self-Management Education

HIPAA   Health Insurance Portability and Accountability

IRB   Institutional Review Board

NCCMT   National Collaborating Centre for Methods and Tools

NIDDK   National Institute of Diabetes and Digestive and Kidney

PACT   Patient Aligned Care Team

SMA   Shared Medical Appointments

SMART   Specific, Measurable, Attainable, Realistic, Timely

T2DM   Type 2 diabetes mellitus

VA   Veterans Administration

CHAPTER I

INTRODUCTION

Type 2 diabetes mellitus (T2DM) is a chronic disease that has reached epidemic proportions worldwide and is a leading cause of death in the United States. Despite a significant risk to morbidity and mortality, the most effective diabetes treatment is still unclear. The costs are staggering for this disease that can be, in many cases, prevented or managed through diabetes self-management and positive lifestyle changes. Implementation of diabetes self-management education (DSME) programs is one method to address the educational needs of patients with T2DM. Barriers to goal attainment need to be more fully addressed if these education programs are to be successful in helping patients make positive behavioral changes. Advanced practice nurses (APNs) can address these barriers to goal attainment and promote self-management behaviors through DSME. Shared medical appointments can be used to accomplish these objectives in a practice setting.

The purpose of this capstone project was to implement shared medical appointments to provide DSME, address barriers to goal attainment, and encourage healthy behavior changes including healthy eating, being active, taking medication, monitoring blood glucose, problem solving, healthy coping, and reducing risks as outlined by the AADE by the AADE Outcomes Project (Mulcahy et al., 2003). Through

use of DSME, these behavior changes, AADE7 (AADE, 2017), and the barriers to goal attainment were addressed.

Background and Significance

Type 2 diabetes mellitus is a chronic disease that has reached epidemic proportions worldwide. In 2014, the Centers for Disease Control and Prevention (CDC; 2014) reported an estimated 29.1 million people or 9.3% of the total population of the United States have Type 2 diabetes. This includes 21.0 million who have been diagnosed and 8.1 million or 27.8% undiagnosed (CDC, 2014). Diabetes is currently the seventh leading cause of death in the United States but is believed to be underreported as the cause of death and a contributing factor in many more deaths. Diabetes is a major cause of heart disease, stroke, blindness, and the primary cause of end-stage renal disease and non-traumatic amputations. Total estimated costs of diabetes in the United States in 2012 were $245 billion (CDC, 2014). This included $176 billion in direct costs such as hospital stays, medications, and diabetic supplies and $69 billion in indirect costs such as lost work, disability, or premature death (CDC 2014).

Barriers to Goal Attainment

While many providers provide appropriate medical care for patients with diabetes, many patients still fail to reach diabetic goals, which could lower their risk for diabetes complications. One such goal is glycemic control, which is measured by blood glucose measurement and the hemoglobin HbA1C. The American Diabetes Association (ADA; 2014) proposed a goal for HbA1C < 7.0:

> Less stringent A1C goals (such as <8%) may be appropriate for patients with a history of severe hypoglycemia, limited life expectancy, advanced microvascular or macrovascular complications, and extensive comorbid conditions and in those with long-standing diabetes in whom the general goal is difficult to attain despite

DSME, appropriate glucose monitoring, and effective doses of multiple glucose-lowering agents including insulin. (Recommendations, para. 2)

The U.S. Department of Health and Human Services (2012) noted, "When tested, significant numbers of patients are in poor control with HbA1c values of 9 percent or greater: 29.6 percent of commercial populations, 27.3 percent for Medicare, and 48.7 percent of Medicaid populations" (p. 1). Other goals promoted by the ADA (2016) included achieving a healthy weight (BMI < 27 kg/m^2), control of hypertension (BP < 140/90) and hyperlipidemia (LDL-C $\geq$ 100 mg/dL), increased physical activitiy ($\geq$ 150 min/wk moderate-intensity aerobic activity (50%-70% max heart rate), spread over $\geq$3 days/wk), smoking cessation, and identification/management of risk factors of chronic renal disease, retinopathy, and neuropathy.

Barriers to diabetes self-management behaviors and goal achievement have been identified in the literature. Barriers are physical or psychosocial factors that impede self-management of diabetes including limited self-efficacy, cost of treatment, cultural beliefs, low family support, difficulties with problem solving, lack of knowledge, lack of motivation, dietary issues (easy availability of inexpensive foods high in fat and calories, lack of knowledge about healthy food choices, being hungry, food cravings), and sedentary occupations and recreational activities. Self-efficacy is the individual's confidence in his/her ability to perform certain health behaviors. Self-efficacy has also been associated with self-management behaviors (Glasgow, Toobert, & Gillette, 2001; King et al., 2010; Sarkar, Fisher, & Schillinger, 2006). Glasgow et al. (2001) identified low levels of family support, fear of hypoglycemia, depression, and diabetes-related stress as barriers. King et al. (2010) noted problem solving and social-environmental support as impacting self-management. Additional studies have examined barriers to

medication adherence. Al-Qazaz et al. (2011) found an association between knowledge and medication adherence while Bailey et al. (2012) found cost, no refills, poor health status, and transportation were barriers to medication adherence. Barriers to appropriate dietary behaviors have been identified as "stress causing over-eating or unhealthy food choices, difficulty resisting the temptation to eat unhealthy food, and healthy food being too expensive" (Marcy, Britton, & Harrison, 2011, Conclusions.)

Veterans with Diabetes

The U.S. Department of Veterans Affairs (VA; 2015) noted that close to 25% of VA patients have diabetes, which is much higher than the 9% of all Americans who have diabetes: "Many Veterans of all ages are at risk for diabetes because of the high rate of obesity and those who are overweight, estimated at over 70 percent of Veterans receiving VA care" (p. 1). The VA patient also tends to be older, has lower incomes, and has limited access to high-quality, healthy food--social disparities that can lead to a greater diabetes risk (Wahowiak, 2014). Veterans with Type 2 diabetes mellitus who were exposed to herbicides (Agent Orange) during service might be eligible for disability compensation and health care. This has increased the number of veterans (Vietnam Era) who seek care in the VA healthcare system.

<div align="center">

Literature Review

</div>

Type 2 diabetes is the most prevalent form of diabetes.

> Type 2 diabetes is caused by a combination of factors, including insulin resistance, a condition in which the body's muscle, fat, and liver cells do not use insulin effectively. Type 2 diabetes develops when the body can no longer produce enough insulin to compensate for the impaired ability to use insulin. (National Institute of Diabetes and Digestive and Kidney Diseases [NIDDK], 2016, p. 1)

The HbA1C test is used to detect Type 2 diabetes and prediabetes. The HbA1C test is a blood test that reflects the average of a person's blood glucose levels over the past three months and does not show daily fluctuations. The NIDDK (2016) stated a normal HbA1C level is below 5.7%, an HbA1C of 5.7 to 6.4% indicates prediabetes, and a level of 6.5% or above means a person has diabetes.

Healthy People 2020

Healthy People 2020 (2017) determined several goals with regard to diabetes management: reduced mortality and morbidity from diabetes, improved risk reduction, improved glucose monitoring, and improved glycemic control. They also addressed identifying and decreasing risks in patients with prediabetes. One of their goals was to "increase the proportion of persons diagnosed with diabetes who receive formal diabetes education" (Healthy People 2020, 2017, p. 2)

Prevention of Type 2 Diabetes
Complications

The risk of complications of diabetes including microvascular complications of the eyes, kidneys, and nervous system and cardiovascular diseases increases with poor diabetes control. Improved diabetes control can decrease risk of complications. The CDC (2011) noted that in general, "Every percentage point drop in HbA1C can reduce the risk of microvascular complications (eye, kidney, and nerve diseases) by 40" (p. 10). The risk of cardiovascular disease (heart disease or stroke) among people with diabetes can be reduced by 33% to 50% and the risk of microvascular complications (eye, kidney, and nerve diseases) can be reduced by approximately 33% with blood pressure control (CDC, 2011). The risk for any complication related to diabetes is reduced by 12% for every 10 mmHg reduction in systolic blood pressure (CDC, 2011). "Reducing diastolic

blood pressure from 90 mmHg to 80 mmHg in people with diabetes reduces the risk of

major cardiovascular events by 50%" (CDC, 2011, p.10). Cardiovascular complications

could be decreased by 20% to 50% with improved control of LDL cholesterol. Severe

vision loss could be reduced by an estimated 50% to 60% through detection and

treatment with laser therapy. Comprehensive foot care programs could reduce

amputation rates by 45% to 85% (CDC, 2011). A decline in kidney function could be

reduced by 30% to 70% by detecting and treating early diabetic kidney disease by

lowering blood pressure. Implementing healthy lifestyle changes could reduce the risk for

developing complications of diabetes (CDC, 2011).

Diabetes Self-Management

In 2003, the American Association of Diabetes Educators "adopted behavior

change as the outcome of diabetes self-management education (DSME)" (Mulcahy et al.,

2003, p. 768). The AADE7 (AADE, 2017) was developed that included seven diabetes

self-care behaviors felt to be critical in diabetes self-management: being active, healthy

eating, medication taking, monitoring of blood glucose, problem solving (especially for

blood glucose), reducing risk of diabetes complications, and living with diabetes

(psychosocial adaptation; Mulcahy et al., 2003).

> As the science of diabetes self-management education evolved, it became widely
> accepted that the primary goal of diabetes education is to provide knowledge and
> skills training, help individuals identify barriers, and facilitate problem-solving
> and coping skills to achieve effective self-care behaviors. (Mulcahy et al., 2003,
> p. 770)

Funnell and Anderson (2004) noted, "Despite great strides that have been made in

the treatment of diabetes in recent years, many patients do not achieve optimal outcomes

and still experience devastating complications that result in a decreased length and

quality of life" (p. 123). In today's managed care environment, time constraints and reimbursement constraints often limit the amount of time providers can spend in diabetes education and treatment. Third party payers are increasingly demanding proof of better outcomes for patients. Traditional medical models of care have not been effective in this challenging healthcare environment, which places greater and greater emphasis on self-management of diabetes as well as other chronic medical conditions in the hands of the patients. It is increasingly important to provide the appropriate support to empower patients to manage their diabetes. "Empowerment is defined as helping patients discover and develop the inherent capacity to be responsible for one's own life" (Funnell & Anderson, 2004, p. 124). Heisler, Bouknight, Hayward, Smith, and Kerr (2002) found improved outcomes with improved self-management using patient-provider interaction models. Warsi, Wang, LaValley, Aorn, and Solomon (2004) and Norris, Engelgau, and Narayan (2001) in a review of research on self-management programs conducted from 1980-1999 also noted mild to moderate improvement of outcome criteria with diabetes self-management with regard to HbA1C.

Shared Medical Appointments

The concept of shared medical appointments (SMA) has existed for many years; however, in attempts to lower costs and improve access to care, they are again becoming more popular.

> The premise for SMAs is to provide the educational part of a medical appointment once, with a large group of patients, instead of repeating the same material on a one-on-one basis; providing an opportunity to manage chronic illness, improve quality, and facilitate patient self-efficacy and self-management. (Sanchez, 2011, p. 383)

Jaber, Braksmajer, and Trilling (2006) and Davis, Sawyer, and Vinci (2008) noted

improved patient and physician satisfaction, improved quality of care, and decreased

health care utilization with the use of SMAs. Collaborative goal setting is a valuable tool

for improving self-management skills among patients with diabetes (Langford, Sawyer,

Gioimo, Brownson, & O'Toole, 2008).

Theoretical Frameworks

Chronic Care Model

Wagner (1998) developed the chronic care model to examine the complex needs

of patients with chronic illnesses whose needs were not being met with traditional

medical care (see Figure 1). Sanchez (2011) noted this model was developed to address

three main issues in managing patients with chronic illnesses: (a) primary care is

designed to be reactive rather than proactive in managing acute rather than chronic

disease; (b) patients often need but do not receive self-management education to assist in

management of chronic conditions; and (c) because of time constraints, providers are not

able to educate patients and coordinate care with patients with chronic illnesses. This

model presumes active interactions between the primary care team and the patient. This

process is supported by both community and health systems.

