

Culturally Tailored Diabetic Self-Management Education in the African-American Type 2

Diabetic in a Faith Based Organization

Barbara G. Schimming, MSN, DNPc, FNP-BC

Suffolk, Virginia

Master of Science in Nursing, Old Dominion University, 1997

Bachelor of Science in Nursing, Old Dominion University, 1996

Registered Nurse Diploma, Louise Obici School of Nursing, 1980

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Kathryn Reid, PhD, FNP-C, CNL

Ishan Williams, PhD, FGSA

Alison Skinner, MD

### Abstract

Diabetes Mellitus is a major public health concern in the United States (U.S.). It is well documented that minority groups are at higher risk and possess higher disease prevalence in the U.S. Specifically, the African-American community suffers with a higher prevalence of diabetes, morbidity, mortality and disease burden than most other minorities and the white community. The literature supports that self-care activities to manage diabetes translate into better glycemic control. Moreover, education programs based upon the Health Belief Model (HBM) and the construct of self-efficacy (SE) have demonstrated statistically significant increases in self-care behaviors and improved glycemic control for those with diabetes. However, there is some evidence that patients report perceived prejudices and distrust of the U.S. healthcare system by African-American citizens. As a result, the African-American church may offer a trusted space for the African-American to learn about health promoting behaviors. This Faith Based Organization (FBO) served as the setting for the delivery of a 4-week culturally tailored Diabetic Self-Management Education (DSME) program to 8 African-American adults who have Type 2 Diabetes in Portsmouth, Virginia. A family nurse practitioner led the culturally sensitive DSME. Diabetes knowledge scores did not improve after the DSME training intervention utilizing Wilcoxon Signed Ranks Test ( $z = -.577$ ,  $p = .564$ ) but The Diabetic Empowerment Scale scores did improve after DSME training ( $z = -2.527$ ,  $p = .012$ ). Satisfaction scores were above 96 % for all study participants. Future evaluations of culturally sensitive DSME training programs should pursue randomized controlled studies in an FBO, incorporate literacy and numeracy evaluations prior to intervention and measures of hemoglobin A 1 C,

knowledge of diabetes and empowerment to further evaluate efficacy of this training approach over the standard of care.

Keywords: *African-American, Type 2 Diabetes Mellitus, Health Belief Model, Self-Efficacy, Faith Based Organization, Diabetes Self-Management Education*

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I acknowledge my Lord and Savior Jesus Christ and His gifting me with gifts that will bless humanity.

“Be anxious for nothing, but in everything by prayer and supplication with thanksgiving let your request be known unto God. And the peace of God, which passeth all understanding will keep your hearts and minds through Christ Jesus.” Philippians 4:6,7

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Diabetes mellitus (DM) affects millions of citizens in the United States (U.S.) and is estimated that more than seven million people in the country have DM unaware (CDC, 2017). Diabetes affects the metabolism of carbohydrates leading to hyperglycemia and the potential for devastating organ damage (McGill & Herrick, 2015). The effects of microvascular and macrovascular damage can result in neuropathy, retinopathy, nephropathy, cardiovascular accidents (CVA) and myocardial infarction (MI) (McGill & Herrick, 2015). DM is separated into several categories but the most prevalent include Type 1 DM and Type 2 DM (McGill & Herrick, 2015). Type 1 DM is thought to be autoimmune mediated and accounts for 5-10% of the cases in the U.S. and the prevalence of Type 2 DM is approximately 90% (McGill & Herrick, 2015). The etiology of Type 2 DM is not completely understood but it is known that obesity and insulin resistance concurrent with progressive insulin deficiency is the hallmark of this disorder (McGill & Herrick, 2015). Moreover, according to the Center for Disease Control (CDC) (2017) DM is a very costly disease to the patient. It is estimated that each DM patient incurs a cost of \$7,900 annually and the drain on the U.S. healthcare system has been estimated at \$245 billion in 2012 (CDC, 2017). It is documented often in the literature that some minorities possess a higher diabetes prevalence and experience a heavier disease burden (American Diabetic Association, 2017). The African-American population experience a higher diabetic prevalence, morbidity and mortality than most other minorities and Caucasians (Egede et al., 2010). Unfortunately, it is also documented that African-Americans do not always access healthcare in the U.S. because of continued perceived racial prejudice and distrust (Assari et al., 2017). This perception and distrust create barriers to diabetes care and chronic care management.

