A CULTURALLY TAILORED SELF-MANAGEMENT EDUCATION AND SUPPORT INTERVENTION IN A FAITH-BASED FRAMEWORK TO IMPROVE SELF-CARE BEHAVIORS OF AFRICAN AMERICAN ADULTS WITH TYPE II DIABETES MELLITUS

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A project submitted to the faculty at the University of North Carolina at Chapel Hill in partial fulfillment of the requirements for the degree of Doctor of Nursing Practice in the Doctor of Nursing Program in the School of Nursing.

Chapel Hill
2019

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ABSTRACT

Christine E. Weeks: A Culturally Tailored Diabetes Self-Management Education and Support Intervention in a Faith-Based Framework to Improve Self-Care Behaviors of African American Adults with Type II Diabetes Mellitus
(Under the direction of Ann Jessup)

Background: African American (AA) adults have an 80% greater chance of developing type II diabetes mellitus (T2DM) and are twice as likely to die from the disease as non-Hispanic white adults. This disparate effect of T2DM on AA adults warrants continued evaluation of efforts to improve self-management which can affect clinical outcomes.

Purpose: In this feasibility study we sought to implement a pre-validated diabetes self-management education (DSME) program tailored to an AA adult population of volunteer participants with T2DM in a church-based community setting.

Methods: The six-week DSME program was tailored to the participants’ faith and culture by using short scriptural lessons, prayers, individual sharing which allowed for the AA tradition of storytelling and teaching to adapt healthy food choices in the AA culture. Outcomes measured were weight, self-reported fasting blood glucose (FBG) and physical activity (PA). Diabetes psychosocial self-efficacy and diabetes knowledge were also measured before and after participation.

Results: Composite weight measures showed no statistical significance (p = .165). However, the participants did demonstrate improvements in FBG (p = .042), PA (p = NS), diabetes knowledge (p = .002) and psychosocial self-efficacy (p = .001). Seventy-two percent of
the participants who completed the post-intervention surveys “strongly agreed” that they learned a lot about self-management and that they would recommend the classes to friends or family.

**Conclusion:** The increase reported in psychosocial self-efficacy in this study likely contributed to positive trends in FBG, PA, and diabetes knowledge, as suggested by the Self-Efficacy Theory. Motivational verbal persuasion through brief scripture lessons and prayer prior to diabetes self-management education can produce positive physiological feedback as participants’ self-efficacy increases. The structure and methods used in this study can be easily transferred to other faith-based settings.
ACKNOWLEDGEMENTS

I am sincerely grateful to the UNC graduate school and School of Nursing for allowing me the opportunity, great honor and privilege to learn from, work with, and be mentored by well renowned, widely published innovators of change and generators of information in my specialty. The support of the faculty and ancillary staff have facilitated my accomplishments thus far despite the enormous life challenges during my passage here. I would like to extend thanks to my UNC DNP project committee members, Dr. Ann Jessup and Dr. Julee Waldrop, for their guidance, patience and invaluable support. Great thanks also to my site committee member, Dr. Althea Massenburg for your support and being one of my project champions at Triangle Church. The support Dr. Massenburg and Minister Mitch Mitchell, as project champions, without whom use of this site would not have been possible is deeply appreciated. I would like to thank the Triangle Church for the use of their facilities and support. Dr. Catherine Zimmer’s incredibly patient and cheerful support in guiding me through the statistical analysis of my project data was amazing.

The support of my children Anne-Yael and Blaise Joshua Okale-Weeks has been unparalleled. We have travelled a long road to this place together. From Durham Technical Community College to the walls of the Tar Heels you have shown great strength and courage. We have talked and struggled through the many learning processes and I say thanks “my sweet babies”.
Most significantly is the faith, courage, insight that God has provided me with through His Word and His Spirit. With you Father, all things are possible and you have allowed me to climb yet another Kilimanjaro. You are the wind beneath my wings and I thank you infinitely.
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<tbody>
<tr>
<td>A1C</td>
<td>Hemoglobin A1C</td>
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<tr>
<td>AA</td>
<td>African American</td>
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<td>ADA</td>
<td>American Diabetes Association</td>
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<td>AADE</td>
<td>American Association of Diabetes Educators</td>
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<tr>
<td>CAD</td>
<td>Coronary Artery Disease</td>
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<td>CBCT</td>
<td>Church-based Culturally Targeted</td>
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<td>CDC</td>
<td>Centers for Disease Control and Prevention</td>
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<td>CH</td>
<td>Chapel Hill</td>
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<tr>
<td>CHAMPS</td>
<td>Community Healthy Activities model Program</td>
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<td>CI</td>
<td>Confidence Interval</td>
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<tr>
<td>CINAHL</td>
<td>Cumulative Index to Nursing and Allied Health Literature</td>
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<tr>
<td>CKD</td>
<td>Chronic Kidney Disease</td>
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<td>DAWN</td>
<td>Diabetes Awareness and Wellness Network</td>
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<tr>
<td>DES-SF</td>
<td>Diabetes Empowerment Scale – Short Form</td>
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<tr>
<td>DKT2</td>
<td>Revised Diabetes Knowledge Test</td>
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<tr>
<td>DNP</td>
<td>Doctorate in Nurse Practice</td>
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<tr>
<td>DPP-4</td>
<td>Dipeptidyl Peptidase-4</td>
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<tr>
<td>DSME</td>
<td>Diabetes Self-Management Education</td>
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<tr>
<td>DSMES</td>
<td>Diabetes Self-Management Education and Support</td>
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<tr>
<td>ESRD</td>
<td>End Stage Renal Disease</td>
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<tr>
<td>FBG</td>
<td>Fasting Blood Glucose</td>
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<td>FFA</td>
<td>Free Fatty Acids</td>
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<td>GLP-1</td>
<td>Glucagon-like Peptide 1</td>
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<td>Abbreviation</td>
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<tr>
<td>GRADE</td>
<td>Grading of Recommendations, Assessment, Development and Evaluations</td>
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<td>IBM</td>
<td>International Business Machines</td>
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<td>IRB</td>
<td>Institutional Review Board</td>
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<td>M</td>
<td>Mean</td>
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<tr>
<td>MCDTR</td>
<td>Michigan Center for Diabetes Translational Research</td>
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<tr>
<td>MDRC</td>
<td>Michigan Diabetes Research Center</td>
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<tr>
<td>MI</td>
<td>Minimal Intervention</td>
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<td>MDRTC</td>
<td>Michigan Diabetes Research and Training Center</td>
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<td>NIDDK</td>
<td>National Institute of Diabetes and Digestive and Kidney Diseases</td>
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<td>NC</td>
<td>North Carolina</td>
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<td>OMH</td>
<td>Office of Minority Health</td>
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<td>P</td>
<td>P-value</td>
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<td>PA</td>
<td>Physical Activity</td>
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<td>PAD</td>
<td>Peripheral Artery Disease</td>
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<td>RCT</td>
<td>Randomized Control Trial</td>
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<td>RWJF</td>
<td>Robert Wood Johnson Foundation</td>
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<tr>
<td>SE</td>
<td>Self-Efficacy</td>
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<td>SGLT2</td>
<td>Sodium-glucose co-transporter-2 Inhibitors</td>
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<tr>
<td>SD</td>
<td>Standard Deviation</td>
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<tr>
<td>SI</td>
<td>Special Intervention</td>
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<tr>
<td>SMART</td>
<td>Specific, Measurable, Attainable, Realistic, and Time-limited</td>
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<tr>
<td>SPSS</td>
<td>Statistical Package for the Social Sciences</td>
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<td>Abbreviation</td>
<td>Full Form</td>
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<tr>
<td>T1DM</td>
<td>Type I Diabetes Mellitus</td>
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<td>T2DM</td>
<td>Type II Diabetes Mellitus</td>
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<tr>
<td>UKPDS</td>
<td>United Kingdom Prospective Diabetes Study</td>
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<tr>
<td>UNC</td>
<td>University of North Carolina</td>
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<tr>
<td>US</td>
<td>United States</td>
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<td>WHO</td>
<td>World Health Organization</td>
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CHAPTER 1: INTRODUCTION

Diabetes mellitus is a chronic metabolic disorder that manifests in two main types. Type I diabetes occurs because of the body’s absolute lack of insulin production. Diabetes resulting from the body’s resistance to insulin that is produced, or its insufficient production of insulin is referred to as Type II. This project focuses on type II diabetes mellitus (T2DM) which is the most common form of diabetes. An estimated nine percent of the world’s adult population was affected by diabetes overall in 2014 (World Health Organization [WHO], 2016). A similar percentage of the United States (US) population is affected by T2DM (Centers for Disease Control and Prevention [CDC], 2017)), ranking it seventh among the leading causes of death in the US and North Carolina (NC) in 2015 (CDC, 2017; North Carolina Division of Public Health, 2017). The healthcare costs associated with diagnosed cases of diabetes in the US in 2012 approached $245 billion, which was more than two times greater than the healthcare cost for people without diabetes (CDC, 2017). African American (AA) adults have an 80% greater chance of developing diabetes and are twice as likely to die from the disease as non-Hispanic white adults (Office of Minority Health [OMH], 2016). Obesity and low levels of physical activity (PA) are strong indicators for the development and/or worsening of T2DM. AA adults with T2DM are almost two times more likely to be obese (Ogden, Carroll, Kit, & Flegal, 2013) and less likely to report healthful PA compared to their non-Hispanic white counterparts (Van Duyn et al., 2007). Forty percent of NC’s AA adult residents are obese and only about 30% engage in the recommended level of PA (North Carolina Department of Health and Human
The disparate impact of T2DM on AA adults and increased lifestyle risks warrants continued evaluation of efforts to improve clinical outcomes.

The purpose of this project was to implement a culturally tailored, faith-based, diabetes self-management education intervention that included social support in a sample of AA participants with T2DM and complete pre-intervention (T1) and post-intervention (T2) measures to evaluate the effect the intervention had on self-care behaviors and clinical outcomes. For this project, clinical outcomes and self-care behaviors were defined in terms of 1) weight 2) physical activity (PA) measured in minutes per day and 3) self-reported fasting blood glucose (FBG) measurements as these are some of the major areas of responsibility in self-management for people with T2DM. If not well managed, these areas, over time, may increase the likelihood of the development of complications from diabetes. After analyzing the post intervention results, recommendations will be made to clinical providers, family members and community support advocates who provide care for AA with T2DM, with the goal of improving T2DM outcomes and health.
CHAPTER 2: LITERATURE REVIEW

Background and Significance

Pathophysiology. Insulin, the key that opens the door to allow glucose into cells, is secreted from the β-cells found in the islet of Langerhans located throughout the pancreas. When tissues become resistant to insulin, β-cells are signaled to produce more insulin to maintain the body’s homeostasis. As β-cells are fatigued from constant production of insulin, they begin to dysfunction. As cells are overworked, β-cell dysfunction eventually leads to β-cell death. Insulin resistance, beta cell dysfunction and ultimate destruction, over time, lead to the development of T2DM (Kahn, Cooper, & Del Prato, 2014). Beta cell dysfunction is insidious at its onset. It generally takes about five to seven years before individuals notice the three main symptoms of diabetes (polyphagia, polydipsia, and polyuria) and seek help that leads to a diagnosis.

Risk factors. Non-modifiable factors contributing to the development of T2DM include age, race, sex, and family history (National Institute of Diabetes and Digestive and Kidney Diseases [NIDDK], 2016b). Maturing age increases one’s risk for diabetes. This is demonstrated by the increased prevalence of diabetes as age rises (CDC, 2017). Minority racial and ethnic groups are at greater risk of developing diabetes and are disproportionately affected by it. African Americans are second only to American Indians/Alaska Natives in this disproportionate effect (CDC, 2017). Globally more men are diagnosed with diabetes than are women (Kautzky-Willer, Harreiter, & Pacini, 2016); however, in the US between 2013 and 2015, 13% of AA adult females were diagnosed with diabetes versus 12% of AA adult males (CDC, 2017). Additionally,
the risk of developing diabetes is increased in persons with first generation relatives who have had diabetes (Franks, 2010).