"This model is based on three fundamental aspects of chronic illness care:

choices, control, and consequences" (Funnell & Anderson, 2004, p. 124). Choices refer

to those choices patients make every day with regard to their diabetes care. Control is the

concept that patients are ultimately in charge of self-management behaviors they adopt.

Consequences refer to the short- and long-term outcomes of decisions made. Patients

have the right and the responsibility to manage their diabetes. It is the role of the

provider to empower the patient to make educated and appropriate decisions with regard

to their lifestyle and healthcare goals--whether or not they actually do so. This is done

through "education, appropriate care recommendations, expert advice, and support"

(Funnell & Anderson, 2004, p. 125). It is the role of the patient to be an active

participant in his/her own care. Diabetes care is collaboration between the provider and

the patient, and is designed to promote informed decision-making and effective self-

management.
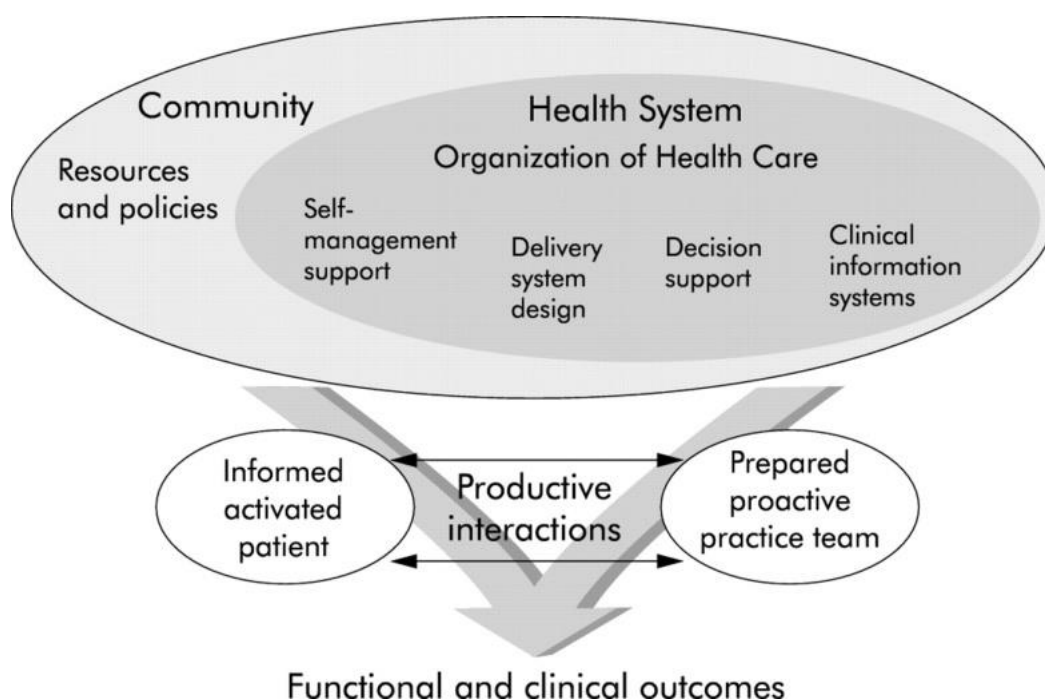
Figure 1. Chronic care model (Wagner, 1998).

Diabetes self-management education is the basis of the chronic care model

empowerment approach. "The purpose of patient education within the empowerment

philosophy is to help patients make decisions about their care and obtain clarity about

their goals, values, and motivations" (Funnell & Anderson, 2004, p. 125). It is important

to recognize not all patients will know how to make changes in their behaviors or how to problem solve, especially with regard to diabetes. Many patients are used to traditional medical models and are hesitant to accept responsibility for their own care. Education might need to focus on problem solving, taking into account the individual's economic, psychosocial, and cultural needs and barriers.

Using a randomized control trial, Piatt, Orchard, Emerson, and Simmons (2006) determined that using the chronic care model to guide practice in an underserved community resulted in improved clinical and behavioral outcomes in people with diabetes. They noted marked declines in HbA1C and non-HDL cholesterol and improvement in HDL cholesterol, diabetes knowledge scores, and empowerment scores. Nutting et al. (2007) evaluated the use of the chronic care model in 30 primary care practices (90 clinicians including physicians, nurse practitioners, and physician assistants) and noted lower HbA1C values and a decrease in the total to HDL ratios.

Stetler Model

"The Stetler model of research utilization helps practitioners assess how research findings and other relevant evidence can be applied in practice" (National Collaborating Centre for Methods and Tools [NCCMT], 2011, p. 1). This model can be used by providers as a critical thinking tool as well as a tool to create change within organizations by providing a link between research and evidence-informed practice. The Stetler model includes five phases; each is designed to "facilitate critical thinking about the practical application of research findings, result in the use of evidence in the context of daily practice, and mitigate some of the human errors made in decision making" (NCCMT,

2011, p. 1). These phases are a progression of critical-thinking steps to assist in the successful use of research findings.

There are several key assumptions in the Stetler (2001) model. First, "the formal organization may or may not be involved in an individual's utilization of research" (Stetler, 2001, p. 274). The VA has a guiding principle of practicing evidence-based medicine. This is represented in many areas within the VA; however, variations amongst providers still exist. Second, "utilization may be instrumental, conceptual, and/or symbolic" (Stetler, 2001, p. 274). This capstone project was designed to utilize research through direct application of knowledge. Third, "other types of evidence and/or non research-related information are likely to be combined with research findings to facilitate decision-making or problem-solving" (Stetler, 2001, p. 274). This project utilized information from diabetes experts providing care with research-based guidelines developed by the American Association of Diabetic Educators (AADE; 2017). Fourth, "Internal and external factors can influence an individual's or group's view and use of evidence" (Stetler, 2001, p. 274). This project considered external evidence such as systematic reviews and consensus of national experts as well as internal evidence such as local consensus from clinical experts. Fifth, "Research and evaluation provide us the probabilistic information, not absolutes" (Stetler, 2001, p. 274). While practice guidelines are established to provide consistency of care between different individuals, each individual's preferences and needs must be addressed. In this project, participants identified individual barriers to accomplishing goals, discussed ways they could overcome these, and developed individual goals. Finally, "Lack of knowledge and skills pertaining to research utilization and evidence-based practice can inhibit appropriate and

effective use" (Stetler, 2001, p. 274). Because research is complex in nature, a model that provides a framework for research utilization is important. This capstone project utilized aspects of the Stetler model to provide structure when considering implementing evidence-based research.

The Stetler (2001) model has five phases (see Figure 2). Phase I--Preparation allows the user to identify internal and external forces that might influence the use of research findings and seek support from stakeholders. Phase II--Validation emphasizes the need to "perform utilization-focused critique and synopsis" of available research (Stetler, 2001, p. 276). Phase III--Comparative Evaluation/Decision Making stresses the need to determine if, through comparison of available research findings, the evidence would be an appropriate fit for the current clinical setting. Phase IV--Translation/ Application focuses on how to implement the research findings. Phase V--Evaluation focuses on evaluation of outcomes from implementing the research.
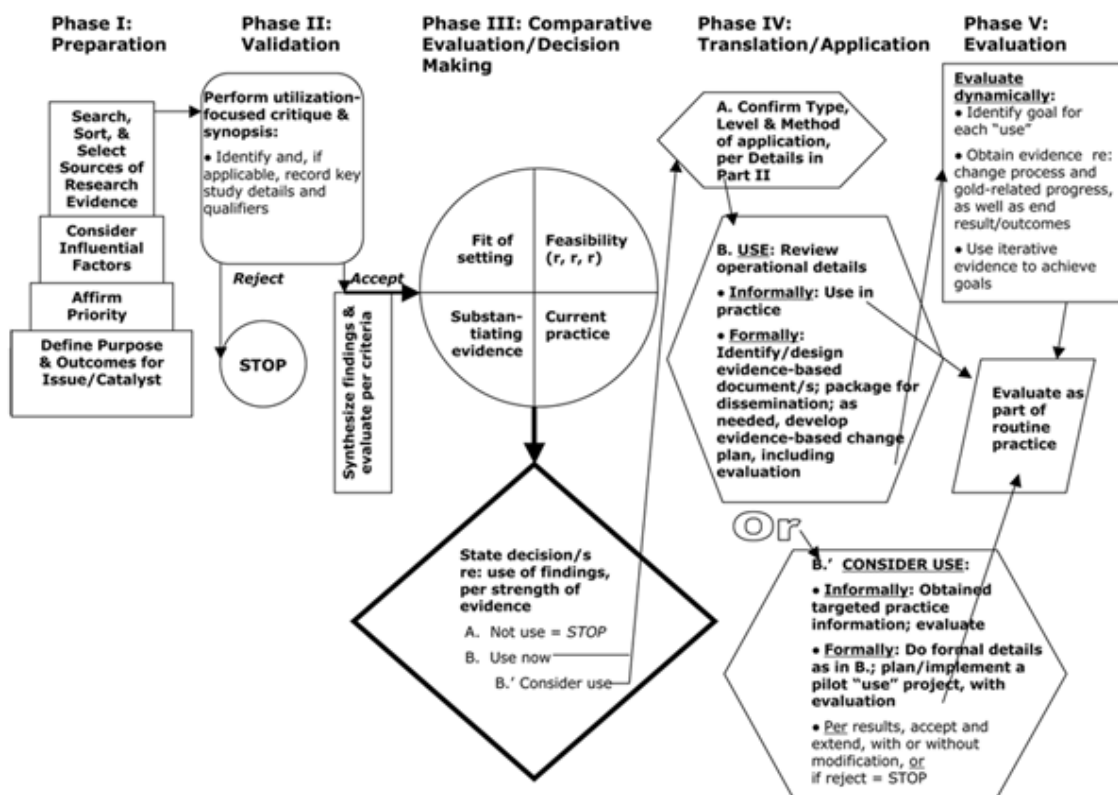
Figure 2. The Stetler model.

Problem Statement

Type 2 diabetes mellitus is a chronic disease that is a leading cause of morbidity and mortality in the United States. Through DSME and positive lifestyle changes, diabetes can be controlled and complications limited or avoided. Implementation of DSME programs is one method to address the educational needs of patients with T2DM. Barriers to goal attainment need to be more fully addressed if these education programs are to be successful in helping patients make positive behavioral changes. Advanced practice nurses can address these barriers to goal attainment and promote self-

management behaviors through DSME using shared medical appointments to accomplish these objectives in a practice setting.

Population, Intervention, Comparison, and Outcome Question

The origin of this capstone project came from the desire to improve diabetes goal attainment and decreased risk for diabetes complications in veteran patients diagnosed with Type 2 diabetes. Thus evolved the PICO question: In veteran patients with Type 2 diabetes, what is the effect of self-management education and the identification of barriers to goal attainment, utilizing shared medical appointments, on goal attainment in Type 2 diabetes (represented by HbA1C) and achievement of goals developed in the goal setting portion of DSME?

- P: The population was Veteran patients 18 years and older with Type 2 diabetes.

- I: The intervention was the use of shared medical appointments to implement a DSME. This program focused on the use of the AADE7 behaviors of self-management. Barriers to goal attainment were assessed and incorporated into goal setting within the DSME program.

- C: Comparison data were the patients' HbA1Cs prior to the intervention. Chart reviews were utilized before the intervention. Self-efficacy scores were measured at the first visit.

- O: The outcome measurement was the achievement of goals set during the educational process and post-intervention HbA1Cs. Chart reviews were utilized after the intervention. Self-efficacy scores were re-assessed at the

last visit and compared to the original scores. Barriers to goal attainment were assessed at the last visit to determine if these were less significant following the intervention.

CHAPTER II

PROJECT DESCRIPTION

Project Objectives

The goal for this capstone project was to use DSME in shared medical

appointments to promote behavior changes for patients with Type 2 diabetes and evaluate

barriers to behavior changes and goal attainment in Type 2 diabetes including healthy

eating, being active, taking medication, monitoring blood glucose, problem solving,

healthy coping, and reducing risks (Mulcahy et al., 2003).