The church within the African-American community is an honored and trusted place for many African-Americans (Brand, 2017). The church, Faith Based Organization (FBO), has been

discussed as a positive setting for health promotion, health prevention and management of chronic diseases (Brand, 2017). Moreover, the church is able to provide a setting for support groups that may facilitate storytelling, experience sharing and offer the opportunity for participants to develop disease resilience for chronic disease management (Goddu, Raffel & Peek, 2015).

### **Background**

Minorities have a higher prevalence of Type 2 DM in the U.S. and non-Hispanic Blacks have been documented with a 12.7% prevalence (American Diabetic Association, 2017). In the city of Portsmouth, Virginia the prevalence of Type 2 DM rate is 12.2 % far surpassing the national average of 8.5% (Diabetes Prevalence in Virginia, 2016). Demographics in the city of Portsmouth show a population of over 54% African-Americans illuminating the disproportionate prevalence of diabetes (The United States Census Bureau, 2016). According to the American Diabetes Association (ADA) (2017) only the American Indian/Alaskan Native population have a higher prevalence of Type 2 DM at 15.1%. It is also well documented that minorities with Type 2 DM experience a heavier disease burden (Dawson, Walker, Campbell & Egede, 2015). According to Egede et al. (2010) African-Americans with Type 2 DM suffered more morbidity and mortality than Caucasians with Type 2 DM. The renal complication of Type 2 DM, end stage renal disease (ESRD), develops at a staggering four-time greater prevalence in the African-American with Type 2 DM than the white community with diabetes (Egede et al., 2010). Moreover, Type 2 DM retinopathy and neuropathy in the African-American population occurs 40-50% and 20-40% respectively more frequently when compared to Caucasians with the same chronic disease (Egede et al., 2010).

The rationale for the increased morbidity and mortality in the African-American community who has Type 2 DM is multifaceted according to Egede et al. (2010). The issues according to Egede et al. (2010) are seen at the patient level, the healthcare provider level and at the level of the healthcare system. Interestingly, patient level factors accounted for more than 90% of poorer Type 2 DM outcomes in the African-American population (Egede et al., 2010). The variances were specific to diabetes knowledge, self-care diabetes skills, self-efficacy, and perceived control of the situation (Egede et al., 2010). The existing data observed diabetes-care differences with a racial and ethnic focus are limited to observation of only one aspect of diabetic self-care (Harris, Eastman, Flegal & Eberhardt, 1999). In addition, much of the aforementioned research has been an aggregate of ethnicities in the U.S. with a diagnosis of Type 2 DM (Oladel, 2006).

Only a few studies broach the subject of perceived discrimination and mistrust of the U.S. healthcare system and the effect on the African-American with Type 2 DM (Egede et al., 2010). According to Egede et al. (2010) there is an influence of racial prejudice upon glycemic control, hypertension, and quality of life and self-care practices in the Type 2 DM African-American community. Another study by Assari et al. (2017) observed there was correlation between gender and perceived discrimination and glycemic responses in the African-American Type 2 DM patient population. The model coefficients for predicting poor glycemic control were statistically significant in the African-American male and suggested that males had poor glycemic control than females who reported discrimination (Assari et al., 2017). Moreover, according to Williams, Clay, Ovalle, Atkinson & Crowe (2017) perceived discrimination and reported healthcare provider mistrust were associated with diabetes distress in older African-American with diabetes.

Diabetes self-care is an essential part of effective diabetic management and essential for glycemic control and minimizing morbidity and mortality (Johnson, Ghildayal, Rockwood & Everson-Rose, 2014). According to Chrvala, Sherr & Lipman (2015) statistically significant glycemic control was associated with patient engagement in diabetes self-management activities. Diabetes self-care activities typically include blood glucose monitoring, foot care, medication compliance, and adhering to a diabetic diet and daily exercise (Adams & Folds, 2014). There have been numerous studies that suggest that predictors of diabetes self-care can be determined by utilization of the Health Belief Model (HBM) (Dehghani-Tafti et al., 2015). According to Dehghani-Tafti et al. (2015) the construct of self-efficacy exerted positive effects on diabetes self-care activities while reported barriers exerted a negative effect. Also, Mehebi et al. (2013) found a direct relationship between self-efficacy and diabetes self-care.