Modifiable risk factors include obesity, physical inactivity, poor diet, smoking and socioeconomic status (Gillett et al., 2012). Obesity, an excess of adipose tissue, is a key risk factor in T2DM as it desensitizes glucose recipient cells such as those in muscles, brain, liver, and adipose tissue to the work of insulin. This desensitization is attributed to an increase in low grade systemic inflammation. Inflammation builds as macrophages, which are the primary source of cytokines in obese individuals, penetrate and accumulate in adipose tissues (Cerf, 2013). This lack of sensitivity of cells to insulin, called insulin resistance, allows for the elevation of glucose, leading to hyperglycemia and T2DM ensues.

A poor diet with overconsumption of saturated fat and free fatty acids (FFA) can lead to obesity. Increase in FFA reduces the protective anti-inflammatory effects of adiponectin, a protein hormone produced by the adipocyte which helps with glucose regulation and fatty acid breakdown. Decreased adiponectin fosters the build-up of inflammation due to cytokines, leading to β cell dysfunction and consequent metabolic malfunction of the body’s demand for insulin (Ouchi & Walsh, 2007). Persistent hyperglycemia due to a lack of insulin leads to continual β cell dysfunction and eventual β cell death if hyperglycemia is not controlled (Cerf, 2013). Additionally, with cells being resistant to insulin and hyperglycemia prevailing, the pancreas is signaled to secrete more insulin where insulin already exists, creating a state of hyperinsulinemia. Increased insulin levels can lead to weight gain (Velasquez-Mieyer et al., 2003).

A lack of moderate PA to include continuous activity, aerobic exercise, weight training and/or flexibility exercises also increases one’s risk of developing T2DM as physical inactivity
reduces fatty acid oxidation and skeletal muscle glucose uptake. Increase in PA, however, increases skeletal muscle mass, enhances glycolysis and thus facilitates cellular glucose uptake (Ley, Schulze, Hivert, Meigs, & Hu, 2015).

Smoking has been associated with the development of T2DM. Active smokers were noted to be at higher risk for the development of T2DM than non-smokers and heavier smokers were noted to be at greater risk than lighter smokers in a meta-analysis of 25 prospective cohort studies done in the US, Europe and Asia with 1.2 million participants (Willi, Bodenmann, Ghali, Faris, & Cornuz, 2007)

Another meta-analysis of 23 prospective case-control and cohort studies conducted in Europe, Asia, Africa, South and North America demonstrated that the overall risks for developing T2DM was increased in populations of lower socio-economic positions of education, occupation and income (Agardh, Allebeck, Hallqvist, Moradi, & Sidorchuk, 2011). Although the complete association between socioeconomic status and T2DM is not fully understood, the causal processes of lack of access to healthcare services, healthy foods, places to exercise and occupational opportunities that give rise to unhealthy lifestyle practices are certainly contributory (Brown et al., 2004).

Complications. The chronic nature of T2DM and the frequent lack of patient adherence to recommended therapies lends to the development of complications from diabetes. Uncontrolled or undetected T2DM has many serious complications. They manifest as hyperglycemia prevails, causing vascular injury (Fowler, 2011) that leads to micro- and macro-vascular complications.
**Micro vascular complications.** Over time, as small vessels supplying blood to organs in the body deteriorate from the buildup of atherosclerosis, an increased risk of T2DM (Chait & Bornfeldt, 2009), complications such as neuropathy, renal insufficiency or failure, and visual impairment manifest. Neuropathy, a condition affecting the nerves, is attributed to diabetes when all other causes have been excluded, per the American Diabetes Association (ADA) (Pop-Busui et al., 2017). It is the most common complication of diabetes, with a lifetime prevalence of approximately 50% (Juster-Switlyk & Smith, 2016). Exposure of the nerves to high blood glucose for prolonged periods give rise to damaged nerves. Several factors, all of which are not fully understood, including processes like the release of too many cytokines into tissues and exaggerated oxidative stress coming together in a downstream metabolic cascade are attributed to nerve damage (Yagihashi, Mizukami, & Sugimoto, 2011). Although diabetes can affect all the nerves in the body, a condition described as diabetic polyneuropathy, neuropathy is most common in the lower extremities (Juster-Switlyk & Smith, 2016). It causes toe, foot or leg pain and numbness increasing risks for fall injuries that lead to hospitalizations. As nerves in the extremities are damaged, numbness develops, leading to a lack of sensitivity in the feet and injuries or ulcers that may occur are not felt. In an environment of high blood glucose, healing is impaired, leading to infection and possible gangrene. Amputations can ultimately occur under these conditions.

Mononeuropathy, peripheral neuropathy and radiculopathy which is unilateral nerve compression, are other forms of diabetic neuropathy which are common. Autonomic neuropathy due to diabetes can manifest in most organ systems such as the digestive system, urinary tract, sex organs, heart and blood vessels, sweat glands, and eyes. This neurological damage can be evidenced in conditions such as gastroparesis, constipation, diarrhea, various bladder
dysfunctions, erectile dysfunction, vaginal dryness, orthostatic hypotension, resting tachycardia, silent ischemia, sudden cardiac death, hypoglycemic unawareness, anhidrosis, and decreased adaptation of eyes to dark and light (Fowler, 2011).

The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) reported an overall prevalence of 14% of the general US population with chronic kidney disease (CKD) and almost half of that number is attributed to people who have diabetes (NIDDK, 2016a). Diabetes is the most common cause of end stage renal disease (ESRD) (Ghaderian, S. B., Hayati, F., Shayanpour, S., & Beladi Mousavi, S. S., 2015). Podocytes, or foot cells, that surround the small glomerular vessels are damaged by hyperglycemia and increased inflammation present in diabetes (Lin & Susztak, 2016)). This results in a decreased ability of the kidneys to filter blood. Furthermore, hyperglycemia can cause proteins in the glomeruli to link up and form cross linkages that lead to glomerular scarring termed glomerulosclerosis. An increase in nephrotic glomerulosclerosis, decreases the kidneys’ ability to filter blood and the kidneys fail gradually (Alsaad & Herzenberg, 2007). As the overworked kidneys eventually fatigue and render the glomeruli “leaky”, large protein particles like albumin can filter into the urine. The need for hemodialysis can arise with kidney failure due to CKD or ESRD.

High blood glucose causes vision impairment in about one third of adults older than age 40 who have diabetes. This is the result of diabetic retinopathy or damage of the small vessels in the eye. Retinopathy is the most common cause of blindness in people with diabetes (NIDDK, 2017) and of blindness overall (Lee, Wong, & Sabanayagam, 2015). Retinopathy often begins to develop long before a diagnosis of diabetes is made to the extent that 21% of people with diabetes have some retinopathy at diagnosis (Fong et al., 2004). As diabetic retinopathy progresses through mild non-proliferative, moderate and severe non-proliferative abnormalities,
it evolves into proliferative diabetic retinopathy which is distinguished by angiogenesis on the retina and bleeding in the posterior vitreous (Fong et al., 2004).

Tight glycemic control was demonstrated by two landmark studies, The Diabetes Control and Complications Trial (DCCT) and the United Kingdom Prospective Diabetes Study (UKPDS), to have a protective effect on the development and progression of complications of diabetes. The DCCT study, however, focused on T1DM, whereas, the UKPDS focused on T2DM. In the UKPDS study one percent decreases in hemoglobin A1C (A1C) were associated with a general risk reduction of any complication from diabetes by 21% (P < 0.0001). The risk reduction translated more specially as follows: 21% for diabetes related deaths (p < 0.0001), 14% for heart attacks (p < 0.0001) and 37% for microvascular complications (p < 0.0001) (Stratton et al., 2000).

**Macro vascular complications.** Peripheral artery disease (PAD), coronary artery disease (CAD), and stroke are macro vascular injurious effects of diabetes (Fowler, 2011). High blood glucose readings decrease the level of nitride oxide, a vasodilator, in blood vessels. With the reduction of nitride oxide, the risk for rise in blood pressure is increased. The flow of blood through the vessels at a higher than normal pressure leads to destruction of blood vessels in the form of narrowing and increased propensity for blockage in vessels. Peripheral artery disease, a vascular abnormality due to blood flow blockage of the vessels, affects 12 million people in the US. People with diabetes make up about 20% of that number (Thiruvoipati, Kielhorn, & Armstrong, 2015) and PAD can lead to lower limb amputations in about 4% of those affected (ADA, 2003), especially in combination with neuropathies. As diabetes drives inflammation and slows blood flow, atherosclerosis accelerates, (Chait & Bornfeldt, 2009) reducing the size of the vessels’ lumen and resulting in hypertension, another complication of diabetes (De Boer et al.,
Hypertension and diabetes serve as strong risk factors for the development of ischemic disease - CAD, stroke and death (De Boer et al., 2017).

**Disparity by Race and Ethnicity**

According to the Office of Minority Health (OMH), the age-adjusted percentage of AA with diabetes who experience visual impairment, kidney disease, and lower extremity amputations exceeds that of non-Hispanic whites with diabetes (OMH, 2016). By 2011, the age-adjusted prevalence of visual impairment in AA adults with diabetes had grown to almost 21% per 100 adults as compared to the 17% for non-Hispanic whites (OMH, 2016). In 2010, an estimated 4.2 times more AA suffered from ESRD due to diabetes than did non-Hispanic whites. The likelihood of the development of CKD in AA is about 17% as compared to the near 14% in whites (NIDDK, 2016a). Chronic kidney disease develops into ESRD over time and affects AA almost four times more than whites or other minority groups by 1.4 times more than Native Americans and 1.5 times more than Asian Americans (NIDDK, 2016a). African-Americans represent only 12.5% of the US population but they represent 38.2% of the population requiring hemodialysis (Calvin et al., 2011). In 2009 twice as many AA underwent lower extremity amputations per 1000 persons with diabetes than non-Hispanic whites (OMH, 2016). African-Americans with diabetes were four times more likely than non-Hispanic whites to be hospitalized for lower limb amputations in 2012 (OMH, 2016) and 2.7 times as likely to suffer from lower extremity amputations as compared to the general population. These statistics show the importance of finding ways to make self-management, the foundation of diabetes management, more effective to achieve successful clinical outcomes for AA.
Interventions for Improving Glycemic Control in Patients with Diabetes

Different strategies to improve glycemic control have been explored in research and practice and the ADA provides guidelines in this regard. All strategies, including lifestyle changes (ADA, 2018a), pharmacological therapies (ADA, 2018b), and diabetes self-care management, require some degree of understanding of the disease process and a plan to yield patient adherence (Hass et al., 2014). Lack of patient adherence to recommended therapies is recognized regardless of the disease process; however, it is particularly true for chronic diseases (Choudhry et al., 2017). The problem with patient adherence to diabetes treatment plans has been acknowledged (Edelman & Polonsky, 2017) and bears a large economic burden (Lee, Balu, Cobden, Joshi, & Pashos, 2006).

Lifestyle changes. As previously noted, T2DM is a chronic disease with the potential for severe complications; however, some very fundamental changes in lifestyle can affect disease progression in a positive direction. Researchers have provided substantial evidence that indicate that healthy lifestyle behaviors to include healthy diets, regular PA, weight loss or management, and smoking cessation contribute to tight glycemic control and reduce the risk for comorbidities like high blood pressure, high cholesterol and cardiovascular complications (Chong et al., 2017; Tuomileho et al., 2001). Although lifestyle changes have demonstrated a positive effect on glycemic control, those changes can be slow in occurring.

Medications. Using pharmaceutical therapies can also help with controlling and managing diabetes. A variety of pharmaceutical treatments for glycemic control have been developed over the years and continue to be developed such as insulin, oral medications, or injectable non-insulin options. Classes of diabetes medications include oral medications such as sulfonylureas, biguanides, alpha-glucosidase inhibitors, thiazolidinediones, meglitinides, bile acid sequestrants, sodium-glucose co-transporter-2 (SGLT2) inhibitors and dipeptidyl peptidase-
4 (DPP-4) inhibitors; injectable non-insulins which include glucagon-like peptide-1 (GLP-1) agonists and amylin mimetics; and different kinds of insulin. The ADA guidelines for pharmacotherapy dictate that the choice of medications should be patient-centered as guided by cost, potential side effects, risks for hypoglycemia, comorbidities, efficacy, potential for weight gain and patient preferences (ADA, 2017). Despite the growth of science in developing these new therapies, poor adherence to either form of diabetes pharmacotherapies is very common (Aikens & Piette, 2009, Edelman & Polonsky, 2017).