Evidence-Based Project /Intervention Plan

This project had three phases: (a) Gathering of preliminary information and

soliciting organizational support, (b) development of the clinical guidelines for the shared

medical appointments, and (c) conducting the planned intervention.

The first phase was the gathering of preliminary information and soliciting

organizational support. This phase included gathering information about the need for the

project including the number of patients not meeting goals using traditional methods and

congruence of this project with goals established through the patient aligned care teams

(PACT) model (U.S. Department of Veterans Affairs, 2016). Meetings occurred with the

VA Center Medical Director and key endocrinologists and diabetic educators to get

shareholder support for the project. Also, these individuals were surveyed regarding best

practice guidelines that would need to be included. Any gaps these individuals noted in

current practices were discussed. This phase also included Institutional Review Board

(IRB) approvals, approval through the VA Research and Development Committee, and

Memorandum of Understanding for use of the Ogden Community Based Outpatient

Clinic (CBOC). Institutional Review Board approval was first sought from the

University of Utah IRB (required because of VA affiliations with the University of Utah

and the Salt Lake City Veterans Affairs Medical Center). Once this was achieved, the

VA Research and Development Committee approved the project (see Appendix A).

Institutional Review Board approval was then acquired from the University of Northern

Colorado; this included development of the Memorandum of Understanding for use of

the Ogden CBOC (see Appendix B).

The second phase of the project was the development of clinical guidelines for

shared medical appointments for DSME. These guidelines were developed utilizing

guidelines established by the AADE and in alignment with their diabetes self-

management education core outcomes measures (Mulcahy et al., 2003). A curriculum

was established that could be utilized in future implementation, if desired, throughout

primary care.

The third phase of the project was implementation of the project/intervention.

Participants were selected from a group of patients at the Ogden VA Community Based

Outpatient Clinic (CBOC). Patients at highest risk were selected including patients over

the age of 21 years with Type 2 diabetes and an HgA1C of > 9. Patient demographic data

were retrieved from patients' records. Patients were asked to participate in the pilot

program designed to provide a comprehensive diabetes education experience in a group

setting. Once patients agreed to participate and consented (see Appendix C), they were

scheduled for four separate shared medical appointments. An HbA1C was drawn at the

first appointment to act as a baseline measure. This project consisted of four patient

shared medical appointments conducted at the Ogden, Utah VA CBOC. Content for each

appointment was determined using the AADE core outcome measures as a guide

(Mulcahy et al., 2003). Each of the appointments was two hours in length. The first

appointment discussed healthy eating and being active. The second addressed taking

medication and monitoring blood glucose. The third discussed problem solving, healthy

coping, and reducing risks. The first three appointments were held at weekly intervals.

At each of these appointments, the primary topics were presented. The patients were

surveyed to determine what they considered the primary barriers to making behavior

changes for each topic (see Appendix D). Group discussion of these barriers and ways to

resolve these barriers occurred. Patients were asked to set one goal with regard to each of

the topics at the end of the appointment. At the beginning of the second through fourth

appointments, the patients were asked whether they were able to achieve the goals set in

previous appointments and what, if anything, hampered their achieving the goals. The

fourth appointment was held four weeks following the third appointment and focused on

whether patients had achieved and maintained their goals. Group discussion focused on

why some goals were met and others were not met. Group problem solving and support

for goals was also a focus. Barriers to change were assessed to determine if the patients

still considered the same barriers to exist. At the first and then fourth appointments,

patients were asked to complete an eight-question diabetes self-efficacy survey (see

Appendix E). This was to see if there was any change in patients' perceptions of self-

efficacy following the program. Patients had their HbA1C drawn two weeks following

the last appointment. During the intervening weeks between the first and fourth

appointments, patients were contacted by the investigator to discuss how they are doing

and if they required any further assistance or had any other questions from the classes.

Completed surveys were kept confidential in a locked drawer until the time of data

analysis and only the investigator had access to the collected data. Project findings were

shared with the organizational leadership and capstone committee members.

<div align="center">**Congruence of Organization's Strategic Plan to Project**</div>

Wahowiak (2014) noted the most important mission of the VA is patient care.

The VA (U.S. Department of Veterans Affairs, 2016) stressed certain core values

including excellence and defined as to "strive for the highest quality and continuous

improvement" (p. 2). Beginning in 2009, the Department of Veterans Affairs (2016)

adopted the PACT model

> as the cornerstone of the New Models of Care transformation initiative intended
> to transform the way Veterans receive their care. [It is a] patient-driven,
> proactive, personalized, team-based care oriented toward wellness and disease
> prevention, resulting in improvements in veteran satisfaction, improved healthcare
> outcomes, and costs. The PACT model is built on the well-known concept of the
> patient-centered medical home staffed by high-functioning teams. (p. 1)

One of the elements of the PACT model is use of shared medical appointments. This has

been developed to improve patient access to care. No specific guidelines have been

developed outlining what must be included in these appointments; however, providers are

encouraged to design and implement them.

The VA in Salt Lake City, Utah, and its affiliated CBOCs, currently provide

diabetes education through three methods

1. A two-hour course including an introduction to diabetes that covers what diabetes is, risks associated with diabetes, ways to decrease these risks, and nutrition associated with diabetes.

2. A four-week course covering the same information as the two-hour course.

3. One-on-one diabetes education provided by a certified diabetic educator (CDE). Nutritional support can also be received from registered dietitians.

During these courses, there is no explicit discussion of barriers to changing behaviors designed into the programs. During one-on-one appointments with dietitians and CDEs, barriers to goal achievement might be addressed but this is very individual to the patient and the provider. Likewise, differing levels of diabetes education are provided by medical and nursing staff. Most providers provide at least basic information regarding diabetes to their patients; however, no set guidelines are established with regard to what is expected to be included in this information. Barrier identification, as with information provided, varies amongst providers. The VA (U.S. Department of Veterans Affairs, 2016) uses Reed's (2011) "Living Well with Diabetes: Guide for Patients and Families" as a resource for diabetes education. The patient and family health education program also provides handouts on such topics as exercise and healthy eating as well as follows ADA (2016) nutritional guidelines and standards for medical care in diabetes. "Veterans of all ages are at risk for diabetes because of the high rate of obesity and those who are overweight, estimated at over 70 percent of Veterans receiving VA care" (U.S. Department of Veterans Affairs, 2016, p. 1). Thus, an additional resource within the VA system is the MOVE weight management program. This program focuses on health and wellness through healthy eating, physical activity, and behavior change. The MOVE

program, though not diabetes specific, addresses many of the same issues within the

AADE7 (AADE, 2017) program.

Because of its commitment to excellence and quality patient care, this capstone

project was closely aligned with the mission and strategic plan of the VA. The VA has as

additional goals the training of health professionals and continued health research. This

project was also in congruence with these goals. Since its adoption of the PACT model,

patient-focused care has been of primary concern within the VA. This program is

designed to reinforce patient self-management of Type 2 diabetes. Previous research has

shown the value of these programs in improving patient outcomes. Shared medical

appointments have also been shown to be valuable and a cost-effective method of

providing patient care. Shared medical appointments are appointments where more than

one patient (usually three to six patients) are seen together in an appointment. At these

appointments, some general information is shared with the group (such as information on

diabetic diets) and discussed. Generally, there is a portion of the appointment where

patients are able to ask specific questions regarding their own care (generally in a

confidential setting). Plans of care are individualized to each patient.

<div align="center">**Resources**</div>

The primary personnel involved in this project were the investigator, a primary

care provider in the Ogden CBOC, the nurse case manager and LPN assigned to the

PACT team, the nutrition specialist at the Ogden CBOC (either as a consultant or

participant in the nutritional education), and the Clinical Pharmacist at the Ogden CBOC

(either as a consultant or participant in the medication related education). Cost of any

handouts and other classroom supplies were borne by the investigator during the project.

CHAPTER III

EVALUATION PLAN

Objectives

The first objective was to assess the effect the intervention had on barriers to goal attainment. Barriers to behavior change/goals were assessed at the beginning of each appointment through a survey method. At the final appointment, patients were surveyed again to see if they still identified the same barriers with an additional question as to whether the barrier was more of a barrier, the same, or less of a barrier following the intervention.

The second objective was to assess the effect of the intervention on goal setting and achievement. Patients were asked to set goals at each of the shared medical appointments. The patient kept a copy of these goals. At the final appointments, patients were asked to indicate if they were able to implement the goals and if they were continuing to implement them. These goals center on the behavior changes as outlined in the AADE7 (AADE, 2017).

The third objective was to assess patient self-efficacy and determine if there was any change in the self-efficacy with the intervention. The patients completed a diabetes self-efficacy survey on the initial visit. This survey was completed again on the final visit.

The fourth objective was to assess the effect of the intervention on the objective measure of HbA1C. The HbA1C was measured at the first visit and 2.5 months from that date to assess for any association with completion of the intervention.

Evidence-Based Measures

Mulcahy et al. (2003) noted,

> One of the goals of diabetes education is to improve overall health status by empowering the person with diabetes to acquire knowledge, acquire skills, develop confidence to perform appropriate self-care behaviors, and develop the problem-solving and coping skills to overcome any barriers to self-care behavior" (p. 774).

To overcome barriers, they need to be identified. Each of the AADE diabetes education core outcomes measures for diabetes self-management has specific barriers that have been identified through research as those primarily affecting completion of that behavior change. These were presented in a survey form to the patients prior to the appointment when that outcome was being addressed.

Goal setting is one of the key components in the chronic care model (Wagner, 1998). Collaborative goal setting might be used as a tool to improve diabetes self-management. Langford et al. (2008) noted that "the process of goal setting increases patients' self-efficacy as they become active participants in their care and improve their self-management skills" (p. 140S). Goal setting can help patients take ownership and accountability for their own health. Goal setting also helps patients problem solve and address barriers to goal achievement. "The key to successful goal setting is supporting patients to become active participants in their health by encouraging dialogue and questions, exploring values and stressors, and celebrating successes" (Langford et al., 2008, p.143S). Shared medical appointments in this project were designed to allow for

discussion in the group and with the investigator. This group process allowed patients to not only provide support for each other but allowed for group interaction and problem solving.

"The level of self-management patients can maintain daily depends largely on their perception of their ability to perform activities with an expected outcome--their self-efficacy" (Krichbaum, Aarestad, & Buethe, 2003, p. 658). "The theory of self-efficacy proposes that patients' confidence in their ability to perform health behaviors influences which behaviors they will engage in" (Sarkar et al, 2006, p. 823). Sarkar et al. (2006) found an "association between increasing self-efficacy scores and self-management with regard to diet, exercise, blood glucose monitoring, and foot care" (p. 826). One of the primary components of the chronic care model (Wagner, 1998) is patient empowerment. Through this process, patients' self-efficacy can improve as they learn to take control over their lives. The diabetes self-efficacy scale was used to assess self-efficacy.

The HbA1C is a primary tool for measuring diabetes control and determining overall risk for complication of diabetes. It has become the standard assay for glycemic control management and monitoring. Healthy People 2020 (2017) has as one of its goals improved glycemic control among persons with diabetes by reducing the proportion of persons with diabetes with an HbA1C greater than 9% and increasing the proportion of the diabetic population with HgA1C values less than 7%. This measure has also been endorsed by the Diabetes Quality Improvement Project as a key quality performance measure for healthcare organizations (Fleming et al., 2001).

Evidence-Based Measures/Instruments

The AADE (Mulcahy et al., 2003) diabetes education core outcomes measures for diabetes self-management have specific barriers that have been identified through research as those primarily affecting completion of each of seven key behavior changes. These were presented in a survey form to the patients prior to the appointment when that outcome was addressed. An additional "other" was also be presented to patients to identify less common barriers to care.