### **Theoretical Framework**

The HBM is an individual based theory and looks at several components that influence health behavior (Edberg, 2015). The HBM looks at several components that attempt to explain individual behavior to health and disease management (Edberg, 2015). According to Edberg (2015) the behaviors are related to perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy. Perceived susceptibility evaluates perception of personal risk and perceived severity looks at the possible outcome if no action is taken (Edberg, 2015). Perceived benefits and barriers in this model simply describe the benefits to the individual from any actions taken and barriers reflect the potential negative outcomes (Edberg, 2015). Cues to action describes something external to the individual that may motivate them toward an action and self-efficacy describes the confidence the patient owns to carry out the actions needed to promote health or manage a disease process (Edberg, 2015).

Social Cognitive Theory (SCT) is another theoretical concept that has been used to understand Type 2 DM (Edberg, 2015). Bandura in formulating this theory based upon operant conditioning also examined the process of how observational learning impacted individual learning (Edberg, 2015). Bandura described the individual role in learning as an agency (Edberg, 2015). The construct of Self-Efficacy was introduced by Bandura in this theory and gave birth to individual participation in behavior and the ability to change behavior (Edberg, 2015). Reciprocal determination is defined by Bandura as the individual's ability to learn in a perpetual interactive social and physical environment (Edberg, 2015).

Although theory can be useful in helping to better understand diabetes self-management among individuals, there has not been a lot of research recently specific to African-Americans. According to Kennedy, Mathis & Woods (2007) African-Americans fear participation in health-related research because of the Tuskegee Syphilis Study and associated fear fuels continued distrust and may explain the lack of available literature on the African-American Type 2 DM population. Other causes may be implicated, including but not limited to a shortage of minority health-care practitioners, cultural competence, access to care, and the relationship between the patient and the healthcare provider (Kennedy et al., 2007). Based upon the previous evidence, the purpose of this scholarly project will attempt to address the following question: Does the participation in a 4-week culturally tailored diabetes self-management education program in an African-American Church improve diabetic knowledge and the perception of self-efficacy among the African-American participants?

### **Review of Literature**

The methodology for this review of literature included a review of electronic databases, and secondary methods of research. The electronic databases utilized included CINAHL,

MEDLINE, PubMed, Psycinfo, Google Scholar, Web of Science and Cochrane Review.

Secondary methods included ancestry search, textbooks, Centers for Disease Control, and the American Diabetic Association (ADA) for Diabetes in Primary Care. Search strategy included publications between 1990-2018, quantitative and qualitative studies in the English language. Search terms included diabetic self-management, diabetic education, diabetic health education, church based diabetic education in African-Americans, diabetic education in Type 2 DM minorities, diabetic education in nontraditional settings, diabetic self-care in nontraditional settings, National Diabetic Education Program, diabetic self-management and self-efficacy, faith based diabetic health education, culturally appropriate diabetic health education in minorities, diabetic self-management in community settings, diabetic self-care and Health Belief Model and self-efficacy. Excluded terms for this literature review included the pediatric population (<15 years of age), Type 1 DM, gestational DM, diabetic prevention, modes of diabetic education via telephone, computer software driven, telehealth, languages other than English, and dissertations. This search strategy is summarized in the search strategy diagram (see figure and yielded a total of 1,594 unique studies with 327 duplicates discovered. The remaining 1,318 studies were reviewed and 900 were excluded based upon review of the title leaving 312 studies. Abstracts were reviewed for content based upon search items leaving 106 studies for review. The final 106 studies were read in full leaving nine studies for inclusion in this scoping review of literature (see Appendix J). Findings from the literature review will be described in the further detail.