**Self-care management.** Given the significant effects of T2DM on daily quality of life and health outcomes, self-care management is a critical option for addressing the overall growing cost of healthcare in the US, the healthcare costs of T2DM and the costs of disabilities from the long-term effects of T2DM (Powers et al., 2015). Education and behavioral modification interventions are effective self-care management strategies in diabetes care (Hass et al., 2014).

Over decades, the ADA, through the work of large bodies of literature, has recognized the efficacy of diabetes education and established national standards for DSME (Hass et al., 2014). Task forces formed through the ADA and other related organizations review these national standards every five years for appropriateness, relevance, and scientific basis. In 2011, a joint task force of the ADA, the American Association of Diabetes Educators (AADE) and other collaborators convened to review the Standards and decided to change the name of the Standards from the National Standards for Diabetes Self-Management Education to the National Standards for Diabetes Self-Management Education and Support (DSME/S) (Hass et al., 2014). This change structurally acknowledged the ongoing and continued need for support and encouragement for adults with diabetes in their self-care management. Diabetes self-management education not only helps the individual understand their disease process better but
contains elements of lifestyle changes and medication management. The ADA in a joint position statement with the AADE and Academy of Nutrition and Dietetics stipulated that DSME/S should include elements of engagement that reflect patient-centeredness, information sharing where patient needs are determined, psychosocial and behavioral support, integration of other therapies, collaborative care and coordination of goals (Powers et al., 2015).

**Group based intervention and education.** Routine diabetes counseling and education are often done on an individual basis between a patient and a provider and are subject to time constraints (Kirkman, Williams, Caffrey, & Marrero, 2002). Group-based diabetes self-management education compared to routine treatment for people with T2DM, however, is less costly and has exhibited great worth in improving clinical outcomes (Steinsbekk, Rygg, Lisulo, Rise, & Fretheim, 2012). This reigns true as several people can get information and support in an allotted period, benefitting both from the synergy of the group and from individually focused time as needed. The important aspect of support in care of diabetes has been recognized by the National Standards in changing the name from DSME to DSME/S (Hass et al., 2014). A systematic review with meta-analysis of 21 randomized control trials (RCT) involving 2833 participants showed a significant improvement in participants’ glycemic control as measured by A1C at 6 months (P = 0.0006, 13 studies, 1883 participants), 12 months (P = 0.001, 11 studies, 1503 participants) and 2 years (P < 0.00001, 3 studies, 397 participants) in the intervention groups that received group based DSME. Fasting blood glucose also showed improvement at 12 months (P < 0.00001, 5 studies, 690 participants) but not at 6 months (Steinsbekk, Rygg, Lisulo, Rise, & Fretheim, 2012). Although the effectiveness of educational interventions that empower patients in self-management of diabetes has been manifested, this effectiveness has been suboptimal in ethnic minority populations for reasons such as limited health literacy, access
to fruits/vegetables, safe recreational areas, financial burdens, and competing priorities especially when the interventions are not culturally tailored (Peek, Cargill, & Huang, 2007). Cultural tailoring of interventions for AA can be accomplished by drawing upon traditions of oral storytelling and religious testifying (Houston et al., 2011) to encourage patients to share about their challenges and successes in managing diabetes. Engaging the social support of the church and family members and providing nutrition education in the context of traditional dietary patterns (James, 2004) also lend cultural tailoring.

**Group DSME employed in the church setting for AA.** As interventions are culturally tailored, it is crucial to draw upon natural points of connections. For AA, the church has historically been a central institution and has played a significant role in influencing individual beliefs, behaviors, daily activities and connecting with people (Chatters, Taylor, Bullard, & Jackson, 2009; Hatch & Derthick, 1992; Levin, 1984; Markens, Fox, Taub, & Gilbert, 2002). DSME interventions in the church setting, have therefore been studied and proven to be effective by a growing body of evidence (Austin & Claiborne, 2011; Samuel-Hodge et al., 2006; Samuel-Hodge et al., 2009; Whitney et al., 2017).

**Faith-based DSME Interventions for AA - Literature Review**

Databases including CINAHL, Family & Society Studies, PsycInfo, and PubMed were queried for studies published in the English language using the search terms diabetes, African Americans/blacks, diabetes, self-management education, social support, and faith/church/religion/spiritual. Reference lists of published works were also reviewed to find pertinent studies. Inclusion criteria for this review were the following 1) addressed the AA adult population with T2DM; 2) employed faith-based interventions, and 3) self-management education methods. Studies excluded were those addressing prevention issues in diabetes and T1DM, unless the T1DM results were reported separately from the T2DM participants. Figure 1
provides results of the search outcome. Four studies with an overall total of 344 participants addressed the inclusion criteria. Most of the study participants were females and adults between ages 55 and 60. One study focused exclusively on females (Duru et al., 2010). The participant locations were in the southeastern and western regions of the US.

**Figure 1. Literature Search Results**

GRADE (Grading of Recommendations, Assessment, Development and Evaluations) guidelines were used in evaluating the quality of the evidence presented in each of the studies. GRADE provides a framework for assessing quality of scientific evidence for reviews with a systematic approach. In so doing, it differentiates quality assessment for systematic reviews from that which is required for guideline development in making recommendations. GRADE judgements distinguish the findings of a study within a whole body of evidence from the individual study in making an assessment. That is, a certain quality of evidence does not necessarily imply a certain strength of recommendation; for example, high quality studies like
RCTs do not innately denote high recommendations and vice versa. In guideline development the concept of “expert opinion” is also used as a type of evidence. Although the experience of experts in giving an opinion is very important and GRADE recognizes such, in developing guidelines, it differentiates the quality of rating evidence within a body of works upon which opinions are based from the rating of opinions that result from the evidence and its judgements. The level of evidence in GRADE’s reference to “quality” is not in the typical “risk of bias” sense as used by epidemiologists and others but rather in a “nontechnical understanding” which represents confidence in the true effect of where presented data lies compared to the estimated effects in a body of evidence (Balshem et al., 2011). GRADE was developed by an international collaboration of panels and agencies and proposes four categories (high, moderate, low and every low) for the quality of a body of evidence.

Two of four studies in this review were RCT’s (Duru, Sarkisian, Leng, & Mangione, 2010; Samuel-Hodge et al., 2009) while the others used one group, pre-post testing (Collins-Mcneil et al., 2012, Johnson et al., 2014) and qualitative methods (Collins-Mcneil et al., 2012).

**Intervention strategies and settings.** Investigators of the studies included in this review show evidence of diabetes self-management as the cornerstone for influencing clinical outcomes for AA with T2DM. As AA are the minority group second most disproportionately affected by T2DM this is an important factor. All the researchers used group diabetes self-management education, some component of it or various multi component interventions to evaluate the affect DSME has on self-management, self-care behaviors, and/or diabetes related clinical outcomes such as physical activity, weight, A1C, blood glucose testing, blood pressure and/or diet. The length of the studies varied from eight weeks to 12 months. All the studies were completed in
AA church settings and the researchers showed the role of the church as a positive influence in diabetes self-management, which ultimately determines clinical outcomes.


Duru et al., (2010) used a multi-faceted faith-based PA intervention, conducted in three AA churches in Los Angeles, CA based on the Community Healthy Activities Model Program for Seniors (CHAMPS). Researchers evaluated whether the intervention would increase PA in 62 AA women, ages 60 years and older, with sedentary lifestyles. Outcome variables in this study were steps walked per week, systolic blood pressure, diastolic blood pressure, weight, pain and self-reported PA. Samuel-Hodge et al., (2009) developed and evaluated the effectiveness of the “A New DAWN” (Diabetes Awareness and Wellness Network) intervention in churches in central North Carolina. After baseline data was obtained, the intervention divided participants into two groups of a special intervention (SI) and a minimal intervention (MI) by random stratification. The 117 participants from 13 churches who received the SI had one individual counseling session, 12 group diabetes self-management sessions lasting 90 to 120 minutes,
monthly phone contacts and were sent three encouragement postcards during the eight and twelve-month follow up periods. The 84 participants from 11 churches who received the MI received two standard diabetes education pamphlets by mail – “Healthy Eating” and “Staying Alive”. Outcome variables measured were A1C, blood pressure, weight, PA, dietary intake, diabetes knowledge, and general health.

**Results of studies.** Authors of three studies reported statistically significant findings about self-monitoring blood glucose and A1C. Collins-McNeil et al., (2012) reported a decrease in self-monitored blood glucose values from 168±70 mg/dl at baseline to 128±75 mg/Dl at 12-week follow up. Johnson et al., (2014) noted a statistically significant improvement in blood glucose testing behaviors from baseline to 12-month follow up (p =.001). Samuel-Hodge et al., (2009) reported statistically significant improvement in A1C at eight-month follow up from baseline between SI and MI groups with 0.4% difference (95% confidence interval [CI], p = .009); but no statistical significance at 12 months.

Two studies reported positive trends in PA, one of which was statistically significant; Duru et al., (2010) reported PA in mean steps per week was increased at six-month follow up (p = .02) and Collins-McNeil et al., (2012) reported an improvement in PA from baseline of 2.76±2.0 days, to 12-week follow up of 3.58±1.62 days. Johnson et al., (2014) reported no statistically significant improvement from baseline to 12-month follow up in PA. Samuel-Hodge et al., (2009) completed PA analyses in terms of wearing an accelerometer monitor in total days worn, hours per day worn, total hours, light minutes and moderate minutes. No statistically significant change in SI or MI groups at eight and twelve-month were noted for most measures, except for decrease in moderate PA that showed statistical significance between the two groups (95% CI, p = .02).
Three studies reported improvements in weight or diet, two of which were not statistically significant. Johnson et al., (2014) demonstrated statistically significant changes in dietary choices (p = 0.001) as measured by the number of days in seven that participants followed a healthful eating plan, ate five or more servings of fruits and vegetables and ate high fat foods like red meat or full-fat dairy products. Results of the study by Collins-McNeil et al., (2012) showed a decrease in weight from baseline of 211.2 ±44 pounds to 12-week follow up of 209.0 ±42 pounds that was not statistically significant. Duru et al., (2010) saw no statistically significant post intervention differences in participants’ weight observed from baseline (p = .51). Samuel-Hodge et al., (2009) showed no difference in weight at either eight- or twelve-month follow up between the comparison groups. They analyzed twelve categories of dietary intake and generally found no difference between the comparison groups except in fruit (p = .07) and fiber (p = .06), which although were neither statistically different nor significant, trended in a slightly more positive direction in the special intervention group.

Samuel-Hodge et al., (2009) measured diabetes knowledge and showed an increase in both groups, but more so in the SI group with statistical significance in that group at eight-month follow up (95% CI, p = .003). The researchers used a 16-item scale adapted from the 40 multiple choice items of the validated (α = 0.92) Diabetes Knowledge Scale (Stewart et al., 1984).

Researchers demonstrated the effectiveness of faith-based interventions that include DSME among AA with T2DM especially when culturally tailored in the context of the church (Collins-McNeil et al., 2012; Duru et al., 2010; Johnson et al., 2014; Samuel-Hodge et al., 2009). Even though the results of the outcome variables measured in the studies discussed herein varied between studies, all of the studies showed that the interventions employed were effective for some variables and therefore the church may be a viable effective medium for using DSME to
educate AA with T2DM. Other researchers have also shown a positive, significant relationship between the religious beliefs/spirituality of AA, glycemic control and self-care (Newlin, Dyess, Allard, Chase, & Melkus, 2012; Watkins, Quinn, Ruggiero, Quinn, & Choi, 2013). These findings further endorse the use of DSME for AA with T2DM in faith-based settings like the church.

Church groups may provide the social support necessary for individuals to be self-efficacious against T2DM and the potential complications that lurk when self-management is only addressed in the clinic-based setting. Health care providers must be flexible in ways of providing care as we seek new and innovative ways of helping patients to achieve their goal of optimal health. One theory or method does not fit all persons or groups; we should therefore be willing to change plans when they do not achieve acceptable or desirable results. The goal is to use the knowledge gleaned herein to help improve the lives of AA adults with T2DM and ameliorate the outcomes of the disease, while minimizing exorbitant health related costs.
CHAPTER 3: THEORETICAL FRAMEWORK

Background of Self-Efficacy theory

The overall conceptual framework of this project is based on the Self-Efficacy (SE) Theory, a theoretical construct that originated from the Social Cognitive Theory, renamed Social Learning Theory, by Bandura (Bandura, 1977; Ashford & LeCroy, 2010). Self-efficacy, which has emerged as a separate theory, is a major focus of the Social Learning Theory (Locke & Latham, 2002). Self-efficacy theory is both an explanatory and predictive theory because Bandura proposed a correlation between individuals’ behavior and their perception, SE, in their ability to succeed in specific situations or specific tasks (Bandura, 1977). Bandura postulated a direct inter-relationship between an individual’s perception of capability to effect behavior change (SE), their choices, behaviors and endurance through difficult and adverse experiences (Bandura, 1977). He hypothesized that an individual’s perception of SE determined the initiation of behavioral changes, the effort expended in that change towards mastery, and willingness or unwillingness to take risks towards change in challenging conditions and experiences (Bandura, 1977). Self-efficacy is the main motivation for self-management (Maes & Karoly, 2005).