Goal setting was evaluated essentially as whether the patient set a goal and did he/she achieve that goal. Patients were assisted in setting realistic and measurable goals. At each appointment following when the goal was set, patients were asked if they had been able to achieve the goal. If they did, they were encouraged to continue with the behavior change. If they did not, they were asked to continue to work on achieving the goal. There was time during the appointment to group problem solve to help support patients in achieving and maintaining goals. Follow-up at the fourth shared appointment was to assess whether patients were able to achieve the goals set. The goal was behavior change. An example of a goal would be that a patient was going to reduce portion sizes at meals, to recommend portions, or to halve their current portion. The patients in follow-up were asked if they were able to achieve this and there was time to discuss barriers to these goals.

The diabetes self-efficacy scale was used to assess self-efficacy. Caro-Bautista, Martin-Santos, and Morales-Asencio (2013) noted this tool has high validity and reliability. In discussing content validity, it was noted the reading ease score was 82.9%, internal consistency was noted to have a Cronbach's alpha = 0.89, and the test-retest was

given as $r = 0.77$. The HbA1C has become the standard assay for glycemic control management and monitoring.

Method of Analysis

Barriers to change were assessed using descriptive statistics. The most commonly identified barriers were each given a percent occurrence. This was done at the initial visit introducing the topic and again at the fourth visit to determine if a change in the barriers was identified. Patients were also asked if the barrier was more of a barrier, the same, or less of a barrier following the intervention. Each was documented as a percentage. Goals were assessed using descriptive statistics that noted if goals were achieved and maintained at the one-month point.

Self-efficacy was assessed and scored at the beginning of the intervention and at the fourth appointment. The scores were averaged and any difference reported. Statistical significance of the change following the intervention was reported using t-testing. Each individual had a reported score and the change for each individual was noted. Scatter plots were used to determine if there was an association between the HbA1C and self-efficacy scores.

An HbA1C was recorded at the beginning and two months following the beginning of the intervention. Changes in HbA1C were reported as an absolute change in the HbA1C as well as whether there was a statistically significant change using t-testing. Changes in HbA1C were also compared to self-efficacy scores. Scatter plots were used to determine if there was an association between HbA1C and self-efficacy scores.

CHAPTER IV

RESULTS

Type 2 diabetes mellitus (T2DM) is a chronic disease and a leading cause of morbidity and mortality in the United States. Through diabetes self-management and positive lifestyle changes, diabetes can be controlled and complications limited or avoided. Implementation of diabetes self-management education (DSME) programs is one method to address the educational needs of patients with T2DM. Barriers to goal attainment need to be more fully addressed if these education programs are to be successful in helping patients make positive behavioral changes. Advanced practice nurses (APNs) could address these barriers to goal attainment and promote self-management behaviors through DSME using shared medical appointments to accomplish these objectives in a practice setting. The purpose of this capstone project was to implement shared medical appointments to provide DSME, address barriers to goal attainment, and encourage healthy behavior changes.

Criteria for inclusion in this project included patients over the age of 21with Type 2 diabetes and an HgA1C of > 9. The CDC (2011) noted, "Every percentage point drop in HbA1C can reduce the risk of microvascular complications (eye, kidney, and nerve diseases) by 40%" (p. 10). While the concepts addressed in this project could be used with diabetics regardless of baseline HgA1Cs, participants in this group by virtue of

elevated HgA1C of > 9 were chosen because of a higher risk for complications if their diabetes blood glucose control was not achieved.

During this project, the following multiple objectives were measured:

1. Determined what barriers participants identified as those interfering with achieving self-care behavior change objectives as outlined by the AADE (Mulcahy et al., 2003) including healthy eating, being active, taking medication, monitoring blood glucose, problem solving, healthy coping, and reducing risks.

2. Measured participants' diabetes self-efficacy to determine if the project increased their perception of their ability to manage their diabetes.

3. Determined if, by addressing self-care objectives and goal setting in a group shared medical appointment, there was an improvement in the perception of barriers to achieving goals and self-care objectives.

4. Determined if, by addressing self-care objectives and goal setting in a group shared medical appointment, there was an improvement in the objective measure of HgA1C.

Demographic Data on Participants

This project was based on a small group shared medical appointment format so the size of the group was limited. Initially, six participants were recruited for the project; one dropped out prior to the first appointment and five participants completed the four shared medical appointments. Four males and one female participated in the group. The average age of the participants was 64.8 years (range 57-75 years). The average HgA1C for the group was 11.96 (range 10.7-13.1)

Objective One Outcomes

Barriers to achieving each of the seven behavioral change objectives were

surveyed at the appointment when the objective was addressed. Barriers included in the

survey were those identified by the AADE (Mulcahy et al., 2003). Each barrier was rated

on a 7-point scale with 7 being a significant barrier.

Barriers to Healthy Eating

Barriers surveyed included environmental triggers, emotional, cultural, financial,

and other. Table 1 provides averages for each barrier rating. In discussion, emotional

barriers, which were identified as the greatest barrier, were described as depression

eating, lacking motivation, and feeling less normal because they had diabetes. The

primary environmental trigger identified was problems in resisting unhealthy foods,

especially fast foods, that were readily available. Financial concerns included buying

healthy foods on fixed incomes (belief that unhealthy foods were less expensive).

Table 1

Barriers to Healthy Eating

Barrier	Average Rating
Environmental triggers	3.8
Emotional	3.8
Cultural	4.0
Financial	4.4
Other	2.0

Barriers to Being Active

Barriers to being active included physical limitations, time, environment, fear, and other. Table 2 provides averages of each barrier rating. Two participants identified other, one stated laziness and rated it a 2, and one stated financial and rated it as a 6. During discussion of this topic, physical limitations, although not identified as the highest barrier, was discussed the most. Most participants had health-related limitations in mobility, especially osteoarthritis, obesity, and neuropathy, which significantly limited their ability to be physically active. The group discussed strategies to overcome some of these limitations. Those still working identified time as a difficult barrier to overcome; however, during discussion, they discussed many ways to incorporate exercise into their daily routines. Environment was primarily lack of access to exercise equipment and lack of other family members participating in these activities with them. Fear was identified as a significant issue; primary concerns were making pain-related issues worse and fear of low blood glucose during exercise. *Other* included financial (felt if he could afford a gym membership he would exercise more) and laziness (felt he lacked the internal motivation to want to make change).

Table 2

Barriers to Being Active

Barrier	Average Rating
Physical limitation	3.3
Time	4.0
Environment	2.7
Fear	3.3
Other	0.0

**Barriers to Taking Medications
as Prescribed**

Barriers to taking medications as prescribed included vision or dexterity, financial, fear of needles, cognitive or math skills, embarrassment or other. Table 3 provides averages for each barrier. Most of the participants in the group were service connected for diabetes or at an income level where medications and diabetes supplies were at no cost so this decreased their financial burden. To participate in the project, individuals could not have significant cognitive impairment and most were able to do simple math calculations. Discussion included the availability of free apps for use with smart phones to calculate carbohydrate intake and insulin dosing. Vision and dexterity were discussed as well as options for different insulin delivery systems including insulin pens. Embarrassment primarily focused on participants' concerns with public perceptions of them when using insulin in public. Fear of needles, which rated highest in the group, was described as not liking to take multiple injections a day (all participants

were insulin dependent Type 2 diabetics) rather than actual fear of needles. *Other* was noted twice. The first was described as having problems at times in drawing up insulin and not having any support of family members. The second was neglect of self. Many veterans have comorbid diagnoses of posttraumatic stress disorder and depression. They found it difficult to motivate themselves to change; as one veteran noted having a self-described "I don't really care" attitude.

Table 3

Barriers to Taking Medications as Prescribed

Barrier	Average Rating
Vision or dexterity	3.2
Financial	2.6
Fear of needles	3.6
Cognitive, math skills	2.6
Embarrassment	2.8
Other	1.4

Barriers to Monitoring
Blood Glucose

Barriers to monitoring blood glucose included physical, financial, cognitive, time, inconvenient, emotional, and other. Table 4 provides averages of each barrier rating. In discussion of these barriers, inconvenience and time were combined and participants noted they often did not feel they had the time to stop during their day and check blood

glucose levels. They felt taking their blood glucose meters with them essentially everywhere they went if there was a possibility of needing to monitor before a meal was cumbersome and they often forgot their meters. They discussed strategies including staggered monitoring that would limit the need to always have their monitor and having a second monitor they could leave in their car. Physical limitations were primarily focused on difficulty manipulating the monitor itself. Although identified, financial was later discussed as not a major issue. Cognitive was described as the problem-solving process of what to do with the results and how to determine dosing. Emotional focused mainly on using their meter in public and public perception. One individual did note that remembering to take his insulin was an issue for him as he would often start eating before monitoring.

Table 4

Barriers to Monitoring Blood Glucose

Barriers	Average Rating
Physical	3.2
Financial	2.6
Cognitive	2.6
Time	3.4
Inconvenient	3.6
Emotional	3.0
Other	0.4

Barriers to Problem Solving

Barriers to problem solving included cognitive, financial, coping strategies, emotional, physical, and other. Table 5 provides averages for each barrier. Financial barriers were discussed as primarily cost of keeping medications/foods available to deal with high and low readings. Cognitive was described as basic difficulty remembering what to do when faced with high or low readings. The group discussed keeping a "cheat sheet" (participant comment) they could keep with them with this information. Coping strategies were combined with cognitive strategies. Emotional was discussed as how the individuals felt when faced with high or low readings as if they had done something "wrong." Discussion of the "normalcy" of having low or high blood glucose readings or being faced with eating options that were not ideal ensued and participants came up with multiple solutions. Physical barriers were described as physically not being able to get the food or medications they needed when their blood glucose was low and needing to rely on others.

Table 5

Barriers to Problem Solving

Barrier	Average Rating
Cognitive	2.00
Financial	3.00
Coping strategies	2.50
Emotional	2.25
Physical	2.50
Other	0.40

Barriers to Healthy Coping

Barriers to healthy coping included lack of awareness, financial, lack of support, physical, psychosocial stress, and other. Table 6 provides averages for each barrier. Lack of awareness discussion focused primarily on lack of diabetes education to understand their disease. Financial, which rated highest, was primarily an issue of dealing emotionally with the cost of medications and food that caused a financial burden on themselves or their families. Lack of support focused primarily on not having supportive family members who were interested in helping them manage their diabetes. Physical focused on dealing with the physical limitations of health issues made worse or caused by diabetes. Psychosocial distress was primarily described as just not accepting they had diabetes and that it might limit them in their lives. Discussion focused primarily on not getting "caught up in a pity party" (participant comment) and "taking responsibility of their health" (participant comment) and moving forward.

Table 6

Barriers to Healthy Coping

Barrier	Average Rating
Lack of awareness	2.00
Financial	3.00
Lack of support	2.75
Physical	2.75
Psychosocial distress	2.75
Other	0.00

**Barriers to Reducing Risks of
Complications**

Barriers to reducing risks of complications included financial, time, unawareness of disease process or seriousness, lack of rapport with provider, travel, physical disabilities, and other. Table 7 provides averages for each barrier. Time, travel, and physical disabilities were discussed together. The biggest barrier was not being near a VA facility that provided their care, especially for those living in rural areas, those having transportation problems, or those who worked. Financial was an issue primarily for those who were working and felt they could not afford to take time off. Unawareness of disease process or seriousness was not highly rated; one participant noted they "knew what they should do but were not good at following through" (participant comment). Lack of rapport with provider was described as "being embarrassed when discussing what they were not doing right" (participant comment) when seeing provider to the point where they skipped or delayed appointments.

Table 7

Barriers to Reducing Risks of Complications

Barrier	Average Rating
Financial	2.75
Time	3.75
Unaware of disease process or seriousness	2.0
Lack of rapport with provider	2.0
Travel	3.75
Physical disabilities	2.75
Other	0.00

Objective Two Outcomes

The second objective for this project was measuring participants' diabetes self-efficacy to determine if the project increased their perception of their ability to manage their diabetes. Each participant was asked to complete a standard diabetes self-efficacy scale at the first and fourth appointments. Scores were tallied and can be seen in Table 8. Difference in scores was calculated and average for the group and difference in group average was also calculated. Statistical significance of this data was also calculated. A statistically significant improvement was seen in self-efficacy scores pre- and post-project: p value of 0.05, the $t = 2.14$. ($df = 8$, variance = 8.66).