### **Systematic Review of Randomized Controlled Trials (RCT)**

The systematic review performed by Creamer et al. (2014) included a total of 33 worldwide studies (11 of which were from the original 2008 meta-analysis) and were associated with culturally appropriate health education for people in ethnic minorities. Studies included

were from upper-middle income and high-income countries (Creamer et al., 2014). This systematic review was included and information was extracted from African-American data for diabetic knowledge and self-efficacy compared to control/standard of care (Creamer et al., 2014). Knowledge increase and glycemic improvement was statistically significant at 3, 6, 12 months in the intervention group (Creamer et al., 2014). Self-efficacy scores were neutral compared to control at 3, 6, 12 months (Creamer et al., 2014). Limitations to this systematic review included lack of information for sustainability of the culturally tailored diabetic health education outcomes beyond 12 months, lack of consistent information related to the cost of culturally sensitive diabetic education and heterogeneity of tools utilized for knowledge assessment (Creamer et al., 2014). Wisdom et al (2002) conducted a randomized controlled trial that assessed recruitment efforts of African-American Type 2 DM patients in North Carolina. Once recruited the participants were randomized into either an early intervention group or the delayed intervention group (control) in a faith-based organization (FBO) (Wisdom et al., 2002). Three approaches were employed recruiting from FBOs, community sources and healthcare delivery systems (Wisdom et al., 2002). No significant differences were found between the early intervention group and the delayed intervention group (Wisdom et al., 2012). Each participant was given a survey that measured demographics, empowerment, self-efficacy, attitude, health status and knowledge at baseline, 3, 6, 9 and 12 months (Wisdom et al., 2012). Health system recruitment yielded the highest recruitment but FBO recruited participants attended more classes (greater than 4 classes) regardless of group assignment (Wisdom et al., 2012). Limitations to this study include no data on cost of the recruitment strategies and interventions, no data collected to identify which recruitment modalities led to the outcomes reported and no randomization related to the recruitment strategies (Wisdom et al., 2012).

Samuel-Hodges et al. (2016) conducted a RCT for African-Americans with Type 2 DM. Participants were recruited from a Diabetes Awareness & Wellness Network among 24 churches in North Carolina and then participants were randomized as a group from each participating church into the special intervention (SI) or minimal intervention (MI) group. The SI group included individual counseling conducted by a registered dietitian (RD) (assessment of diabetic self-management skills and psychosocial issues dealing with problem solving and self-efficacy), 12 group sessions, three mailings from patient care provider of healthcare, and telephone calls monthly during the 12-month study contrasted with the MI group of standard diabetic education (Samuel-Hodges et al., 2016). Results showed no differences between SI and MI groups on diabetes clinical care (Samuel-Hodges et al., 2016). Outcome measures reviewed included number of visits with primary care provider per year, counseling by a dietitian-greater than or equal to 2 for previous year, annual cholesterol assessment, annual dilated eye examination, annual dental examination, annual influenza vaccination, diabetes treatment, statin or cholesterol lowering medications, aspirin use, and hormone replacement therapy (Samuel-Hodge et al., 2006). Secondary data gleaned from this study indicated participants recruited from a FBO had better attendance (Samuel-Hodge et al., 2006). Limitations to this study include lack of randomization of 20% of sample because of lack of enough participants from some churches and lack of generalizability (Samuel-Hodge et al., 2006). No data reported regarding baseline RD assessment in the intervention group (Samuel-Hodge et al., 2006).

### **Pre-Experimental and Quasi-Experimental Design**

Newlin et al. (2012) performed a systematic review examining faith-based organization (FBO) health promotion related to diabetes self-management among Black Americans. A total of 12 pre-experimental and quasi-experimental design studies were evaluated and most followed

a collaborative methodology (Newlin et al., 2012). The research team kept control of the research but allowed the church leaders and volunteers to assist in the development of the curriculum and to lead parts of the program (Newlin et al., 2012). Newlin et al. (2012) found researchers in the latter studies were adjunctive in role and approach hoping to strengthen the chance of program sustainability. Outcomes were reported to show significant health outcomes including weight reduction, blood pressure reduction, better glycemic control, decrease in lipid panels, increase in disease knowledge, increase in physical activity and increase in fruits and vegetables (Newlin et al., 2012). Limitations to the review include no guiding theoretical framework, limited statistical control over covariates and difficult to assess which modalities contributed to reported outcomes (Newlin et al., 2012).

### **Systematic Review of Qualitative Studies**

Polzer & Shandor (2005) conducted a literature review of 55 studies assessing African-American spirituality, health, diabetes, and diabetic self-care. Study designs were qualitative and moderator led yielding God centric themes with diabetic education and self-care, and support from church family led to coping with stressors associated with the chronic disease of Type 2 DM (Polzer & Shandor, 2005). Limitations to this review include a lack of generalizability to all African-Americans with Type 2 DM because of the focus on Judeo-Christian faith and lack of focus on other religions, agnostic or atheistic beliefs (Polzer & Shandor, 2005). Moreover, there are vast differences in practice within the Christian denominations thus further affecting generalizability (Polzer & Shandor, 2005).