Application of SE theory to project (Figure 2)

Within the SE Theory Bandura posited that an individual’s motivation to perform a behavior is directly related to their perceived self-confidence in performing that behavior (Bandura, 1977). As such, he suggested that there are four judgements people use to determine personal efficacy: verbal persuasion, vicarious experiences, physiological feedback, and performance outcomes (Bandura, 1977). Mastered experiences influence SE in a positive way,
whereas failed experiences undermine it. Self-efficacy is influenced or undermined by others’ perceived lived experiences, the encouragement or discouragement provided from others and one’s own perceived emotional arousal. Researchers studying SE in the context of diabetes self-management have found SE to have a strong association with self-care behaviors like diet optimization, PA/exercise, glucose self-monitoring and foot care (Sakar, Fisher, & Schillinger, 2006). Maes & Karoly, (2005) identified SE as the main motivation for a successful self-management lifestyle. The effects of the DSME/S intervention in this project are expected to empower participants in their self-care abilities, thus increasing the participants’ SE and consequently improving outcomes.

Figure 2. SE Theory and DSME/S Intervention
Verbal persuasion. During this project a five-minute motivational scripture reading, and teaching preceded each of six weekly DSME/S sessions. This component of the intervention was to promote one form of social persuasion that is necessary for behavioral change according to the SE theory. The scriptures selected were aligned with weekly goal-setting objectives related to the self-management topic discussed as informed by the works of Duru et al., (2010) and Whitney et al., (2017). The motivational teaching from the scriptures were expected to help participants draw parallels in applying the teaching to their personal situations and be instrumental in helping participants set goals during group sessions. Social support, a form of persuasion, was included by providing an opportunity for paired partnerships established during the project and group discussions. The choice of partners was made by participants.

Vicarious experiences. During each DSME/S session an individual with a history of T2DM shared some personal experiences of living with T2DM. Those experiences involved challenges, how they were surmounted, goals and the outcomes achieved. Participants could identify with the presenter’s experiences through these brief moments of sharing. They could continue to live vicariously by sharing experiences through paired partnerships established during the project. The sharing experience also drew upon the religious tradition of “testifying” and cultural oral story-telling in AA communities (Houston et al., 2011).

Physiological feedback. Per Bandura, people’s self-efficacy is influenced by how they perceive their emotional experiences (Bandura, 1977). The motivational scripture lessons and paired partnership design of the project was therefore geared towards positive mood enhancement and goal commitment of project participants. As the participants received weekly DSME/S, the goal was that they would achieve higher levels of mastery in understanding how to manage their disease process. This improved health literacy was expected to alter negative
emotional predisposition and misinterpretations of participants’ physical state, thus effecting a positive outcome.

**Performance outcomes.** Bandura posited that as verbal persuasion, vicarious experiences, and physiological feedback improve, individuals’ self-confidence (SE) is improved, and desirable behaviors are more likely to be performed thus leading to improved outcomes (Bandura, 1977). Related to this project, improved behaviors and outcomes were weight, self-reported FBG measurements and PA.

Bandura in the SE theory focused on individuals’ perception of their abilities that ultimately leads them to follow a plan and institute behavioral changes. Self-efficacy has been shown to be a consistent predictor of successful self-care behaviors (Norman & Conner, 1996); therefore, throughout the duration of the intervention the benefits of healthcare improvements with change, regardless of how small, were capitalized upon. Education in SMART (specific, measurable, attainable, realistic and time-limited) goal-setting was encouraged to harness change (Doran, 1981) and help cultivate SE by helping participants make realizable plans that subsequently would culminate in achievement of goals. This approach was expected to support participants’ SE throughout the intervention and support continued behavioral change which was expected to reflect in outcomes.

**Usefulness and Limitations of SE Theory**

Individuals respond differently to motivational sharing. Their response is governed by their perception; those who perceive high self-efficacy by living vicariously through the verbal persuasion of others, will likely enhance their accomplishments and feelings of well-being (Bandura, 1997). They tackle challenging situations and failures with continued purpose towards their goal, persist through obstacles, remain focused in their activities (Bandura, 1997), and are willing to experiment with new ideas (Ormrod, 2008). On the other hand, high SE does not
always guarantee positive results. Even though participants in the project may have high SE, they may lack the resources to continue to perform after the project ends. Basing SE on performances in prior tasks can be misleading as the individual’s response to the environment and circumstances can always change (Bandura, 1986). Attempts to persuade others verbally can have adverse effects on individuals, leading to low SE. Failures can also lead to stress and depression.

Why the SE Theoretical Approach to this Project

The premise of SE has become a pivotal framework for issues involving behavioral change, which we sought to effect through DSME/S in a faith-based setting. The challenge with improving health outcomes is increasing the willingness of individuals to adapt to healthy lifestyle behaviors. The SE Theory provides the theoretical underpinnings to achieve motivation towards behavioral change which can affect outcomes.
CHAPTER 4: METHODOLOGY

Design

This project was designed as a one group pre- post-test. The focus of this project was the use of a culturally tailored DSME/S church/faith-based intervention that has shown promise in similar populations. The intervention was delivered in a small group format to AA adults with a goal to motivate self-efficacy and increase diabetes knowledge in improving self-care behaviors that would affect clinical outcomes. Health was presented as a resource that enhances the individuals’ quality of life rather than an absence of T2DM and its symptoms (Bhattacharya, 2012). The hope was that this approach would help individuals focus on positive aspects of their life, rather than on a disease process.

Setting

The intervention took place at the Triangle Church in Chapel Hill, NC which is a non-denominational church of mixed races.

Participants

The participants in this project were volunteer members of the Triangle Church. Primary inclusion criteria were AA adults, 18 years old and greater, with T2DM and no foreseeable reason to not complete the six-week program and those who had no exercise restrictions. Exclusion criteria were pregnancy, enrollment in any other diabetes self-management programs at the time of this intervention or participation in other diabetes self-management programs within the last six months prior to this intervention.
Ethical Consideration

All potential participants in the project were adult volunteers. Prior to the initiation of the educational sessions, individuals were asked to sign an informed consent (Appendix A). The consent disclosed the procedures of the project and potential risks, discomforts, or inconveniences which were expected to be minor and not likely to happen. As participants disclosed personal identifying information, they were asked to affix self-generated alpha numeric coded identifiers to all survey responses associated with the project so as to protect their confidentiality and anonymity. There were no conflicts of interest identified or disclosed in this project.

Procedure

Recruitment was done primarily through church announcements directed by one of the church’s trusted ministers who was the project’s champion in leadership and through invitational flyers (Appendix C) that were distributed at church meetings during the beginning weeks of August 2018. Triangle Church members were encouraged to refer individuals for participation by word of mouth. Through the example and leadership of the project champion, announcements were made in small meetings during midweek church services. Word of mouth communication by church members to those persons who were not present when announcements were made connected other potential participants.

Incentives were announced at the informational session. Those incentives included free lunch with each educational session, $20 per round of surveys completed and entry into a drawing for one of two $100 gift certificates to a local grocery store for having completed five (83%) to six (100%) of the educational classes.

The six-week evidence-based, diabetes education intervention was culturally tailored for AA and conducted in the church setting, as part of a faith-based community. To tailor the
curriculum culturally to AA, brief scriptural lessons and prayers were done at the beginning and end of each session to focus participants on their faith. One of the themes noted by Whitney et al., 2017 in their qualitative work with AA is that faith serves to motivate self-management behavioral change in the context of diabetes. Individuals sharing about their challenges and successes allowed for the ethnic tradition of storytelling amongst AA. The weekly educational sessions were delivered by the program leader (PL) and lasted approximately 90 to 120 minutes. The diabetes curriculum was developed by the Community Health Center, Incorporated as part of the Diabetes Initiative, Advancing Diabetes Self-Management program in Middleton, Connecticut (Community Health Center, 2003) (Appendix D). This was a program launched by the Robert Wood Johnson Foundation (RWJF) to help people with diabetes in healthcare self-management by providing them with the necessary resources and community support.

The project’s implementation was monitored throughout its course by the project (PL) on a weekly basis. Key stakeholders included the PL, church minister and participants. Barriers to implementation could have included lack of leadership support and a very limited number of recruited participants. Potential challenges to sustainability were participants’ attendance of sessions, their perception of the sessions and subsequent discouragement, depression and/or anxiety. However, project incentives and the administration of the Concerns Assessment (Appendix E), which was used to explore participant worries and concerns, helped to address these potential issues.

Adapting self-care behaviors to food choices through cultural and lifestyle influences was achieved and demonstrated in discussions during the weekly shared free lunches. For example, the group talked about food preferences and the PL ordered and prepared meals in line with those preferences. During meal serving and consumption the group discussed meal ingredients that
made meals low-calorie but healthy and palatable, food category ingredients and amounts like number of carbohydrates, serving sizes and best time of day to eat the different food categories. For pre-prepared foods and fast foods, the group had an in-class planning exercise to look at fast food menus of their choices and contents of pre-prepared foods that are common at AA family gatherings. In so doing, they evaluated and made the closest healthy plan in terms of content and calories for days when they may feel obliged to have fast or other pre-prepared foods or have to attend family gatherings.

Data Collection

Participants were asked to complete a Diabetes Concerns Assessment Form (Appendix E) at the initial information session, which lasted 60 minutes. The goal of this assessment was to elicit primary concerns, what participants hoped to learn from the program, and to help identify areas in which they would be motivated to change. These goals were intended to help participants begin to concretely explore the intensity of their emotions concerning diabetes towards goal setting for change and to demonstrate empathy for the participants.

Participants who were not using insulin were asked to self-report at least one FBG reading per week. Participants taking insulin could report more often as needed. If participants had not been checking their blood glucose, they were asked to check a fasting measure within seven days of the first educational session and provide that reading as a baseline measure.

Physical activity measured in minutes per week within seven days of starting the program was recorded as a baseline measurement. Frequency of purposeful physical activity, duration, type of activity and intensity were self-recorded daily. Participants were provided with a tool for recording daily measures per week (Appendix F) and these records were reviewed and discussed during the weekly sessions. They were also provided with a tool for weekly goal setting and discussion with partners in the group (Appendix G). The weight of each participant was assessed
at the informational session with shoes removed and outer clothing on, using a SECA electronic scale as validated by Samuel-Hodge et al., (2009).

Measurement tools and surveys were adapted from the Michigan Diabetes Research and Training Center (MDRTC) and used by permission (Appendix H). Diabetes knowledge was assessed using an abbreviated form (14-item general test) of the 23-item revised Diabetes Knowledge Test 2 (DKT2) (Appendix I) designed through the MDRTC (Fitzgerald et al., 1998a). Reliability (α > 0.70) and validity testing was done by comparing responses to the form by different populations, including T1DM and T2DM patients, patients from different educational levels and with different amounts of diabetes education. As expected, participants with more education on diabetes scored higher than those who had less education. The form was deemed valid for measuring diabetes knowledge (Fitzgerald et al., 1998a) and appropriate for use in this project given that the 14-item general test has a good item-to-program content match. Diabetes psychosocial self-efficacy was measured by using the Diabetes Empowerment Scale-Short Form (DES-SF) (Appendix J), for which reliability (α = 0.84) and content validity testing has been evaluated (Anderson, Fitzgerald, Gruppen, Funnell, & Oh, 2003).