Table 8

Diabetes Self-Efficacy Scale *Results*

Participant	Pre-Project Score	Post-Project Score	Difference
1	42	50	8
2	43	61	18
3	13	40	27
4	41	60	19
5	52	73	21
Average	38.3	56.8	18.5

Objective Three Outcomes

Objective three was to determine if, by addressing self-care objectives and goal setting in a group shared medical appointment, there was an improvement in the perception of barriers to achieving goals and self-care objectives. For this objective, the original barriers to self-care objectives were discussed and as a group the participants were asked whether their perception of the barriers had increased, decreased, or stayed the same (see Table 9 for results). Overall, participants stated that participation in group appointments helped their understanding of diabetes and the importance of active participation in self-care activities. They noted the group process helped them develop new strategies to address barriers to achieving goals. None of the participants felt they had achieved their goals completely; however, all participants felt they had achieved progress toward accomplishing their goals to varying degrees. They felt developing specific, measurable, attainable, realistic, and timely (SMART) goals and writing these down helped them hold themselves accountable for making changes and taking responsibility for their own health. They felt this program of shared medical appointments combined with structured diabetes self-management education was helpful and should be offered to more veterans. Their only complaint was the program was limited to four appointments and they would have liked to continue this process as they felt it was helpful and they were able, for the most part, to significantly improve their diabetic control.

Table 9

Perception of Barriers Change

Objective	Increased	Decreased	No Change
Healthy eating	0/5 (0%)	4/5 (80%)	1/5 (20%)
Being active	0/5 (0%)	3/5 (60%)	2/5 (40%)
Taking medication	0/5 (0%)	3/5 (60%)	2/5 (40%)
Monitoring blood glucose	0/5 (0%)	4/5 (80%)	1/5 (20%)
Problem solving	1/5 (10%)	4/5 (80%)	0/5 (0%)
Healthy coping	0/5 (0%)	4/5 (80%)	1/5 (20%)
Reducing risks	0/5 (0%)	4/5 (80%)	0/5 (0%)

Objective Four Outcomes

The fourth objective was to determine if, by addressing self-care objectives and goal setting in a group shared medical appointment, there was an improvement in the objective measure of HgA1C. Table 10 illustrates the pre- and post-project HbA1Cs, the difference, the group average, and the difference in the group average. A statistically significant improvement was found in self-efficacy scores pre- and post-project: a p value of 0.05, the $t = 2.76$. ($df = 8$, variance $= 1.0$). Scatter plots were used to compare pre- and post-project self-efficacy scores and the change in HgA1C values (see Figures 3, 4, and 5). Although two of the participants had a notable increase in self-efficacy scores and a significant increase in HgA1C, no specific pattern was noted.

Table 10

Participant HgA1C Pre- and Post-Project

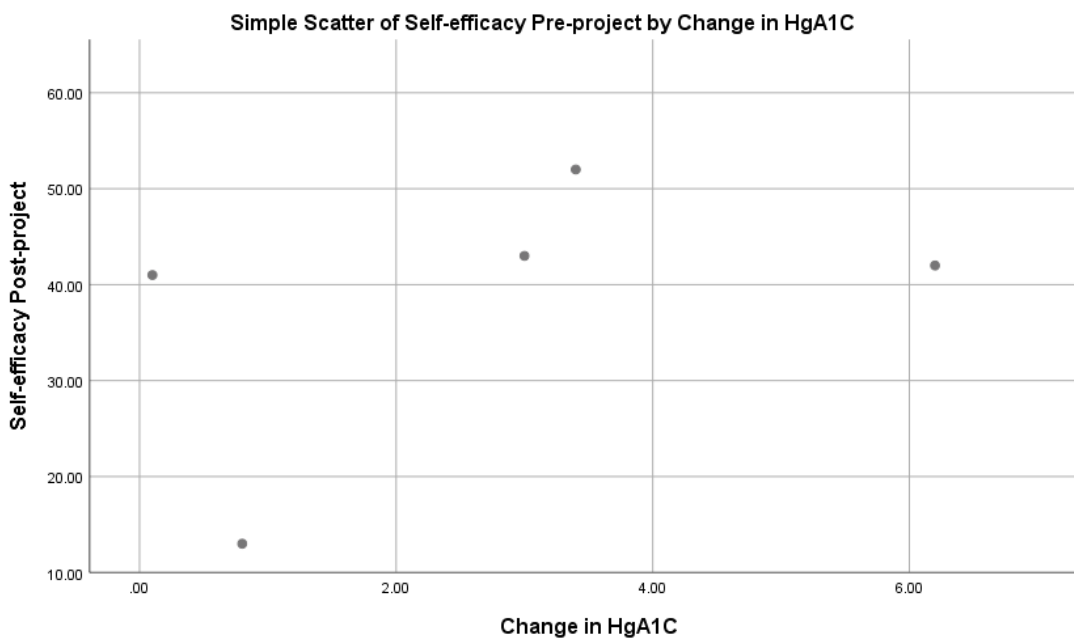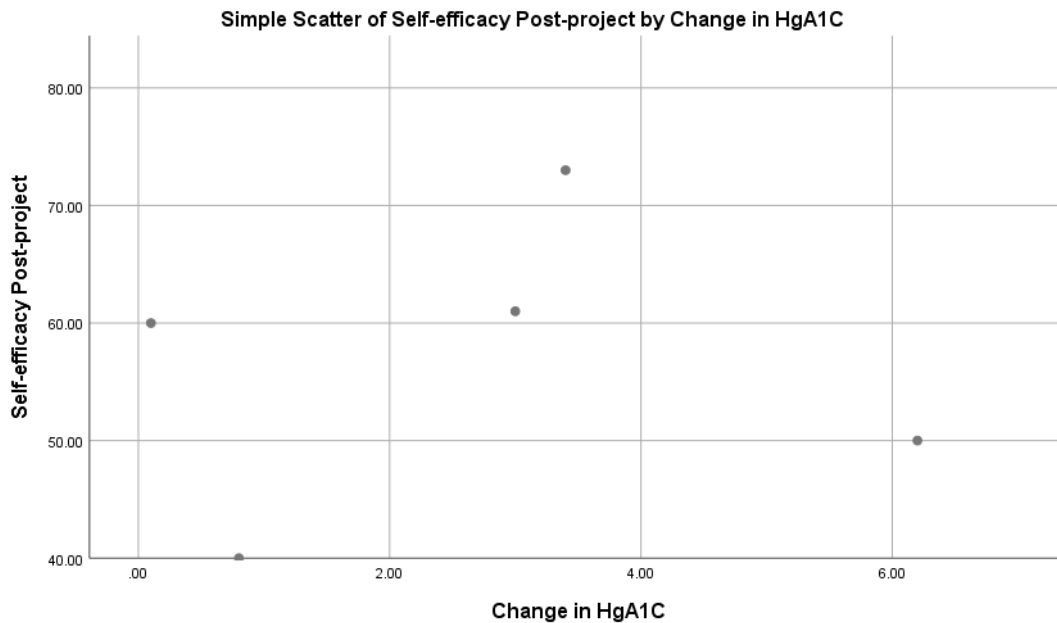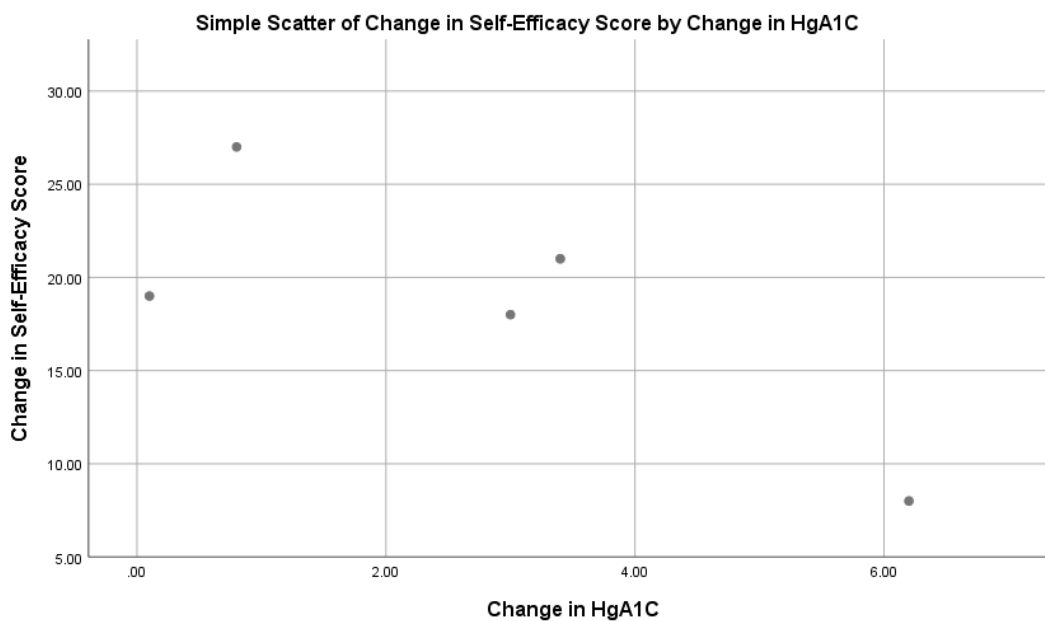| Participant	Pre-Project	Post-Project	Difference
1	13.1	6.9	6.2
2	11.1	8.1	3.0
3	10.7	9.9	0.8
4	12.3	12.2	0.1
5	12.6	8.9	3.7
Average	11.96	9.2	2.7

Figure 3. Comparison of pre-project self-efficacy scores with change in Hg A1C.

Figure 4. Comparison of post-project self-efficacy scores with change in Hg A1C.

Figure 5. Comparison of change in self-efficacy scores with change in Hg A1C barriers.

Barriers

The primary barriers to participation in this project were time constraints and coordination of multiple schedules. It was very difficult for participants to commit to three consecutive weeks of appointments plus a fourth appointment a month later. This was the reason the original sixth participant dropped out of the project prior to the first appointment. Distance to the site of the appointments was significant to a few of the group; however, they did make it to appointments and were on time. Group dynamics was another barrier in this group as there was a great deal of diversity in age, military experience, and current life situations. Despite this, the group did appear to get over their initial awkwardness, shared very freely, and were genuinely very supportive of each other. Space for group appointments is very limited in our current outpatient clinic; this made finding space for the appointments challenging as other meetings were scheduled at the same time and only one room large enough for group meetings was available.

Unintended Consequences

No unintended consequences were identified in this project. Since a provider was already doing shared medical appointments for diabetes in the clinic, front desk staff were initially confused as to the difference in the appointments and attempted to schedule the participants in the other provider's classes. This misunderstanding was quickly resolved and the difference in the appointments explained. How to manage individual issues brought up in the group setting without violating privacy regulations was also challenging but quickly resolved with participants.

Summary

Findings from the data collected in this projected support the use of shared medical appointments to provide diabetes self-management education. Use of AADE (2017) guidelines outlining outcome measures provided an excellent outline for the development of teaching objectives and course outline. There was significant improvement for most of the participants in both their self-efficacy scores and their HgA1Cs, although a correlation between these two was not demonstrated. No significant conflict occurred among the participants during the group discussions and participants voiced overall positive response to the education, goal setting, and discussion aspects of the appointments. The findings of this project supported continued use of shared medical appointments for DSME as well as utilization of AADE outcome measures to guide group and individual diabetes education and management appointments.