Goddu et al. (2015) explored the influence of the narrative on African-Americans with Type 2 DM. This qualitative approach recorded rich experiential data from 36 participants after completion of the Diabetic Empowerment Program (DEP) and how storytelling helped with

diabetic self-efficacy, diabetic self-care, problem solving and shared decision making (Goddu et al., 2005). According to Goddu et al. (2015) storytelling facilitated diabetic information and may increase health literacy/health numeracy and assist African-American Type 2 DM develop trusting relationships with fellow participants. This qualitative study utilized the Larkey and Hecht Model and reports that when participants are engaged in the narrative they are less likely to resist the messages and the story can impact attitudes and beliefs (Goddu et al., 2015). Moreover, according to Goddu et al., (2015) this study found that storytelling as the intervention improved self-efficacy, diabetes self-management, and diabetic outcomes (blood sugar and lipid control). The overall study design weakened internal validity and the outcomes cannot be attributed to the storytelling but the anecdotal data was rich and could facilitate further studies in this patient population.

Whitney et al. (2017) used a qualitative approach to describe the process of applying diabetic education programs into the FBO. The Theory of Planned Behavior explored patient beliefs about spirituality and diabetes self-care and the small focus groups responses were audiotaped and the script was categorized into themes (Whitney et al., 2017). Several themes emerged and discussed how African-American participants felt that spirituality is intertwined with physical health and faith was viewed as a catalyst for self-care in diabetes (Whitney et al., 2017). Limitations to the study include weakness of the design and no outcome data post education and merits further study.

Collins-McNeal et al. (2012) performed a qualitative feasibility study for the development of a church-based culturally targeted (CBCT) diabetic self-management program in the Southeastern portion of the U.S. There were 12 African-American Type 2 DM participants enrolled in a 12-week diabetic self-management program in a FBO (Collins-McNeal et al.,

2012). Results reported no perceived differences in diabetes self-management, physical activity, and glucose monitoring (Collins-McNeal et al., 2012). Audio taped focus groups reported program enjoyment, church members and clergy were receptive and felt that the program was culturally sensitive (Collins-McNeal et al., 2012). Limitations to this study include small sample size and no test/retest data available (Collins-McNeal et al., 2012).

### **Standards of Diabetes Self-Management Education**

The Standards of Diabetes Care Abridged Primary Care Objectives are given for all aspects of diabetic care (ADA, 2018). Special attention was given to Diabetic Self-Management Education (DSME) recommendations and was included in this literature review (see Table 2). According to the ADA the DSME is considered an integral part of diabetic care delivery and monitoring and all diabetic (2018). It is recommended that DSME should be reevaluated when diabetic complications and transitions of care occur but this is considered a recommendation based upon expert opinion only (ADA, 2018). There are several practical applications for DSME in the U.S. but the CDC recognizes the National Diabetic Education Program that includes the 4 Steps Your Diabetes for Life (2016). According to Devchand et al. (2017) 4 Steps showed statistically significant increases in diabetic self-efficacy and diabetes knowledge in those with no previous diabetic education.

### **Literature Review Summary**

There is a plethora of research demonstrating statistically significant effects on glycemic control utilizing theory. The HBM and self-efficacy construct are implicated in much of the research reviewed as mediating self-care practices in diabetes and improved glycemic control. Sadly, there is an anemic representation of information exclusively examining the effects of the HMB, SCT and the self-efficacy construct upon the African-American Type 2 DM population.