In order to assess baseline and post study demographics, health status, health perception, and support systems, the Diabetes Project Pre (Appendix K) and Post Participation (Appendix L) Questionnaires were adapted from components of the Center for African American Health – Diabetes Initiative Pre and Post Questionnaires (Diabetes Initiative, 2009) and the Diabetes Care Profile through MDRTC (Fitzgerald et al., 1998b). The tools were formatted in a similar manner to the questionnaires from the Diabetes Initiative with some questions from the Diabetes Care Profile added. The pre-questionnaire gathered baseline data on descriptive participant characteristics, health status, and support which were compared to post intervention findings of
the post intervention questionnaire. It was important to us to know the participants’ health status, their perceptions thereof and how the disease was affecting them in terms of potential co-morbidities in addressing their concerns about their disease process.

At the end of the program, participants were asked to evaluate the program based on their satisfaction and the program’s effectiveness using two questions scored on a five-point Likert scale and two open ended questions that asked about the strengths and weaknesses of the program.

**Human Participants Research Compliance**

The Institutional Review Board at the University of North Carolina at Chapel Hill reviewed and approved this study.

**Data Analysis**

Data were analyzed using the IBM Statistical Package for the Social Sciences (SPSS) Statistical Software, version 25.0, generating descriptive analysis of sample participant demographic and health status variables which included age, gender, education, marital and employment status, years since diagnosis, smoking history, whether they had a primary care provider, health insurance, high cholesterol, and high blood pressure. Pre- and post-intervention diabetes knowledge questionnaires and composites of psychosocial self-efficacy domains were compared to determine changes over time using paired T tests. Changes in the continuous outcome measures of weight and FBG were also compared for any changes using paired T tests. Cross-tabulations of pre and post categorical physical activity variables were constructed to assess change. Due to the small overall sample size, no tests were completed to determine level of significance in change for physical activity categories.

To evaluate the program, participants were asked to report on program satisfaction, effectiveness, strengths and weaknesses (Appendix M). This evaluation was done with the use of
two questions evaluated on a Likert Scale ranging from 1 “strongly disagree” to 5 “strongly agree”. Two open ended questions about the strengths and weaknesses of the program were asked. Frequencies and percentages were used to analyze the questions on the Likert scale and themes of the open-ended questions were observed with similarities being noted.
CHAPTER 5: RESULTS

Introduction

We in this study sought to implement a pre-validated DSME/S program tailored to an AA adult population recruited at a non-denominational mixed-race church in North Carolina. Effects associated with the educational program on participant clinical outcomes of weight, self-reported FBG readings and physical activity are reported herein. Descriptive analyses of sample characteristics and health status domains, perceptions of diabetes psychosocial self-efficacy and diabetes knowledge data are also reported before and after participation.

Twelve persons agreed to participate in the project. Four participants withdrew from engaging in the intervention prior to the commencement of the program due to time constraints and health challenges. Eight participants completed the six-week program, but one did not complete post-intervention surveys and therefore data are not reported for that person. That participant was noted to be the only person who had reported challenges with depression in the Concerns Assessment and later reported that anxiety and depression issues lead to incompletion of surveys. Data were collected pre and post six-week intervention for a sample population of seven volunteer participants.

Six of the seven participants were female and one was a male. All participants had at least completed high school, with most participants (72%) having completed a bachelor’s degree and none had completed any graduate studies. Participants were all older adults with a mean age of 53 years and a mean number of years since diagnosis of 9.7 (Table 2). Seventy-one percent of the participants were insured by their employers prior to the program initiation and 86% were
insured by their employers by the end of the program, even though 72% reported having full-time work (Table 2). All other variables in Table 2 remained the same. Most of the participants reported that they had health insurance (71%), a personal medical provider (86%), and regular medical care (71%); however, 57% (Table 3) perceived having no one to help them with their disease process at the onset of the program. This perception reportedly changed by the end of the program with participants reporting 57% physician and 14% nurse assistance with their disease process. An equal 14% of participants, pre and post intervention, reported being unemployed and retired, as well as, never married and married (43%) and one had been divorced.

**Primary Concerns of Participants**

Before the educational program began, participants were asked about their primary concerns when caring for their diabetes, to explore their emotions about these concerns, and to discover what they hoped to learn from the program so as to address those concerns. Participants identified several concerns related to medications, such as side effects, effectiveness and changing medications, consistency with taking medications, and possibility of weaning medications completely. Concerns about food included identifying categories, healthy choices for consistency and taste and how the foods affect blood glucose; and following a consistent regular healthy diet. They were also concerned about exercising regularly. Participants indicated a desire to learn about strategies to enhance self-discipline, consistency, motivation, accountability, advocating for self and planning. Approximately three-fourths of them expressed frustration in regards to their concerns.
Pre and Post Intervention Questionnaire Results

Table 1. Paired T Tests-Continuous Variables - Questionnaires

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Table 2. Description of Sample Characteristic at Baseline

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<td></td>
</tr>
<tr>
<td>Female</td>
<td>6</td>
<td>86</td>
</tr>
<tr>
<td>Male</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High school/ GED</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td>Some college</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td>Bachelor's degree</td>
<td>5</td>
<td>72</td>
</tr>
<tr>
<td><strong>Health Insurance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>2</td>
<td>29</td>
</tr>
<tr>
<td>Employer Provided</td>
<td>5</td>
<td>71</td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
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<td></td>
</tr>
<tr>
<td>Never Married</td>
<td>3</td>
<td>43</td>
</tr>
<tr>
<td>Married</td>
<td>3</td>
<td>43</td>
</tr>
<tr>
<td>Separated/Divorced</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td><strong>Employment Status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FT Work</td>
<td>5</td>
<td>72</td>
</tr>
<tr>
<td>Unemployed, looking for work</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td>Retired</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td><strong>Years Since Diagnosis: Mean # of years = 9.7</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>1</td>
<td>14.3</td>
</tr>
<tr>
<td>14</td>
<td>1</td>
<td>14.3</td>
</tr>
<tr>
<td>13</td>
<td>1</td>
<td>14.3</td>
</tr>
<tr>
<td>11</td>
<td>1</td>
<td>14.3</td>
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<tr>
<td>5</td>
<td>1</td>
<td>14.3</td>
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<tr>
<td>4</td>
<td>1</td>
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<tr>
<td>3</td>
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<td>14.3</td>
</tr>
<tr>
<td><strong>Smoker</strong></td>
<td>0</td>
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</tr>
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*Note: N= 7*
Table 3. Description of Sample Population – Health Status Characteristics at Baseline

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>n</th>
<th>%</th>
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</thead>
<tbody>
<tr>
<td>Hypertension</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>3</td>
<td>43</td>
</tr>
<tr>
<td>Yes</td>
<td>4</td>
<td>57</td>
</tr>
<tr>
<td>Hyper cholesterol</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>3</td>
<td>43</td>
</tr>
<tr>
<td>Yes</td>
<td>4</td>
<td>57</td>
</tr>
<tr>
<td>Personal Provider</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td>Yes</td>
<td>6</td>
<td>86</td>
</tr>
<tr>
<td>Years with Provider</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 6 months</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Between 6 months and 1 year</td>
<td>1</td>
<td>14.3</td>
</tr>
<tr>
<td>3 – 5 years</td>
<td>4</td>
<td>43</td>
</tr>
<tr>
<td>➔ 5 years</td>
<td>1</td>
<td>14.3</td>
</tr>
<tr>
<td>No provider</td>
<td>1</td>
<td>14.3</td>
</tr>
<tr>
<td>Regular Medical Care</td>
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<td></td>
</tr>
<tr>
<td>No</td>
<td>2</td>
<td>29</td>
</tr>
<tr>
<td>Yes</td>
<td>5</td>
<td>71</td>
</tr>
<tr>
<td>Health Rating</td>
<td></td>
<td></td>
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<tr>
<td>Good</td>
<td>4</td>
<td>57</td>
</tr>
<tr>
<td>Fair</td>
<td>2</td>
<td>29</td>
</tr>
<tr>
<td>Poor</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td>Who Helps You With T2DM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spouse</td>
<td>1</td>
<td>14.3</td>
</tr>
<tr>
<td>Friends</td>
<td>1</td>
<td>14.3</td>
</tr>
<tr>
<td>Doctor</td>
<td>1</td>
<td>14.3</td>
</tr>
<tr>
<td>Nurse</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>No One</td>
<td>4</td>
<td>57</td>
</tr>
<tr>
<td>Complications from T2DM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>5</td>
<td>71</td>
</tr>
<tr>
<td>Yes</td>
<td>2</td>
<td>29</td>
</tr>
</tbody>
</table>

Note: N= 7
Outcomes Measures

Table 4. Paired T Tests - Continuous Variables

<table>
<thead>
<tr>
<th></th>
<th>Pre Mean</th>
<th>Post Mean</th>
<th>Δ in Mean</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>253.31</td>
<td>255.00</td>
<td>1.686</td>
<td>.165</td>
</tr>
<tr>
<td>FBG</td>
<td>196.86</td>
<td>148.71</td>
<td>48.143</td>
<td>.042</td>
</tr>
</tbody>
</table>

Table 5. Cross-Tabulation of Pre and Post Purposeful Physical Activity – Type

<table>
<thead>
<tr>
<th>Physical Activity</th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Walking</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>7</td>
<td>7</td>
</tr>
</tbody>
</table>

Table 6. Cross-Tabulation of Pre and Post Purposeful Physical Activity – Duration

<table>
<thead>
<tr>
<th>Physical Activity</th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>30 minutes</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>40 minutes</td>
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<td></td>
</tr>
<tr>
<td>50 minutes</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>7</td>
<td>7</td>
</tr>
</tbody>
</table>

Table 7. Cross-Tabulation of Pre and Post Purposeful Physical Activity – Intensity

<table>
<thead>
<tr>
<th>Physical Activity</th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Moderate</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Brisk</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>7</td>
<td>7</td>
</tr>
</tbody>
</table>
Table 8. Cross-Tabulation of Pre and Post Purposeful Physical Activity -Times/Week

<table>
<thead>
<tr>
<th>Physical Activity</th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>1 time</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>3 times</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>5 times</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>7</strong></td>
<td><strong>7</strong></td>
</tr>
</tbody>
</table>

The DES-SF assessed participants’ diabetes psychosocial self-efficacy in the domains of assessing the need for change, developing a plan, overcoming barriers, supporting oneself, coping with stress, asking for support, motivating oneself and making appropriate diabetes care choices. A statistically significant (p = .001) improvement in the total score of these domain measures related to self-efficacy was noted. Statistically significant (p = .002) improvements were also noted in participants’ diabetes knowledge as measured by the abbreviated DKT2.

Two continuous outcome measures of weight and self-reported FBG were evaluated. Values at T1 and T2 were obtained for each of these variables. Pre-mean weights (253.31 lbs) compared to post mean weights (255.00 lbs) showed a change in mean weight of 1.686 (p = .165) which was not statistically significant. The mean pre-FBG of 196.86 mg/dl decreased to a mean post-FBG of 148.71 mg/dl, demonstrating a statistically significant decrease in the mean of 48.143 mg/dl (p = .042).

The PA variable was measured categorically in four domains of activity type, duration, intensity and number of times per week. Seventy one percent of participants reported doing no form of purposeful PA prior to beginning this program. Two participants continued to report no activity by the end of the program and one participant who was doing some activity at T1, showed no change in walking 30 minutes at a moderate intensity one time a week by T2. Four participants reported improvements in PA. One person continued walking 30 minutes at a
moderate intensity but increased from one time a week to three times a week. Three persons who reported no PA pre-intervention, reported improvements in PA as follows: one started walking 30 minutes at a brisk intensity three times a week; one started walking, briskly, 40 minutes five times weekly and one started walking at moderate intensity for 50 minutes three times weekly.

**Participant Satisfaction and Program Evaluation**

Seventy-two percent of the participants who completed the post-intervention surveys “strongly agreed” that they would recommend the classes to friends or family and felt that they learned a lot about self-management; whereas, 28% reported feeling neutral about whether they learned a lot. An equal 14% of participants “somewhat agreed” or were neutral in regards to recommending the class to friends or family.

Strengths of the program identified by participants were related to partnership with another participant, sharing goals with others during class time, the technology and visual aids used to explain concepts, the specific program content, and the PL’s continual encouragement. Participants identified the imbalance in the number of female and male participants, answering questions during instruction time and not only at the end during a question and answer period, lack of ongoing instruction beyond the six weeks and the class not preparing a meal together as weaknesses.
CHAPTER 6: DISCUSSION

Informed by the SE Theory, a culturally tailored, faith-based, diabetes self-management education intervention that included social support was implemented in a sample of AA participants with T2DM. The effect the intervention had on self-care behaviors and clinical outcomes as measured by weight, self-reported FBG and PA at T1 and T2 is reported herein. It was thought that using the constructs of the SE Theory would affect participants’ SE to bring about behavioral changes that would affect clinical outcomes. Given the small number of participants in this program, this study may be viewed as a feasibility study.