CHAPTER V

RECOMMENDATIONS AND IMPLICATIONS
FOR PRACTICE

Type 2 diabetes mellitus (T2DM) is a chronic disease and a leading cause of morbidity and mortality in the United States. Through diabetes self-management and positive lifestyle changes, diabetes can be controlled and complications limited or avoided. Implementation of diabetes self-management education (DSME) programs is one method to address the educational needs of patients with T2DM. The purpose of this capstone project was to implement shared medical appointments to provide DSME, address barriers to goal attainment, and encourage healthy behavior changes.

Findings from this project supported the implementation of DSMEs to improve patient outcomes and potentially decrease the risk for complications due to diabetes. The DSME program outlined in this program could be used in several ways in practice. Individual providers could use the outcomes in this program as a template to guide practice. Nursing care managers could use these guidelines to guide education and management of diabetic patients in individual or group settings. Diabetic nurse educators could use AADE (2017) outcome measures to guide practice and diabetic education classes.

Feedback from the participants in this project provided additional important information that has implications for practice. Having adequate time to ask questions and

discuss treatment options was important to participants. Setting goals, especially writing

them down, was beneficial in helping participants take responsibility for their own health.

The AADE (2017) outcome objectives are based on behavior changes. By focusing on

the need for changes in behavior and strategies to make those behavior changes,

participants were able to look at the many aspects of self-care they needed to address in

order to be successful in reaching diabetic goals. By breaking these outcomes into seven

different yet interconnected outcomes, the expected changes were less overwhelming and

more manageable. Looking at making incremental changes rather than large changes all

at once was also helpful for patients. Setting a series of smaller SMART goals was

helpful. Understanding the importance of goal setting and adequate time for discussion

of treatment plans and instilling in patients the importance of self-responsibility for their

own health is valuable for providers in how they organize their patient appointments.

Recommendations Related to Barriers and Unintended Consequences

Primary barriers noted in implementation of this project were scheduling and time

constraints. In the case of the participants in this project, it was difficult to attend

appointments weekly even when condensed into a three-week period and at a specific

date and time. Future appointments using the guidelines established this project could be

more flexible on time and date constraints. Also, the concepts covered in these

appointments could easily be adapted to individual appointments using the AADE (2017)

outcomes as a template for concepts on which to focus in appointments.

The use of telehealth for patients at a distance from the VA could also be

incorporated if patients had the needed technology to support this access. Phone

conferencing would be another option. These strategies would also be helpful with

regard to very limited meeting space. Maintaining of confidentiality is always an important aspect of group appointments. Reminding participants in groups that they need only share information they want to share and additional personal questions could be covered at a later time was very valuable and participants should be reminded of this at each appointment.

Ongoing Activities or Evaluations Outside the Scope of the Doctor of Nursing Practice Project

The majority of the participants in this project still had not met the goal of HgA1Cs < 7.0. The concepts introduced in this project were new to most of the participants. Support of continued implementation of the concepts introduced in this project is essential. All of the participants saw some improvement in their HgA1Cs but because of time constraints of the project, these improvements were not maximized. Continued follow-up of these participants using techniques developed for this project would be incorporated in their follow-on care and they would be monitored for improvement, both new and sustained, at 6, 9, and 12 months.

The outline used in this project for providing DSME will be incorporated into future shared medical appointments. A template incorporating the AADE (2017) outcome measures will be developed and provided to other CBOC providers and care managers for their use in conducting group and individual appointments as they determine is appropriate.

Recommendations Within the Framework of the Organization's Strategic Plan

Wahowiak (2014) noted the most important mission of the VA is patient care. The VA (Department of Veterans Affairs, 2016) stresses certain core values including

excellence, which is defined as to "strive for the highest quality and continuous

improvement" (p. 1). This project utilizing current standards promoted by the AADE

represents a move toward this goal. Beginning in 2009, the Department of Veterans

Affairs (2016) adopted PACT (Patient Aligned Care Team)

> as the cornerstone of the New Models of Care transformation initiative intended
> to transform the way Veterans receive their care. [This is] a patient-driven,
> proactive, personalized, team-based care oriented toward wellness and disease
> prevention resulting in improvements in Veteran satisfaction, improved healthcare
> outcomes and costs. (p. 1)

One of the elements of the PACT model is use of shared medical appointments. Their

use in this project was to provide DSME and an alternative to other traditional methods

of diabetes education. By using a template that outlines behavior change outcomes noted

by the AADE (2017), consistent and thorough care and management of patients with

Type 2 diabetes can be accomplished. This program provides for increased continuity of

care for patients. It would also meld well with the current MOVE program for weight

loss, emphasizing and supporting many of the concepts of the MOVE program, especially

with regard to healthy eating and exercise. Also, many diabetic patients have the co-

morbid problem of obesity which, if addressed and effected, could lead to improved

diabetic control.

Because of its commitment to excellence and quality patient care, this project

aligned closely with the mission and strategic plan of the Department of Veterans Affairs

(2016). The VA has as additional goals the training of health professionals and continued

health research. This project was also in congruence with those goals. This program was

designed to reinforce patient self-management of Type 2 diabetes, which is in congruence

with patient-focused care that has been of primary concern within the VA in the development of PACT.

Personal Goals and Contribution to
Advanced Practice Nursing

The author's personal goal in advance practice nursing included the ability to make positive changes in the healthcare environment in which she works and to continue to find innovate ways to meet the needs of patients under her care. The program designed here was done with the intention of continuation in the present and future care of all Type 2 diabetics. Information gathered in this project and the template for care developed as a result will be shared with other providers in the CBOC where the author works as well as with the VA Executive Board for dissemination beyond the CBOC. Providing optimal diabetic care to Type 2 diabetics is well within the expertise of advanced practice nurses (APNs).

Essentials of Doctoral Education for
Advanced Nursing Practice

The American Association of Colleges of Nursing (AACN; 2006) developed eight essentials for advanced nursing practice: I--Scientific Underpinnings for Practice, II--Organizational and Systems Leadership for Quality Improvement and Systems Thinking, III--Clinical Scholarship and Analytical Methods for Evidence-Based Practice, IV--Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care, V--Health Care Policy for Advocacy in Health Care, VI--Interprofessional Collaboration for Improving Patient and Population Health Outcomes, VII--Clinical Prevention and Population Health for Improving the Nation's Health, and VIII--Advanced Nursing Practice. The author incorporated many of the eight essentials

into this DNP project that reflected concepts learned during her DNP educational

program.

Essential I (scientific underpinnings for practice) was met through a

comprehensive review of current literature related to the subject of diabetes and diabetic

education. The author additionally completed educational programs offered by the

AADE (2017) for clinicians with regard to AADE7 outcome criteria and techniques for

use of these concepts to teach patients. This provided a more thorough knowledge of the

seven outcomes addressed in this project.

Essential II is Organizational and Systems Leadership for Quality Improvement

and Systems Thinking. The AACN (2006, p 10) noted, "Advanced nursing practice

includes an organizational and systems leadership component that emphasizes practice,

ongoing improvement of health outcomes, and ensuring patient safety" (p. 10). Through

completion of this capstone project, which clearly focused on practice and improvement

of health outcomes, this author accomplished this essential. There was also

demonstration of organizational and system leadership in designing a project that would

complement and enhance diabetes education programs already present in the VA system

with the goal to expand beyond the CBOC in which the author works to other CBOCs

locally and potentially nationally.

Essential III is Clinical Scholarship and Analytical Methods for Evidence-Based

Practice. The AACN (2006) described multiple ways in which a DNP program graduate

could demonstrate this essential including "critically appraising existing literature and

other evidence to determine and implement the best evidence for practice," which was

done in the literature review of this project; "design and implement processes to evaluate

outcomes of practice within a practice setting," which was accomplished during data gathering and analysis of the outcomes of the capstone project; "apply relevant findings to develop practice guidelines and improve practice and the practice environment," which was achieved through the development of the practice guideline for the shared medical appointments utilized in this project; and "disseminate findings from evidence-based practice and research to improve healthcare outcomes," which is the long-term goal of this project (p. 12).

Essential IV (Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care) was evidenced by use of electronic medical records system, which also tracked participant progress toward goals, and access of the patient almanac to determine individuals who met study criteria. An IBM SPSS statistics software was also utilized to analyze outcome data from the project. A template for care utilizing the AADE (2017) outcome objectives will also be designed and provided to providers and care managers for use in the electronic record system.

Essential V is Health Care Policy for Advocacy in Health Care. This was best demonstrated in advocating for changes in the current diabetes education program to provide a cost effective, yet outcome-effective program to meet the needs of veterans not meeting diabetic goals. Recognizing there are barriers to achieving these goals, the healthcare system could positively implement education programs that focus on identifying and addressing these barriers and developing strategies with patients to address them.

Essential VI is Interprofessional Collaboration for Improving Patient and Population Health Outcomes. This was done through collaboration with multiple groups

and individuals within the VA system. This included practice experts in diabetes education, nutrition, and pharmacy/medication management. It also involved obtaining the cooperation of other providers and ancillary staff to schedule the participants for appointments and gain access to limited space for conducting appointments. Also, approval of research and development and approval for the project from the Center Director was needed.

Essential VII is Clinical Prevention and Population Health for Improving the Nation's Health. This project focused on prevention of disease complications and population health, specifically diabetic patient populations. Considerable evidence indicates diabetes has reached a national crisis level with new diabetics being diagnosed daily in staggering numbers. Current interventions are failing to successfully manage these individuals in decreasing the risk for complications of diabetes, which leads to an enormous cost in both loss of quality of life as well as a financial drain on an already overtaxed healthcare system. The focus of this project was to develop a program that could advance diabetic health and education to promote healthy behavior changes, which would decrease negative outcomes associated with poorly controlled diabetes.

Essential VIII is Advanced Nursing Practice. The author is an advanced practice nurse working in the primary care setting. As a primary care provider working in the VA healthcare system, it was the role of the author to develop strategies to meet the VA core values including excellence, which is defined as to "strive for the highest quality and continuous improvement" (U.S. Department of Veterans Affairs, 2016, p. 1). It is not enough to continue the same practices that have been developed in the past if these practices are not achieving expected and necessary patient outcomes. This project was an

attempt to move forward and develop innovative methods for addressing patient care needs with respect to diabetes education and care.

Five Criteria for Executing a Successful Doctor of Nursing Practice Final Project

Waldrop, Caruso, Fuchs, and Hypes (2014) described a five-point system of evaluating the final DNP project represented by the formula EC as PIE (E=Enhances, C=Culmination, P=Partnerships, I=Implements, and E=Evaluates).

Waldrop et al. (2014) noted the DNP project must "enhance health outcomes, practice outcomes, or healthcare policy" (p. 301). This project enhanced practice outcomes through use of DSME in shared medical appointments to address barriers to goal attainment and promote self-management behaviors in Type 2 diabetics.

A DNP project must reflect a culmination of practice inquiry (Waldrop et al., 2014). The author has developed a significant understanding and ability to utilize AADE7 (AADE, 2017) outcome criteria to develop and oversee a successful diabetes education pilot program. This was accomplished by a thorough review of the literature, professional inquiries of diabetes education experts, and continuing education related to the AADE7 program offered through the AADE.

The DNP project requires engagement in partnerships (Waldrop et al., 2014, p. 302). Multiple partnerships were formed during this project and the author collaborated with members of the interdisciplinary team within the VA. This was both for content expertise as well as for system support of the project.

The DNP project implements evidence into practice (Waldrop et al., 2014). Evidence-based information on the topics of diabetes, diabetes education, shared medical appointments, veterans with diabetes, complications of diabetes, barriers to goal

attainment, and national outcome measures were researched. These were used to design and implement a practice guideline to use shared medical appointments to provide DSME.

The DNP project included evaluation of healthcare practice outcomes (Waldrop et al., 2014). Outcome measures of changes in self-efficacy scores and HgA1Cs were calculated. Barriers to goal attainment were re-evaluated to determine if perception of these as barriers had increased, decreased, or stayed the same. Both self-efficacy scores and HgA1Cs had statistically significant improvements with implementation of the project. Barriers primarily identified were perceived as less of barriers following the project.