### **Project Significance**

In the state of Virginia prevalence of diabetes is approximately 12.2 % compared to 8.5% nationally (American Diabetes Association, 2014). In the southeastern coastal city of Portsmouth, Virginia the prevalence of diabetes is 13% (CDC, 2011). Distinguishable factors about the city include a population of 95,252 citizens, over 50% female, 54.2% African-American, 20.8% college educated, per capita income \$23,057, and 18.6% living at the poverty level (The United States Census Bureau, 2016). The African-American diabetic patient residing in Portsmouth, Virginia has the highest age-adjusted death rate in the state and is among the highest age-adjusted hospital rates in Virginia (Virginia Department of Health, 2016). This city has been included to be part of the CDC's Diabetes Belt (2014). The Diabetes Belt comprises over 15 states in the U.S., mostly southern states, and 644 counties with a higher prevalence of DM type 2 (CDC, 2014). Indicators identified with this CDC distinction include higher prevalence of obesity, inactivity, and less education (2014). A greater majority of African-American citizens live in these areas placing them at greater risk for the development of diabetes (2014). The ultimate goal of this project is to increase self-care behaviors and ultimately better glycemic control in the adult African-American Type 2 diabetic population. An African-American Church will serve as the setting for implementation of a culturally tailored DSME in the city of Portsmouth Virginia.

The African-American church is a trusted part of the community and is an underutilized community resource (Brand, 2017). The African-American population have been historically reticent to engage in the processes and research of the current healthcare system (Brand, 2017). The non-traditional venue and infrastructure of the church offers culturally sensitive options for health promotion, a safe and trustworthy milieu, and teaching self- management strategies for

chronic diseases (Brand, 2017). Access to healthcare for minorities is disproportionate and the loving inclusive behaviors of Christian precepts encourage a welcoming atmosphere for learning and support (Brand, 2017). Including church leadership in planning and advertisement for the program may enable and reinforce the project. Advertisement in the Sunday bulletins, home newsletters, and from the pulpit is easily administered and cost effective (Brand, 2017).

Church leadership can guide the advanced practice nurse practitioner in compliance with church policy and administration. Culturally tailored diabetic self-care information can be utilized with the inclusion of Christian precepts in the AA church (including Biblical scripture in the diabetic self-care activities (Brand, 2017). Potential barriers may include perceptions by some church members that the Family Nurse Practitioner (FNP) is an outsider. To potentially overcome this potential bias the FNP will include collaboration from senior pastoral leadership.

The National Diabetic Education Program (NDEP) booklet: 4 Steps to Manage Your Diabetes for Life was utilized during the 4-week program and has been studied and found to be easy to understand and also has shown statistically significant increases in diabetic self-management and self-efficacy post program (Devchand, et al., 2017). A Family Nurse Practitioner (FNP) was the sole researcher and led the DSME program in a culturally relevant, safe, and edifying venue within the African-American church. The church infrastructure lends itself to collaboration with the FNP for health promotion, health maintenance and to help with restoration of trust between the healthcare delivery system and the African-American diabetic patient community (Brand, 2017).

This health promotion project offers an innovative way to use cost effective and tested education resources in a nontraditional healthcare venue while collaborating with the trusted leadership of the African-American church and congregate. Moreover, this will hopefully begin

to allay mistrust and fear that is prevalent within the African-American community and may facilitate more minority involvement in healthcare research. The milieu of the African-American church may begin to restore trust with healthcare providers. The African-American community church may also encourage culturally specific storytelling that may edify the group in dealing with daily diabetic self-care activities. Most importantly this innovative approach to teaching diabetic self-care may increase diabetic self-efficacy and self-care practices and achieve glycemic control consistently. Hopefully, these behavior changes will lead to decreasing morbidity and mortality in the African-American adult Type 2 DM participating in this project in Portsmouth, Virginia. This scholarly project aims to evaluate if participation in a 4-week culturally tailored diabetic self-management education program in an African-American Church improves diabetic knowledge and the perception of self-efficacy among African-American participants?

## **Methods**

### **Introduction**

Diabetes Mellitus is a major public health concern in the U.S. It is well documented that certain minority groups with DM have higher prevalence rates and higher morbidity and mortality. The African-American community is a minority group that suffers with higher disease prevalence, morbidity and mortality. A review of the literature supports that diabetic self-care activities translate into better diabetic outcomes. Also, diabetic education programs incorporating the constructs of the Health Belief Model and self-efficacy have demonstrated statistically significant increases in self-care behaviors. However, literature also shows that our current healthcare system is failing this community of patients. Some of the literature discusses

patient reported prejudices with the health care system and continued mistrust by the African-American community. The African-American Church offers a rich faith-based infrastructure to facilitate health promotion, health prevention and management of disease. Moreover, this nontraditional venue may facilitate culturally sensitive applications of health-related educational processes, increase access and participation and possibly increase participation in health-related research. The purpose of this project is to evaluate if a culturally tailored 4-week DSME program in a FBO will affect diabetic knowledge and the perception of diabetic self-efficacy in African Americans with Type 2 diabetes living in Portsmouth Virginia.