Summary of Findings

All the participants attended at least 50% of the classes; one attended all of the classes, 71% attended five of the classes and one attended four of the classes. Having received at least half of the content of the program, a statistically significant (p = .001) improvement in participants’ SE, diabetes knowledge (p = .002), and FBG readings (p = .042) were reported. Positive changes in PA were noted; however, the number of participants did not allow for statistically significant change conclusions to be drawn for these categorical data. Participant weights remained stable, without significant change (p = .165).

Most of the participants reported frustrations about the concerns conveyed in the initial Concerns Assessment but did not clarify the specifics of their frustration. Conversations during the program revealed that frustrations were due to knowledge deficit especially with participants’ changing needs and coping with those changes.
The average T2 fasting blood sugar of 148.71 mg/dl was higher than a clinically desirable 126 mg/dl or less for persons on oral diabetes therapies but demonstrates an important decrease over six weeks, even without a change in mean weight. Hemoglobin A1C, the 3-4-month average of individual blood glucose readings, is the gold standard for clinical management of diabetes. However, the convenience measure of FBG readings was used as we were not certain that participants would be able to obtain pre- and post- comparative A1C measures and the time between T1 and T2 measures was too short to measure an A1C. The lack of change noted in weight is homogeneous with the findings of studies completed by Duru et al., (2010) who saw no statistically significant post intervention differences in participants’ weight observed from baseline and Samuel-Hodge et al., (2009) who showed no difference in weight at either eight or twelve-month follow up between comparison groups.

Changes observed in reported PA appeared positive. Analysis for significant changes could not be done due to the small number of participants. In prior studies, Duru et al., (2010) showed an increase in mean steps per week that was statistically significant after six months and Collins-McNeil et al., (2012) reported an improvement in number of days of PA from baseline at 12-week follow up. The PA data reported herein are all self-reported which is different from the previous studies. In addition, prior studies allowed longer periods for evaluation.

The positive changes in FBG, self-efficacy and positive trends in PA, along with the strong participant satisfaction, support the implementation of DSME/S in church community group settings for AA as did Samuel-Hodge et al., (2009), Duru et al., (2010), Collins-McNeil et al., (2012), and Johnson et al., (2014). It is noteworthy that this study was conducted in and participants were recruited from a mixed-race church; whereas, the aforementioned studies were conducted in AA churches. Despite the variation in race makeup of the churches, the findings of
a positive, significant relationship between the religious beliefs/spirituality of AA, glycemic control and self-care by Newlin et al., (2012) and Watkins et al., (2013) are supported.

The fact that most participants reported having a personal medical provider and regular medical care but perceived that they had no one to help them with their disease process was paradoxical. By the end of the intervention, however, participation frustration levels appear to have declined. This decline in frustration, likely due to increased post-intervention diabetes self-care knowledge, may have also led participants to identify physicians and nurses as those who do help them with T2DM. The increased diabetes knowledge may have assisted participants in understanding how healthcare providers help them.

Forty-three percent of participants reported being married, but only fourteen percent perceived their spouse as providing help with T2DM. The reason for this incidental finding was not explored as it was not a focus of this study. However, this could be linked to the participants’ own expressed frustration at the onset of the project that also did not allow them to recognize physicians or nurses as those who help them with their illness. Social support transactions between partners in marriage, when one partner has diabetes, and the impact of diabetes as a chronic illness on the marital relationship can be undertaken in future research.

Participants reported that their initial concerns had been addressed in the program. In addition to feeling that her concerns had been met, one participant who had been diagnosed with T2DM for greater than a decade indicated that she had learned about new basic issues of T2DM which she never knew or understood prior to this intervention. She in turn reported a desire for continued education to reinforce her learning and have a forum in which ongoing needs could be addressed. These findings may be suggestive of the ongoing need for DSME/S in groups and the need to perhaps begin DSME at the pre-diabetes level. They may also endorse elements of the
SE Theory which indicate that individuals may lack resources to continue to perform positively even with high self-efficacy.

**Lessons Learned**

Caring for T2DM only in the primary care setting may not lead to patients being able to better care for themselves nor a reduction of health care costs, given the time constraints in primary care. In this study, even though participants felt like their concerns had been met, at least one wanted to have ongoing classes beyond six weeks. The need for follow up during the week was very apparent, as some participants reported forgetting the assignment of the week.

Despite encouragement by the PL towards additional social support by partnering during the program, all participants agreeing that partnership accountability would be most helpful, and some expressing that accountability partnership was one of the biggest assets to them, not all participants sought out or used the support of partners in the program. Those participants who kept contact with accountability partners did not report issues with forgetting weekly assignments. They rather, reported feeling very accomplished or challenged to persevere in their goals. This may be indicative of the need for personal or individual social support for people with this chronic illness.

The usefulness of DSME has been demonstrated in this study, as well as, unveiled the need to tailor programs to the needs of specific groups being served. For example, six weeks has been studied and shown to be an appropriate time in which to execute DSME groups (Funnell, Nwankwo, Gillard, Anderson, & Tang, 2005; Peek et al., 2012). Nonetheless, this church’s participants had a hard time committing to six weeks. This may denote the need to provide DSME to certain groups in smaller segments of time.
Study Limitations

This program was conducted in a church of mixed races which differs from prior studies of this kind that executed programs in AA churches and it is unknown whether the inclusion criteria related to race influenced participation. Although the small size of the sample population was an asset to teaching this group that perceived many changes in controlling their disease process, the generalizability of the findings is limited due to the size of the group and the specificity of the group. While the lessons learned, and information gleaned from the work with this population cannot be generalized to others, there are transferable elements that can be applied when working with similar populations in similar settings. Such elements include the fact that spiritual leaders are well respected in AA communities and can consequently be a strong force in promoting DSME programs. They should therefore be sought out as project champions. Completing group education in small groups, adapting tools to the specific needs of the group being trained, and providing incentives for participation are also transferrable.

Most of the data were self-reported and therefore left up to the discretion and perception of the reporter. A challenge with self-reporting is that reporters may want to please the PL, therefore reporting may be skewed. Coupled with this, is the fact that other possible confounding factors such as the warmer weather that may have encouraged participants to go out for walks, and could have contributed to behavioral change, were not assessed. Further, a hurricane that occurred during the period in which participants had committed to DSME classes caused one class to be postponed to a later date. The confounding effects of this delay were neither explored nor measured but could have contributed to why one participant did not complete post-intervention surveys.
**Study Strengths**

The program was well supported by the church’s leadership. They provided scriptural lessons and prayers at the beginning of each class, which encouraged the participants. The particular engagement of one of the church’s ministers as a project champion was very important to the success of the project and buy-in of the members. Having a spiritual leader endorse the need for health education helped the participants also see the need for it. Use of faith beliefs was a point of encouragement for participants in encouraging behavioral change. All participants were members of the same church with similar beliefs.

The size of the group served as a strength in providing a personal touch to meeting the participants’ educational and group support needs. It made it easier for participants to have personal contact with the PL and for the PL to communicate with individuals when they needed personal direction and support. It fostered vicarious learning and social support amongst participants.

Using pre-validated tools was also an asset as some potential difficulties in measurement had already been worked out and tools had had reliability and validity testing done. The ability to adapt the tools, as allowed by MDRTC and Diabetes Initiative, was indeed an asset as it allowed for adapting the tools to the specific needs of this intervention.

**Implications for Future Research and Clinical Practice**

Further research should continue to report attempts to engage AA with T2DM in self-management. Identifying impediments to implementation and strategies that work best in the populations studied to provide more ways to minimize the disparate impact of this ever-evolving disease process on AA is paramount. This study did not address the effects social determinants of health like education and economic stability might have had on participant behaviors in controlling their disease process although participants were surveyed on some of these issues. It
is important that future research be completed in this context so as to determine the effects and find ways to alleviate them.

The concept of DSME national standards have existed for over a decade, yet the disparity in T2DM amongst minorities and AA persists and is growing. As noted by the reports of the participants in this study who had mostly had regular primary care, they were frustrated by their diabetes self-care. Keeping all other factors constant, this implies that their empowerment of self-care needs was not being met within the primary care system. It is therefore important that community partners of influence, such as the church, become involved in the dissemination of desperately needed DSME/S and coordinate it in tandem with clinical care by communication with primary care providers. Using shared medical appointments in the primary care setting may also serve as a viable medium for dissemination of DSME/S (Ridge, 2012). Future research should invest in sustainable solutions to encouraging community partnerships and shared medical appointments for disseminating DSME to AA.

**Recommendations**

It is therefore our recommendation that clinical providers and community leaders should seek out opportunities to establish partnerships for the provision of DSME classes. The classes demonstratively can possibly provide education and reinforcement, as well as, social support. Family members are encouraged to attend these classes, when offered and when affected family members allow them to, to learn about the disease process and provide social support to their affected family members.

**Conclusion**

The effectiveness of this project seen in the results was highlighted by one participant who, even though was diagnosed 13 years ago, felt that the program was very helpful in teaching her things she neither knew nor understood and therefore felt the need for ongoing educational
assistance of this kind. There is a clear need to establish sustainable ongoing community partnerships where DSME can be provided to improve outcomes for AA with T2DM.

Whereas the results from this project may not be generalizable, the structure and methods used could be easily transferrable to other faith-based settings. Motivational verbal persuasion through brief scripture lessons and prayer prior to diabetes self-management education in a small group that provides social support can produce positive physiological feedback as participants’ self-efficacy increases. This possibility was demonstrated in this project by the trends towards improvement reported in the outcomes of fasting blood glucose and physical activity.
APPENDIX A: PARTICIPANT CONSENT FORM

University of North Carolina at Chapel Hill

Consent to Participate in a Translational Research Project

Using a Culturally Tailored Diabetes Self-Management Education and Support Intervention in a Faith-Based Framework to Improve Self-Care Behaviors of African American Adults with Type II Diabetes Mellitus

Principal Investigator: Christine E. Weeks, FNP-BC
IRB # 18-1639
UNC-Chapel Hill Department: School of Nursing
Email Address: ceweeks@email.unc.edu
Contact telephone number: 919 601 9743

What is this project about?
This project is being done with adult (age 18+) African Americans (AA) volunteers. You must have type II diabetes mellitus (T2DM). A six-week church-based diabetes self-care education training program will be carried out monitoring self-care behaviors and clinical outcomes. For this project, self-care behavior and clinical outcomes will be 1) self-reported fasting blood glucose measurements 2) physical activity (PA) measured in minutes per week and 3) weight. There will no greater than 30 participants.

Reasons you should not participate in this project
You should not take part in this project if you are pregnant, are currently a part of any other diabetes self-management programs or have participated in other diabetes self-management programs within the last six months.

What will happen during the project?
The educational sessions will take place at Triangle Church, Chapel Hill. They will after the church service on the dates designated dates.

If you volunteer to take part in this study, we will ask you to:

1. Complete several surveys and tasks (see below) during a meeting at the start of the project and again when it is over. You will need about 45 to 90 minutes to complete the surveys each time. We will have time for you to learn about the project and ask questions when the project
starts. You will be weighed at the first meeting. You will be weighed with outer clothing and shoes removed using a SECA electronic scale. Your weight will be assessed in a private area, separate from other participants.

2. Take part in 6 weekly diabetes self-management education (DSME) sessions which will each last about 90 to 120 minutes. Complete tasks and think of goals at each of the six sessions. These tasks may include: (1) keeping a diary (to be explained by the project leader – Ms. Weeks), (2) answering questions about what you know, your feelings about things related to diabetes, and your behaviors related to diabetes; (3) keeping a list of physical activities you do each day; and (4) taking quizzes on things you have learned in the program and checking blood glucose at least once a week.

3. Provide a list of medications and dosages you are currently taking while in the DSME project.

The measurements taken at the beginning of the project will be compared to those at the end of the project to make conclusions based on statistics.