Summary

This DNP project addressed use of shared medical appointments to provide DSME. As a major part of this project, barriers to each of the seven outcome criteria outlined in AADE7 (AADE, 2017) were surveyed and addressed by participants in the study. To facilitate participant engagement in actively making behavior changes, SMART goal setting was utilized. While many different approaches to diabetes education are available in the United States and the world, many individuals with Type 2 diabetes are still not meeting their goals; as a consequence, many develop the complications of diabetes and experience a decreased quality of life and decreased longevity.

This project provided a different strategy for approaching diabetes education and management. Outcomes from this project were positive and promising. Further use of the guidelines developed in this project are planned including continued use of shared

medical appointments to provide DSME, development of a template for providers and/or care managers to use for patient education and management, and dissemination of the information from this project to the VA at the local, Veterans Integrated Service Networks, and possibly national level.

REFERENCES

Al-Qazaz, H., Sulaiman, S., Hassali, M., Shafie, A., Sundram, S., Al-Nuri, R., & Saleem, F. (2011). Diabetes knowledge, medication adherence and glycemic control among patients with type 2 diabetes. *International Journal of Clinical Pharmacy*, *33*, 1028-1035.

American Association of Colleges of Nursing. (2006). The *essentials of doctoral education for advanced nursing practice*. Retrieved from http://www.dnpnursing solutions.com/dnp-nursing-program-overview/dnp-program-essentials/

American Association of Diabetes Educators. (2017). *AADE7™ system*. Retrieved from https://www.diabeteseducator.org/practice/aade7-system

American Diabetes Association. (2014). Standards of medical care in diabetes—2014. *Diabetes Care*, *37*(Suppl 1), S14-S80.

American Diabetes Association. (2016). Standards of medical care in diabetes—2016. *Diabetes Care, 39*(Suppl 1), S1-S106.

Bailey, G., Barner, J., Weems, J., Leckbee, G., Solis, R., Montemayor, D., & Pope, N. (2012). Assessing barriers to medication adherence in underserved patients with diabetes in Texas. *The Diabetes Educator, 38*(2), 271-279.

Caro-Bautista, J., Martin-Santos, F., & Morales-Asencio, J. M. (2013). Systematic review

of the psychometric properties and theoretical grounding of instruments

evaluating self-care in people with type 2 diabetes mellitus. *Journal of Advanced*

Nursing, *70*(6), 1209-1227.

Centers for Disease Control and Prevention. (2011). National diabetes fact sheet:

National estimates and general information on diabetes and prediabetes in the

United States, 2011. Atlanta, GA: U.S. Department of Health and Human

Services, Centers for Disease Control and Prevention.

Centers for Disease Control and Prevention. (2014). National Diabetes statistics report:

Estimates of diabetes and its burden in the United States, 2014. Atlanta, GA: U.S.

Department of Health and Human Services.

Davis, A., Sawyer, D., & Vinci, L. (2008). The potential of group visits in diabetes care.

Clinical Diabetes, 26(2), 58-62.

Fleming, B., Greenfield, S., Engelgau, M., Pogach, L., Clauser, S., & Parrott, M. (2001).

The diabetes quality improvement project. *Diabetes Care, 24*(10), 1815-1820.

Funnell, M., & Anderson, R. (2004). Empowerment and self-management of diabetes.

Clinical Diabetes, 22(3), 123-127.

Glasgow, R., Toobert, D., & Gillette, C. D. (2001). Psychosocial barriers to diabetes self-

management and quality of life. *Diabetes Spectrum*, *14*(1), 33-41.

Healthy People 2020. (2017). *Diabetes*. Retrieved from http://www.healthypeople.gov

/2020/topics-objectives/topic/diabetes

Heisler, M., Bouknight, R., Hayward, R., Smith, D., & Kerr, E. (2002). The relative importance of physician communication, participatory decision making, and patient understanding in diabetes self-management. *Journal of General Internal Medicine, 17,* 243-252.

Jaber, R., Braksmajer, A., & Trilling, J. (2006). Group visits for chronic illness care: Models, benefits and challenges. *Family Practice Management, 13*(1), 37-40.

King, D., Glasgow, R., Toobert, D., Striycker, L., Estabrooks, P., Osuna, D., & Faber, A. (2010). Self-efficacy, problem solving, and social environmental support are associated with diabetes self-management behaviors. *Diabetes Care*, *33*(4), 751-753.

Krichbaum, K., Aarestad, V. and Buethe, M. (2003). Exploring the connection between self-efficacy and effective diabetes self-management. *The Diabetes Educator, 29*(4), 653-662.

Langford, A., Sawyer, D., Gioimo, S., Brownson, C., & O'Toole, M. L. (2008). Patient-centered goal setting as a tool to improve diabetes self-management. *The Diabetes Educator*, *33*(6), 139s-1144s.

Marcy, T., Britton, M., & Harrison, D. (2011). Identification of barriers to appropriate dietary behavior in low-income patients with type 2 diabetes mellitus. *Diabetes Therapy*, *2*(1), 9-19.

Mulcahy, K., Maryniuk, M., Peeples, M., Peyrot, M., Tomky, D., & Yarborough, P. (2003). Diabetes self-management education core outcomes measures. *The Diabetes Educator*, *29*(5), 768-803.

National Collaborating Centre for Methods and Tools. (2011). *Stetler model of evidence-based practice*. Hamilton, ON: McMaster University.

National Institute of Diabetes and Digestive and Kidney Diseases. (2016). *Symptoms & causes of diabetes*. Retrieved from http://www.niddk.nih.gov/health-information/health-topics/Diabetes/causes-diabetes/Pages/index.aspx (

Norris, S., Engelgau, M., & Narayan, K. (2001). Effectiveness of self-management training in type 2 diabetes: A systematic review of randomized controlled trials. *Diabetes Care, 24*(3) , 561-587.

Nutting, P., Dickinson, W., Dickinson, L., Nelson, C., King, D., Crabtree, B., & Glasgow, R. (2007). Use of chronic care model elements is associated with higher-quality care for diabetes. *Annuals of Family Medicine*, *5*(1), 14–20.

Piatt, G., Orchard, T., Emerson, S., & Simmons, D. (2006). Translating the chronic care model into the community: Results from a randomized controlled trial of a multifaceted diabetes care intervention. *Diabetes Care*, *29*(4) , 811-817.

Reed. J. (2011)*. Living well with diabetes: Guide for patients and families*. Munster, IN: Hilton Publishing Company Inc

Sanchez, I. (2011). Implementation of a diabetes self-management education program in primary care for adults using shared medical appointments. *The Diabetes Educator. 37*(3), 38-391.

Sarkar, U., Fisher, L. and Schillinger, D. (2006). Is self-efficacy associated with diabetes self-management across race/ethnicity and health literacy? *Diabetes Care*, *29*(4), 823-829.

Stetler, C. (2001). Updating the Stetler model of research utilization to facilitate

    evidence-based practice. *Nursing Outlook, 49*(6), 272-279.

U.S. Department of Health and Human Services, Health Resources and Services

    Administration. (2012). *Diabetes module*. Retrieved from

    http://www.hrsa.gov/quality/toolbox/508pdfs/diabetesmodule.pdf

U.S. Department of Veterans Affairs. (2015). *Close to 25 percent of VA patients have*

    diabetes. Retrieved from https://www.va.gov/health/NewsFeatures/

    20111115a.asp

U.S. Department of Veterans Affairs. (2016). *Patient aligned care team (PACT).*

    Retrieved from http://www.va.gov/health/services/primarycare/pact/

Wagner, E. (1998). Chronic disease management: What will it take to improve care for

    chronic illness? *Effective Clinical Practice, 1*(1), 2-4.

Wahowiak, L. (2014). Salute to health: The VA's focus on diabetes care, research, and

    training. *Diabetes Forecast, 67*(12), 44-47.

Waldrop, J., Caruso, D., Fuchs, M. A., & Hypes, K. (2014). EC as PIE: Five criteria for

    executing a successful DNP final project. *Journal of Professional Nursing, 30*(4),

    300-306.

Warsi, A., Wang, P., LaValley, M., Avorn, J., & Solomon, D. (2004). Self-management

    education programs in chronic disease: A systematic review and methodological

    critique of the literature. *Archives of Internal Medicine, 164*(15), 1641-1649.

APPENDIX A

**APPROVAL FROM VETERANS AFFAIRS RESEARCH
AND DEVELOPMENT COMMITTEE**

Department of Veterans Affairs

Memorandum

Date: June 8, 2017

From: Research and Development Service Center; Acting ACOS/R&D (15I)

Subj: Final VA Approval

To: Marissa Grotzke, M.D. (11lP)

1. Your research project, IRB_00097905 "Barriers to goal attainment in type 2 diabetes" has received final approval to be conducted at the VA SLC Health Care System. It was approved by the IRB on 4/19/2017 and the R&D on 4/25/2017.

2. At the time you begin enrolling VA participants, a signed informed consent document **and** signed HIPAA authorization document must be obtained from each individual participating in the study. **Please remember that the VA has two separate documents for signature, one for consent and one for HIPAA authorization** It is important that the forms be properly completed and dated in the spaces provided, including signature and date of the participant and person obtaining consent. All original signed and dated informed consent and HIPAA authorization documents are maintained in the investigator's research files.

3. The IRB sends a reminder to the principal investigator each year to renew the human studies project. It will automatically be routed to us for VA approval.

4. Any changes to this study must be submitted to the IRB prior to initiation via an amendment application. All submissions to the IRB are simultaneously submitted to the VA Research Office. Failure to comply with this requirement will cause termination of the study.

5. If you have questions, please contact Caroline Phinney at 582-1565, ext. 4866.

NOEL G. CARLSON, Ph.D.

cc: HRPP Office

APPENDIX B

**INSTITUTIONAL REVIEW BOARD APPROVAL
AND MEMORANDUM OF UNDERSTANDING**

UNIVERSITY OF
NORTHERN COLORADO

Institutional Review Board

DATE: July 27, 2017

TO: Virginia Mol
FROM: University of Northern Colorado (UNCO) IRB

PROJECT TITLE: [1095429-1] Barriers to Goal Attainment in Type 2 Diabetes
SUBMISSION TYPE: New Project

ACTION: APPROVED
APPROVAL DATE: July 27, 2017
EXPIRATION DATE: July 27, 2018
REVIEW TYPE: Expedited Review

Thank you for your submission of New Project materials for this project. The University of Northern Colorado (UNCO) IRB has APPROVED your submission. All research must be conducted in accordance with this approved submission.

This submission has received Expedited Review based on applicable federal regulations.

Please remember that informed consent is a process beginning with a description of the project and insurance of participant understanding. Informed consent must continue throughout the project via a dialogue between the researcher and research participant. Federal regulations require that each participant receives a copy of the consent document.

Please note that any revision to previously approved materials must be approved by this committee prior to initiation. Please use the appropriate revision forms for this procedure.

All UNANTICIPATED PROBLEMS involving risks to subjects or others and SERIOUS and UNEXPECTED adverse events must be reported promptly to this office.

All NON-COMPLIANCE issues or COMPLAINTS regarding this project must be reported promptly to this office.

Based on the risks, this project requires continuing review by this committee on an annual basis. Please use the appropriate forms for this procedure. Your documentation for continuing review must be received with sufficient time for review and continued approval before the expiration date of July 27, 2018.

Please note that all research records must be retained for a minimum of three years after the completion of the project.

If you have any questions, please contact Sherry May at 970-351-1910 or Sherry.May@unco.edu. Please include your project title and reference number in all correspondence with this committee.

Hello,

We have moved this request to expedited due to the blood draws and the need to be at an expedited level in order to complete an IAA.

I noticed on page 5 of the Barriers 3 Survey the word financial is misspelled.

Best,

Maria

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within University of Northern Colorado (UNCO) IRB's records.

Statement of Mutual Agreement

University of Northern Colorado

Doctorate of Nursing Practice Capstone Project

Virginia Mol, MS, FNP, DNP-S

July 10, 2017

The purpose of the "Statement of Mutual Agreement" is to describe the share view between the Department of Veterans Affairs, Ogden VA CBOC, Odgen, UT and Virginia Mol, DNP Candidate from the University of Northern Colorado, concerning her proposed Capstone Project.