### **Research Design**

A quasi-experimental design was utilized. A pre-test and post-test were used to assess the effect of culturally sensitive DSME upon participant diabetic knowledge and perception of diabetic self-efficacy.

### **Purpose of the Study**

The purpose of this study was to examine if the application of a four-week culturally tailored diabetic education program in an African-American church influenced participant perception of diabetic knowledge and diabetic self-efficacy.

### **Hypothesis:**

**The hypotheses tested were as follows:**

- Culturally tailored Diabetes Self-Management Education (DSME) will improve diabetic knowledge in participants.
- Culturally tailored DSME will improve participation perception of diabetic self-efficacy.
- Culturally tailored DSME will yield high satisfaction scores by participants.

### **Definition of Terms:**

**African-American:** An American with African or Black ancestry (The American Heritage dictionary, 2001).

**Church:** A building for public use; especially Christian worship (The American Heritage dictionary, 2001).

**Diabetes Belt:** consist of 15 states including 644 counties identified by the CDC in the U.S. whose inhabitants have higher prevalence of DM type 2 (CDC, 2014). Geographically mainly southern states with higher rates of obesity, inactivity, lower education and more African-American inhabitants all risk factors for DM type 2 (CDC, 2014).

**Diabetes Self-Management Education:** The process of assisting in the knowledge, skill, and the ability to perform diabetic self-care (Powers et al. 2015).

**Diabetes Self-Management:** Typically includes a regimen of blood glucose monitoring, foot care, medication compliance and adherence to diabetic diet and daily exercise (Adams & Folds, 2014).

**Health Belief Model (HBM):** Components of the HBM that affect human behavior include: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action and self-efficacy (Edberg, 2015).

**Self-Efficacy:** The confidence that an individual can perform the activity encountered (Edberg, 2015).

**Social Cognitive Theory:** The process of individual behavior actively operating with the environment (Edberg, 2015).

**Type 2 Diabetes Mellitus (Type 2 DM):** This metabolic disorder is not completely understood but obesity and insulin resistance concurrent with progressive insulin deficiency is the hallmark of this disorder (McGill & Herrick, 2015).

**4 Steps to Manage Your Diabetes for Life (4 Steps):** A four-step program/booklet to assist the diabetic in how to live with diabetes. This program is a part of the National Diabetes Education Program (NDEP) ([www.ndep.nih.gov](http://www.ndep.nih.gov)).

### **Setting**

The setting for this culturally tailored DMSE was held at a Baptist Church in Portsmouth, Virginia. This faith-based organization (FBO) is nestled in the downtown portion of Portsmouth within an African-American neighborhood. The culturally tailored DMSE occurred in the family center of the church with the senior pastor and his wife, the First Lady, of the church health ministry in attendance.

### **Description of Sample**

A convenience sample of 3 adult male and 5 female participants with type 2 DM were recruited through Church affiliation in Portsmouth, Virginia. Inclusion criteria included self-identified African-American with Type 2 DM, participants over 21 years of age, Portsmouth resident, and the willingness to attend at least 2 of the 4 DSME class sessions held in the FBO in Portsmouth, Virginia during October 2018. Exclusion criteria included pregnant women, pediatric participants, illiterate participants, Type 1 DM, inability to be reached by phone, inability to attend at least 2 of the 4 DMSE classes held in the FBO in Portsmouth, Virginia.