**Potential risks and discomforts**
There exists the possibility of psychological risks, breach of confidentiality, and discomfort and injury with increased exercising. We believe that they are not likely to happen as only Ms. Weeks and Dr. Jessup will have access to any of your information, computers and documents are password protected and you are encouraged to follow up with your primary care provider.

**Potential benefits to you and society**
Participants may have potential benefit from receiving more information about diabetes management.

**Incentives for taking part in the project**
Project incentives will include free lunch with each educational session, $20/round of surveys completed and entry into a drawing in which each participant will have an equal chance to receive one of two $100 gift certificates to a local grocery store for having completed five (83%) to six (100%) of the educational classes. There is no cost to you for taking part in the project.

**Privacy**
Any information that is obtained in connection with this project and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law. Privacy will be maintained by means of a code you will create. The code will be made up of a mixture of letters and numbers. We will not use your name in any of the information we get from this project or in any of the project reports.

Ms. Weeks will use the data collected for the group as a whole in her project presentation and other publications. We also may use any information that we get from this project in any way we think is best for publication or education. Any information we use for publication will not identify you personally.
What are my rights in regards to participation to this project?
You can choose whether or not to be in this project. If you consent to be in this project, you may withdraw at any time without penalty of any kind. You may also refuse to answer any questions you do not want to answer. Ms. Weeks may withdraw you from this project if your physician tells you that taking part in the project may be bad for your health.

Rights of project participants
The University of North Carolina at Chapel Hill’s Institutional Review Board has reviewed my request to conduct this project. If you have any concerns about your rights in this project, please contact Christine E. Weeks, FNP-BC at 919-601-9743 or Dr. Ann Jessup at 919-966-0978. If you have questions or concerns about your rights as a research subject, you may contact the UNC Institutional Review Board at 919-966-3113 or by email to IRB_participants@unc.edu.

Title of Study: Using a Culturally Tailored Diabetes Self-Management Education and Support Intervention in a Faith-Based Framework to Improve Self-Care Behaviors of African American Adults with Type II Diabetes Mellitus

Principal Investigator: Christine E. Weeks, FNP-BC

I understand what I read above. My questions have been answered to my satisfaction, and I agree to take part in this project voluntarily. I have been given a copy of this form.

________________________________________
Printed Name of Participant

________________________________________
Signature of Participant

________________________________________
Date

________________________________________
Signature of Project Team Member Obtaining Consent

________________________________________
Date

________________________________________
Printed Name Project Team Member Obtaining Consent

________________________________________
Date
APPENDIX B: IRB APPROVAL

To: Christine Weeks
School of Nursing

From: Non-Biomedical IRB

Approval Date: 8/03/2018
Expiration Date of Approval: 8/02/2019
RE: Notice of IRB Approval by Expedited Review (under 45 CFR 46.110)
Submission Type: Initial
Expedited Category: 7. Surveys/interviews/focus groups
Study #: 18-1639

Study Title: USING A CULTURALLY TAILORED SELF-MANAGEMENT EDUCATION AND SUPPORT INTERVENTION IN A FAITH-BASED FRAMEWORK TO IMPROVE SELF-CARE BEHAVIORS OF AFRICAN AMERICAN ADULTS WITH TYPE II DIABETES MELLITUS

This submission has been approved by the IRB for the period indicated. It has been determined that the risk involved in this research is no more than minimal.

Study Description:

Purpose: to implement a culturally tailored, faith-based, diabetes self-management education intervention that includes social support to evaluate the effect on self-care behaviors and clinical outcomes.

Participants: African American adults with Type 2 diabetes recruited from a local church.

Procedures (methods): Design is a one group educational intervention using pre- and post-intervention evaluation. Sessions covering DSME will be offered once a week, lasting 60-90 minutes for 6 weeks. Measures will be compared using descriptive statistics and if appropriate paired t-tests or chi-square tests.

Investigator’s Responsibilities:

Federal regulations require that all research be reviewed at least annually. It is the Principal Investigator’s responsibility to submit for renewal and obtain approval before the expiration date. You may not continue any research activity beyond the expiration date without IRB approval. Failure to receive approval for continuation before the expiration date will result in automatic termination of the approval for this study on the expiration date.

Your approved consent forms and other documents are available online at http://apps.research.unc.edu/irb/index.cfm?event=home.dashboard.irbStudyManagement&irb_id=18-1639.
You are required to obtain IRB approval for any changes to any aspect of this study before they can be implemented. Any unanticipated problem involving risks to participants or others (including adverse events reportable under UNC-Chapel Hill policy) should be reported to the IRB using the web portal at http://irbis.unc.edu.

Please be aware that additional approvals may still be required from other relevant authorities or "gatekeepers" (e.g., school principals, facility directors, custodians of records).

The current data security level determination is Level II. Any changes in the data security level need to be discussed with the relevant IT official. If data security level II and III, consult with your IT official to develop a data security plan. Data security is ultimately the responsibility of the Principal Investigator.

This study was reviewed in accordance with federal regulations governing human participants research, including those found at 45 CFR 46 (Common Rule), 45 CFR 164 (HIPAA), 21 CFR 50 & 56 (FDA), and 40 CFR 26 (EPA), where applicable.

CC:
Ann Jessup, School of Nursing IRB Informational Message - please do not use email REPLY to this address
APPENDIX C: INVITATIONAL FLYER

UNC: IRB Research Study #: 18-1639

PURPOSE RESEARCH STUDY: Implement a culturally tailored, faith-based, diabetes self-management education intervention

WHO CAN PARTICIPATE?
- African American adults
- With Type 2 Diabetes
- Not pregnant

PROJECT INCENTIVES: free lunch with each educational session, $20 per round of surveys completed and entry into a drawing in which each participant will have an equal chance to receive one of two $100 gift certificates to a local grocery store for having completed five (83%) to six (100%) of the educational classes.

STUDY LOCATION: Triangle Church, Chapel Hill, NC

COMMITSMENTS REQUIRED OF THE PARTICIPANTS
- Informational session for potential participants lasting 45 to 90 min
- Attend six weekly diabetes self-management education (DSME) sessions which will each last about 1.5 to 2 hours
- Checking blood glucose
- Participate in purposeful physical activity
- Weighing at beginning and end of project
- Completing surveys and quizzes
- Keeping a personal diary and making weekly goals

CONTACT CHRISTINE WEEKS AT 919 601 9743 OR CEWEEKS@EMAIL.UNC.EDU for further information

For any questions or concerns about your rights as a research subject, you may contact the UNC Institutional Review Board at 919-966-3113 or by email to IRB_participants@unc.edu
APPENDIX D: SAMPLE EDUCATIONAL SESSION

Example of a Culturally-Tailored Teaching Session

Session 1: Overview and Monitoring

Scripture: Philippians 4:13 (NIV) – “I can do all this through him who gives me strength.”

- Feelings surrounding diagnosis – Participants to share/“testify” about challenges with diagnosis
- Explanation of diabetes
- Blood glucose and laboratory monitoring
- Overview of how to live with diabetes
- Self-management

To cover the particularly important role of family among African-Americans in health care and for social support, participants will chose a family member or friend to go through the program together.

Teaching Objectives:
1. Participants will verbalize their feelings about the diagnosis of diabetes.
   Teaching points:
   - Discuss feelings and recognize the impact they might have on control of diabetes. Dispel myths that surround the reasons for contracting diabetes; i.e., the participants did something bad, or they ate too much sugar.
   - Ask participants what they feel is the hardest part of their diagnosis to manage and what life style changes are most difficult to incorporate into their lives. This discussion should lead into teaching objective #2.

2. Participants will be able to define diabetes and its pathophysiology.
   Teaching points for the questions, “what causes diabetes?” and “what is diabetes?”
   - Describe normal glucose metabolism in simple terms. Explain that most foods contain sugar (glucose) and that the body needs this sugar or glucose for energy. Explain that the brain, muscles and internal organs all use sugar (glucose) for fuel.
   - Emphasize that eating too much sugar did not cause participant’s diabetes. Genetics, weight, family history and ethnicity all contribute to diabetes.
   - In diabetics, the body can’t use the insulin that is produced or the pancreas doesn’t produce enough insulin. Familiarize participants with the term, “insulin resistance.”
   - Without insulin, glucose can’t move from the bloodstream into body cells.
   - Without insulin, sugar or glucose builds up in the bloodstream.
   - The body can also make glucose from storage supplies in places like the liver. Therefore, many participants with diabetes have a high glucose level in the morning even though they haven’t eaten since dinner. Their bodies have been “making” sugar while they were asleep.
   - Because some people don’t produce enough insulin and other people can’t use what is produced, different people take different types of medication.

Key Teaching Point: diabetes is the inability of the body to take sugar out of the bloodstream and put it where it needs to go.
3. Participants will understand normal glucose ranges, the importance of blood glucose self-monitoring and the significance of A1C laboratory monitoring.

**Teaching points:**
- Blood glucose levels reflect the amount of glucose in the blood at that moment. Because most foods have sugar, blood glucose levels increase after eating.
- Target blood sugar levels are 80-120. Two hours after eating, a blood sugar level of 180 or less is ok.
- Identify test times. Stress the need to check blood sugars at different times of the day.
- Stress the importance of recording the results and time of day that the reading was taken even if the meter has memory.
- Describe A1C as a three month report card that shows how much sugar has built up on the cells in a three month period. Stress that this is the most accurate way of determining how well controlled diabetes is.
- Define an A1C of below 7.0 as a goal.
- Discuss complications of diabetes. Explain why a lower A1C is important.  
  - Readings above 8 mean higher risk for problems.
  - Participants with an A1C of 7.0 or less have much less risk for heart disease, stroke, kidney disease, eye problems, foot problems and nerve damage.

**Key Teaching Point: it is essential to check blood glucose levels daily and to strive for levels of 80-120 (and no more than 180 after eating)**

4. Participants will understand that diabetes is a lifelong disease. Participants will also understand that they can self-manage their diabetes with proper nutrition, exercise and sometimes medication. This is an overview: specific points will be discussed in more detail in later sessions.

**Teaching points:**
- Diet is crucial to diabetes management
- Maintaining a healthy body weight is one of the keys to managing diabetes. Being overweight makes insulin less able to do its job (keeping glucose levels normal in the blood). *Losing even a small amount of weight helps lower the blood glucose levels.*
- Physical activity helps to decrease blood glucose levels and other aspects of health. Stress need for MD approval before beginning any exercise regimen.
- Discuss the role of taking medications, oral or injected, as prescribed.
- Discuss that diabetes is a progressive disease and they should not blame themselves if they need to go on insulin.

**Key Teaching Point: diabetes is a lifelong disease in which self-management is crucial.**

5. Hand out self-management goal sheets. Discuss the concept of self-management and have participants develop one self-management goal related to today’s session. Let participants know that these will be reviewed in future sessions. Ask participants to work on their goals in the next week and to bring the sheets back to the next session.

6. Questions and answers.
APPENDIX E: CONCERNS ASSESSMENT

Diabetes Concerns Assessment Form
Adapted from the Diabetes Concerns Assessment Form by
Michigan Diabetes Research and Training Center

Please answer the following questions. Your answers will help ensure that your needs are addressed.

1. What is the hardest problem, or what causes you the most concern when caring for your diabetes at this time? (e.g. following a diet, medication, stress)

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

2. Please write down a few words about what you find difficult or frustrating about the concern you mentioned above.

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

3. How would you describe your thoughts or feelings about this issue? (e.g. confused, angry, curious, worried, frustrated, depressed, hopeful)

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

4. What would you like us to do during the diabetes self-management education (DSME) sessions to help address your concerns?

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

5. I would like answers to the following questions during the DSME sessions:

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

Thank you

Original form developed by RM Anderson and MM Funnell
Michigan Diabetes Research and Training Center
©2005, The University of Michigan
http://diabetesresearch.med.umich.edu/peripherals/profs/documents/emh/ConcernsAssessment.pdf

Tables
APPENDIX F: DAILY PARTICIPANT LOG

Daily Participant Log
To record daily purposeful physical activity (PA) and any glucose checks
For 6 weeks

<table>
<thead>
<tr>
<th></th>
<th>Sun</th>
<th>Mon</th>
<th>Tues</th>
<th>Wed</th>
<th>Thurs</th>
<th>Fri</th>
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</tbody>
</table>

Please record only purposeful physical activity, duration, type of activity and intensity.
APPENDIX G: WEEKLY SELF-MANAGEMENT GOAL SETTING SHEET

Diabetes Self-Management Goal Sheet

If your diabetes is not in control, something needs to change.