Proposed Capstone Project Title: Barriers to Goal Attainment in Type 2 Diabetes

Brief Description of Proposed Capstone Project:

In order to improve outcomes in patients with type 2 diabetes, the purpose of this DNP capstone project is to use diabetes self-management education (DSME) in shared medical appointments to promote behavior change in patients with type 2 diabetes and to evaluate for barriers to behavior changes and to goal attainment in type 2 diabetes.

By using shared medical appointments to review/educate patients on diabetes self-management goals and using group discussions to discuss barriers to meeting these goals and possible solutions to overcome these barriers, it is hoped that patients will be able to develop and attain self-care management goals for themselves. Through the setting of goals and improving their self-efficacy with regard to setting and attaining them, it is hoped that the overall outcome is improved diabetic control as evidenced by reduced HgA1Cs and risk reduction.

Goal of Capstone Project:

Develop a shared medical appointment format that will enhance patient learning with regard to type 2 diabetes self-management and decrease patient diabetes risk by improving blood glucose control.

Proposed On-site Activities:

Proposed onsite activities include standard blood draws at the first appointment and at 3 months. Also, the participants will participate in 4 shared medical appointments. The first three, on 3 consecutive weeks, will last approximately 2 hours in length. At each of these appointments 2 to 3 self-management subjects will be introduced and discussed. Each participant will be asked to complete a brief survey on what they identify as barriers to attaining self-management goals and to set a goal to work on with regard to this subject. Participants will also be asked to participate in a discussion with other veterans in the group regarding ways they might overcome these barriers. The 4th appointment will be held 1 month following the 3rd appointment and will be used to discuss whether goals set by the participants were met and whether they have been maintained, and if they were/were not, then why/why not. Participants will also be asked to

complete a self-efficacy scale at the 1st and 4th appointments, to determine if this intervention improved their belief in their ability to achieve their goals.

Confidentiality of Patient Records:

Results of this study may be published, but participant identity will remain private to the extent allowed by law. Records about participants will be kept in a locked file cabinet in the primary investigator's office. Only those who work with this study or are performing their job duties for the VA will be allowed access to the information. No identifying information will leave the VA premise. Access to participant medical records will only be accessible through use of the primary investigator's PIV access card with standard record security as afforded by the Department of Veterans Affairs Medical Center.

The DNP Capstone Project will include a final report, and abstract, potential publication or oral presentation of the report. No personal identifiers will be included and all data will be in aggregate form. The author welcomes any comments or suggestion from the Agency, but reserves the right to publish findings and analysis according to professional standards and principles of academic freedom. For any work of scholarly nature, the author agrees to follow the Agency preferences on how it is to be named (or not) in the work.

7/18/17

Signature of DNP Student   Date

7-19-17

Signature of Agency Member   Date

July 17, 2017

Signature of DNP Capstone Chair/Research Advisor   Date

APPENDIX C

**CONSENT FORM FOR HUMAN PARTICIPANTS
IN RESEARCH**

UNIVERSITY *of*
NORTHERN COLORADO

CONSENT FORM FOR HUMAN PARTICIPANTS IN RESEARCH

UNIVERSITY OF NORTHERN COLORADO

Project Title: Barriers to Goal Attainment in Type 2 Diabetes
Student Researcher: Virginia Mol, MS, FNP,
DNP-S
Research Advisor: Kathleen Dunemn, PhD, APRN, CNM, School of Nursing
Co-Research Advisor: Vicki Wilson, PhD, MS, RN, School of Nursing
Committee Member/VA Research Advisor: Dr. Marissa Grotzke, M.D.

Purpose and Description: The purpose of this research study is to use Diabetes Self-Management Education (DSME) in shared medical appointments to promote behavior change for patients with type 2 diabetes and to evaluate for barriers to behavior change and goal attainment in type 2 diabetes. I am doing this study because, despite multiple currently available intervention strategies for type 2 diabetes, many patients are still not meeting A1C goals and remain at high risk for the development of complications of diabetes. You have been asked to participate because your A1C is > 9%. This study takes a different approach to diabetes education than you have previously participated in and will provide you another opportunity to successfully address your diabetes self-care goals. The study will last a total of 3 months, however, the participants will only be involved in appointments on 3 consecutive weeks, then a final shared medical appointment one month following the third week and a final lab appointment at the 3 month point.

In this study, participants will be asked to attend/participate in four shared medical appointments. Each of these appointments will last approximately two hours. At the first three of these appointments, the investigator will introduce diabetes self-management topics. Each of these topics is related to behaviors that would help them become better at diabetes self-management. Participants will be asked to complete simple surveys asking them what might be barriers to them in accomplishing these behavior changes. For example, one subject will be healthy eating. They participant will be asked what barriers exist that would limit their ability to eat healthier. After the surveys are done, the participants will discuss, as a group, ways to overcome these barriers. At the end of the discussion, each participant will be asked to set a simple, achievable goal related to the topic. At the fourth appointment, participants will be asked how they have done with regard to accomplishing their goals and what helped them achieve them or what hindered them. They will have their A1C drawn at the first appointment and then repeated at 3 months. Each of these blood draws will include approximately 1.5 to 2 mls of blood, drawn from the subjects arm. This is to determine if the program helped the participants

reduce their overall diabetes risk by reducing their A1Cs. They will also be asked to complete a self-efficacy scale at the first and fourth visits. This scale is used to determine how confident the participants believe they are able to make changes. The first three appointments will be weekly for three weeks, with the fourth appointment being one month after the third appointment. Participants will have a final lab appointment three months after the first appointment.

RISKS
There are no foreseeable risks anticipated for this study. Participants will have two standard blood draws to check their A1Cs, per standard protocol. These blood draws will be done per VA lab protocols and pose no additional risks than any labs you have had done. Standard blood draw risks include pain, a bruise at the point where the blood is taken, redness and swelling of the vein and infection, and a rare risk of fainting. No risks are anticipated as a result of educational and group discussions.

UNFORESEEABLE RISKS
No unforeseeable risks are anticipated, however, if any participant experiences any negative effect while attending the appointments, these will be addressed at the CBOC clinic by their primary care team.

REPRODUCTIVE RISKS
There are no anticipated reproductive risks.

BENEFITS
We cannot promise any benefits to you from your being in the study. However, possible benefits may include a better understanding of ways to manage your diabetes and a reduction in your overall diabetes risk by reduction of your A1C. We hope that this study will help you, however, this cannot be guaranteed. The information we get from this study may also help us treat future patients.

ALTERNATIVE PROCEDURES
None

CONFIDENTIALITY
Results of this study may be published, but your identity will not appear in any such publication. We will keep all research records that identify you private to the extent allowed by law. Records about you will be kept in a locked file cabinet in the primary investigator's office. Only those who work with this study or are performing their job duties for the VA will be allowed access to your information. None of your identifying information will leave the VA premise.

PERSON TO CONTACT
If you have any questions, complaints, or concerns about this research or related matters please contact the primary investigator at 801-479-4105 or your primary care team. If you think you may have been injured in this study, please call the Ogden Clinic Manager, at 801-479-4105; he can be reached at this number between 0800-1700, Monday – Friday.

INSTITUTIONAL REVIEW BOARD
Contact the Institutional Review Board (IRB) if you have questions regarding your rights as a research participant. Also, contact the IRB if you have questions, complaints or concerns which you do not feel you can discuss with the investigator. The University of Utah IRB may be reached by phone at (801) 581-3655 or by e-mail at irb@hsc.utah.edu.

Participation is voluntary. You may decide not to participate in this study and if you begin participation you may still decide to stop and withdraw at any time. Your decision will be respected and will not result in loss of benefits to which you are otherwise entitled. Having read the above and having had an opportunity to ask any questions,

please sign below if you would like to participate in this research. A copy of this form will be given to you to retain for future reference. If you have any concerns about your selection or treatment as a research participant, please contact Sherry May, IRB Administrator, Office of Sponsored Programs, Kepner Hall, University of Northern Colorado Greeley, CO 80639; 970-351-1910.

_____
Subject's Signature   Date

_____
Researcher's Signature   Date

APPENDIX D

BARRIERS SURVEY

BARRIERS TO BEING PHYSICALLY ACTIVE

Participant identification number: _____

Please rate the following barriers from 1-7. 1 being not at all, 7 being a significant barrier to being active.

- Physical limitation   1   2   3   4   5   6   7

- Time   1   2   3   4   5   6   7

- Environment   1   2   3   4   5   6   7

- Fear   1   2   3   4   5   6   7

- Other:_____   1   2   3   4   5   6   7

BARRIERS TO EATING HEALTHY

Participant identification number: _____

Please rate the following barriers from 1-7. 1 being not at all, 7 being a significant barrier to eating healthy.

- Environmental triggers   1   2   3   4   5   6   7
- Emotional   1   2   3   4   5   6   7
- Cultural   1   2   3   4   5   6   7
- Financial   1   2   3   4   5   6   7
- Other: 1   2   3   4   5   6   7

BARRIERS TO TAKING MEDICATIONS

Participant identification number: _____

Please rate the following barriers from 1-7. 1 being not at all, 7 being a significant barrier to taking medications.

- Vision or dexterity   1   2   3   4   5   6   7

- Financial   1   2   3   4   5   6   7

- Fear of needles   1   2   3   4   5   6   7

- Cognitive, math skills   1   2   3   4   5   6   7

- Embarrassment   1   2   3   4   5   6   7

- Other:_____   1   2   3   4   5   6   7

BARRIERS TO MONITORING BLOOD GLUCOSE

Participant identification number: _____

Please rate the following barriers from 1-7. 1 being not at all, 7 being a significant barrier to monitoring blood glucose.

- Physical   1   2   3   4   5   6   7

- Financial   1   2   3   4   5   6   7

- Cognitive   1   2   3   4   5   6   7

- Time   1   2   3   4   5   6   7

- Inconvenient   1   2   3   4   5   6   7

- Emotional   1   2   3   4   5   6   7

- Other:_____ 1   2   3   4   5   6   7

BARRIERS TO PROBLEM SOLVING

Participant identification number: _____

Please rate the following barriers from 1-7. 1 being not at all, 7 being a significant barrier to problem solving.

- Cognitive   1   2   3   4   5   6   7

- Financial   1   2   3   4   5   6   7

- Coping strategies   1   2   3   4   5   6   7

- Emotional   1   2   3   4   5   6   7

- Physical   1   2   3   4   5   6   7

- Other:_____   1   2   3   4   5   6   7

BARRIERS TO REDUCING RISKS OF COMPLICATIONS

Participant identification number: _____

Please rate the following barriers from 1-7. 1 being not at all, 7 being a significant barrier to reducing complications of diabetes.

- Financial   1   2   3   4   5   6   7

- Time   1   2   3   4   5   6   7

- Unaware of disease process   1   2   3   4   5   6   7
   or seriousness

- Lacking rapport with provider   1   2   3   4   5   6   7

- Travel   1   2   3   4   5   6   7

- Physical disabilities   1   2   3   4   5   6   7

- Other:_____ 1   2   3   4   5   6   7

BARRIERS TO LIVING WITH DIABETES (PSYCHOSOCIAL ADAPTATION)

Participant identification number: _____

Please rate the following barriers from 1-7. 1 being not at all, 7 being a significant barrier to psychosocial adaptation.

- Lack of awareness   1   2   3   4   5   6   7

- Financial   1   2   3   4   5   6   7

- Lack of support   1   2   3   4   5   6   7

- Physical   1   2   3   4   5   6   7

- Psychosocial distress   1   2   3   4   5   6   7

- Other:_____   1   2   3   4   5   6   7

APPENDIX E

DIABETES SELF-EFFICACY SCALE

Diabetes Self-Efficacy Scale

We would like to know *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 being not at all confident and 10 being totally confident.

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

Not 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 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 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 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 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 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 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 confident   1   2   3   4   5   6   7   8   9   10   totally confident