You must decide what changes you are willing and able to make.

To start, answer this question “What is the one thing you would like to do this week to improve your health?” Write your answer below:

______________________________________________________________________________
______________________________________________________________________________

To reach your goal, you need to have a plan. Your plan needs to be specific.

Answer the following questions to help make it specific. Discuss your goal and plan for success with your partner.

<table>
<thead>
<tr>
<th>What will you do?</th>
<th>When will you do it?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How will you do it?</th>
<th>Where will you do it?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>How often will you do it?</th>
<th>The things that could make it hard to achieve my goal:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>My plan for overcoming these difficulties is:</th>
<th>People who can help me achieve my goal:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

We want to support you and help you make a healthy change.

**Change is difficult but you are not alone.**

- You may not succeed at first.
- You **can** always start over.
- Every day is a new chance to do something good for yourself.
Making SMART Goals:

S - Specific What am I going to do (What, when, where, how)

M - Measurable How will I know when I have got there

A – Achievable Is this something I can do and in my control? What will I need?

R – Realistic Am I being realistic? What are the likely problems?

T – Time Bound Can I do this in a reasonable time frame?
Dear Ms. Weeks,

Please feel free to use any of our survey instruments located on our website. We just ask that you cite our Center as follows: The project described was supported by Grant Number P30DK092926 (MCDTR) from the National Institute of Diabetes and Digestive and Kidney Diseases.

Good luck with your research.

Thank you,

Pam Campbell
Michigan Diabetes Research Center
Michigan Center for Diabetes Translational Research
University of Michigan Medical School
1000 Wall Street
RM# 6100 Brehm Tower
Ann Arbor, Michigan 48105
Tel: 734-763-5730
Fax: 734-647-2307

Remember to cite the Michigan Diabetes Research Center (MDRC) and/or the Michigan Center for Diabetes Translational Research (MCDTR) in publications:

"The project described was supported by Grant Number P30DK020572 (MDRC) from the National Institute of Diabetes and Digestive and Kidney Diseases" OR the project described was supported by Grant Number P30DK092926 (MCDTR) from the National Institute of Diabetes and Digestive and Kidney Diseases."
APPENDIX I: DIABETES KNOWLEDGE TEST 2

Michigan Diabetes Research and Training Center’s Revised Diabetes Knowledge Test

1. The diabetes diet is:
   a. the way most American people eat
   b. a healthy diet for most people
   c. too high in carbohydrate for most people
   d. too high in protein for most people

2. Which of the following is highest in carbohydrate?
   a. Baked chicken
   b. Swiss cheese
   c. Baked potato
   d. Peanut butter

3. Which of the following is highest in fat?
   a. Low fat (2%) milk
   b. Orange juice
   c. Corn
   d. Honey

4. Which of the following is a “free food”?
   a. Any unsweetened food
   b. Any food that has “fat free” on the label
   c. Any food that has “sugar free” on the label
   d. Any food that has less than 20 calories per serving

5. A1C is a measure of your average blood glucose level for the past:
   a. day
   b. week
   c. 6-12 weeks
   d. 6 months

6. Which is the best method for home glucose testing?
   a. Urine testing
   b. Blood testing
   c. Both are equally good

7. What effect does unsweetened fruit juice have on blood glucose?
   a. Lowers it
   b. Raises it
   c. Has no effect

8. Which should not be used to treat a low blood glucose?
   a. 3 hard candies
   b. 1/2 cup orange juice
   c. 1 cup diet soft drink
   d. 1 cup skim milk

9. For a person in good control, what effect does exercise have on blood glucose?
   a. Lowers it
   b. Raises it
   c. Has no effect

10. What effect will an infection most likely have on blood glucose?
    a. Lowers it
    b. Raises it
    c. Has no effect

11. The best way to take care of your feet is to:
    a. look at and wash them each day
    b. massage them with alcohol each day
    c. soak them for one hour each day
    d. buy shoes a size larger than usual

12. Eating foods lower in fat decreases your risk for: 
    a. nerve disease
    b. kidney disease
    c. heart disease
    d. eye disease

13. Numbness and tingling may be symptoms of:
    a. kidney disease
    b. nerve disease
    c. eye disease
    d. liver disease

14. Which of the following is usually not associated with diabetes:
    a. vision problems
    b. kidney problems
    c. nerve problems
    d. lung problems
APPENDIX J: SELF-EFFICACY – SHORT FORM

University of Michigan Diabetes Research and Training Center

Diabetes Empowerment Scale-Short Form (DES-SF)

The 8 items below constitute the DES-SF. The scale is scored by averaging the scores of all completed items (Strongly Disagree = 1, Strongly Agree = 5)

<table>
<thead>
<tr>
<th>Item</th>
<th>Response Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ...know what part(s) of taking care of my diabetes that I am dissatisfied with.</td>
<td>( ) ( ) ( ) ( ) ( )</td>
</tr>
<tr>
<td>2. ...am able to turn my diabetes goals into a workable plan.</td>
<td>( ) ( ) ( ) ( ) ( )</td>
</tr>
<tr>
<td>3. ...can try out different ways of overcoming barriers to my diabetes goals.</td>
<td>( ) ( ) ( ) ( ) ( )</td>
</tr>
<tr>
<td>4. ...can find ways to feel better about having diabetes.</td>
<td>( ) ( ) ( ) ( ) ( )</td>
</tr>
<tr>
<td>5. ...know the positive ways I cope with diabetes-related stress.</td>
<td>( ) ( ) ( ) ( ) ( )</td>
</tr>
<tr>
<td>6. ...can ask for support for having and caring for my diabetes when I need it.</td>
<td>( ) ( ) ( ) ( ) ( )</td>
</tr>
<tr>
<td>7. ...know what helps me stay motivated to care for my diabetes.</td>
<td>( ) ( ) ( ) ( ) ( )</td>
</tr>
<tr>
<td>8. ...know enough about myself as a person to make diabetes care choices that are right for me.</td>
<td>( ) ( ) ( ) ( ) ( )</td>
</tr>
</tbody>
</table>

Thank you very much for completing this questionnaire.

DES-SF, Diabetes Research and Training Center
© University of Michigan, 2003
APPENDIX K: PRE PARTICIPATION QUESTIONNAIRE

Diabetes Project Participation Questionnaire – Pre

All of this information will be kept CONFIDENTIAL.

1. Self-Generated ID____________________ Age____________________

2. Gender: □ Female □ Male

3. Do you have health insurance? □ Self-provided □ Employer provided □ None

4. What is your marital status?

□ Never married
□ Married
□ Separated/Divorced
□ Widowed

5. Which of the following best describes your employment status?

□ 1 Working full-time, 35 hours or more a week
□ 2 Working part-time, less than 35 hours a week
□ 3 Unemployed or laid off and looking for work
□ 4 Unemployed and not looking for work
□ 5 Homemaker
□ 6 In school
□ 7 Retired
□ 8 Disabled, not able to work
□ 9 Something else? (Please specify): _______________________

6. What is the highest grade you completed in school? (Circle a number or level)

<table>
<thead>
<tr>
<th>Grade School</th>
<th>High School</th>
<th>College</th>
<th>Post Grad</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7 8</td>
<td>9 10 11 12</td>
<td>13 14 15 16</td>
<td>17+</td>
</tr>
</tbody>
</table>

7. When were you diagnosed with Diabetes? (what year?) ______________

8. During the past year, have you participated in an educational program about diabetes?

□ Yes □ No

Health Status

9. Is there one particular doctor that you think of as your regular personal doctor?

□ Yes □ No

10. If, yes, how long has this person been your doctor?
☐ 1. Less than 6 months
☐ 2. Between 6 months and 1 year
☐ 3. 1 to 2 years
☐ 4. 3 to 5 years
☐ 5. More than 5 years

11. Are you currently receiving regular medical care for your diabetes? ☐ Yes ☐ No
12. Have you had a Hemoglobin A1C test in the past 6 months? ☐ Yes ☐ No
13. What oral diabetes medications do you take? ☐ None If any, please list:
List__________________________________________

14. Do you use insulin? ☐ Yes, how often______________ ☐ No?
15. Do you see a specialist for: ☐ kidneys ☐ eyes ☐ nerve problems ☐ wounds?
16. Are you currently a smoker? ☐ Yes ☐ No
17. Has a doctor ever told you that you have high cholesterol? ☐ Yes ☐ No
18. Has a doctor ever told you that you have high blood pressure? ☐ Yes ☐ No

In the last year, have you had?

19. A foot exam ☐ Yes ☐ No
20. An eye exam ☐ Yes ☐ No
21. A flu shot ☐ Yes ☐ No
22. A dental exam ☐ Yes ☐ No
23. A urine test for protein ☐ Yes ☐ No
24. How would you rate your overall health? ☐ Excellent ☐ Good ☐ Fair ☐ Poor

25. Who helps you the most in caring for your diabetes? (check only one box)
   ☐ 1. Spouse
   ☐ 2. Other family members
   ☐ 3. Friends
   ☐ 4. Paid helper
   ☐ 5. Doctor
   ☐ 6. Nurse
   ☐ 7. Case manager
   ☐ 8. Other health care professional
   ☐ 9. No one

This product was adapted from the resources of the Focus on Diabetes project at the Center for African American Health in Denver, CO as supported by the Robert Wood Johnson Foundation in Princeton, NJ and the Michigan Diabetes Research Center, Diabetes Care Profile
APPENDIX L: POST PARTICIPATION QUESTIONNAIRE

Diabetes Project Participation Questionnaire – Post

All of this information will be kept CONFIDENTIAL.

1. Self-Generated ID____________________ Age____________________

2. Gender: □ Female  □ Male

3. Do you have health insurance? □ Self-provided  □ Employer provided  □ None

4. What is your marital status?
   □ Never married
   □ Married
   □ Separated/Divorced
   □ Widowed

5. Which of the following best describes your employment status?
   □ 1 Working full-time, 35 hours or more a week
   □ 2 Working part-time, less than 35 hours a week
   □ 3 Unemployed or laid off and looking for work
   □ 4 Unemployed and not looking for work
   □ 5 Homemaker
   □ 6 In school
   □ 7 Retired
   □ 8 Disabled, not able to work
   □ 9 Something else? (Please specify): _______________________

Health Status

6. Is there one particular doctor that you think of as your regular personal doctor?
   □ Yes  □ No

7. If, yes, how long has this person been your doctor?
   □ 1 Less than 6 months
   □ 2 Between 6 months and 1 year
   □ 3 1 to 2 years
   □ 4 3 to 5 years
   □ 5 More than 5 years

8. Are you currently receiving regular medical care for your diabetes? □ Yes  □ No

9. Have you had a Hemoglobin A1C test in the past 6 months? □ Yes  □ No

10. Are you currently a smoker? □ Yes  □ No
11. Has a doctor ever told you that you have high cholesterol? □ Yes □ No
12. Has a doctor ever told you that you have high blood pressure? □ Yes □ No

**In the last year, have you had?**
13. A foot exam □ Yes □ No
14. An eye exam □ Yes □ No
15. A flu shot □ Yes □ No
16. A dental exam □ Yes □ No
17. A urine test for protein □ Yes □ No
18. How would you rate your overall health? □ Excellent □ Good □ Fair □ Poor

19. Who helps you the most in caring for your diabetes? (check only one box)
   □ 1 Spouse
   □ 2 Other family members
   □ 3 Friends
   □ 4 Paid helper
   □ 5 Doctor
   □ 6 Nurse
   □ 7 Case manager
   □ 8 Other health care professional
   □ 9 No one

This product was adapted from the resources of the Focus on Diabetes project at the Center for African American Health in Denver, CO as supported by the Robert Wood Johnson Foundation in Princeton, NJ and the Michigan Diabetes Research Center, Diabetes Care Profile
APPENDIX M: PROGRAM EVALUATION

PROGRAM EVALUATION

1. I would recommend the class to friends/family.

   4. Somewhat Agree

   5. Strongly Agree

2. I feel I learned a lot about self-management

   4. Somewhat Agree

   5. Strongly Agree

Please also answer the following open-ended questions. Feel free to include anything about the program length, session length, delivery methods, effectiveness, or any other information you would like to share.

What do you feel were the strengths of the program?

What do you feel were the weaknesses of the program?

Thank you very much for completing this survey.
REFERENCES