### **Measures**

Instrumentation and surveys utilized in this study included the Diabetic Participation Data Survey form, Diabetes Knowledge Test 2(DKT2), Diabetes Empowerment Scale (DES), DES scoring sheet, and the Satisfaction survey (see Appendix A). The DKT2, DES instruments were

obtained from the Michigan Diabetes Research Center. A letter of permission for use of a Diabetes History form was sent to the University of Michigan Research and Training Center for modification of original form to this scholarly project (see Appendix C). The diabetic history form modification was rejected because of ongoing revisions to the original form at the University of Michigan Research Center. The diabetic participant data survey form was formulated by the principle researcher to reflect a description of the convenience sample with DM type 2. Permission for use of the DKT2 and DES in the study was given conditionally with proper source recognition within the scholarly project. The DKT2 used is a 23-question test that assesses diabetic knowledge with a reliability of greater than .70 (Fitzgerald et al., 2016). The first 14 items on the DKT2 were appropriate for non-insulin using participants and the entire 23 question test was appropriate for insulin dependent Type 2 DM participants (Fitzgerald et al., 2016). The DKT 2 scores were identified with an assigned participant identification number (ID) with attached pre and post intervention status. Each question of the pre and post intervention DKT2 were graded based upon a correct or incorrect response. Correct responses were categorized by the numeral 1 and incorrect responses by the numeral 0. The DES utilized is a 37-item questionnaire that measures diabetic self-efficacy with a reliability of 0.96 (The Michigan Diabetes Research Center, 2018). The DES questionnaires were labeled with an assigned ID number with attached pre and post intervention delineation. The DES has 3 subscales measuring psychosocial aspects (9 questions) with a reliability of 0.93; measuring dissatisfaction and readiness to changes (9 questions) with a reliability of .81; and measuring the ability to set and achieve diabetic goals (10 questions) with a reliability of 0.91 (The Michigan Diabetes Research Center, 2018). Scoring for this scale is based upon the answered items (The Michigan Diabetes Research Center, 2018). Strongly agree merits a score of 5, agree a score of

4, neutral a score of 3, disagree a score of 2, strongly disagree a score 1(The Michigan Diabetes Research Center, 2018). The overall DES score was assessed in this study and was calculated by adding all of the scores and dividing by 28 (see Appendix A) (The Michigan Diabetes Research Center, 2018).

The Diabetic participation data survey form consisted of 13 questions germane to diabetes and the satisfaction form consisted of a 7-question form utilizing a Likert scale to assess satisfaction from class participants both forms labelled with an assigned ID number per participant (see Appendix A).

## **Procedures**

### **Recruitment**

Recruitment was facilitated solely by the senior church leader at his request through the church pulpit on Sundays, church bulletin board, Wednesday night prayer meetings September 01, 2018 through October 5, 2018. The family nurse practitioner, sole researcher, assisted the pastor with recruitment by supplying advertisement flyer and sign up forms for interested participants (see Appendix F). The sole researcher checked with the FBO senior pastor every Tuesday for interested participants and collection of forms September 4, 2018 through October 2, 2018. The Pastor opened the DSME 4-week program to several other area churches in the midtown region of Portsmouth, Virginia and he distributed the advertisement flyers and forms to the senior leadership for recruitment. The same contact information was included and point of contact remained the same as aforementioned. The sole FNP researcher met with senior leadership at the FBO weekly by phone, email, and in person prior to the beginning of the culturally sensitive DSME program. The senior pastor at the FBO opted to personally remind

those recruited participants weekly in September 2018 prior to start of the culturally sensitive DSME.

### **Project Intervention**

The culturally tailored DSME classes began on the first Saturday in October 2018 and occurred every Saturday in October 2018. Classes started at 9 am and ended approximately 12:30 to 1 pm.

On the first meeting, October 06, 2018, an explanation of procedures and IRB consent forms were issued by the FNP sole researcher and forms were obtained from participants (see Appendix D). Also, at the first meeting the participants were instructed by the FNP researcher how to complete the diabetic demographic questionnaire, DKT2 and DES pre-intervention tests (see Appendix A). Please note that all participants were assigned a number with the corresponding pre-intervention DKT2 and DES test and post intervention DKT2 and DES test by the FNP researcher. The letter A was issued for all participants to indicate pre-intervention testing on the first day of class and the letter B was issued for all participants to indicate post intervention testing on the final day of class.

Each session discussed one aspect of Diabetes utilizing the framework provided by NDEP 4 Steps to Control Your Diabetes for Life and was delivered via a PowerPoint presentation taught by the sole FNP researcher (see Appendix E). Note, all participants received a personal copy of the NDEP booklet 4 Steps to Control Your Diabetes for Life at completion of the program study.

At the beginning of the first class each participant received a personal folder to collect all handouts given and the PowerPoint presentation discussed and instructed to bring the folder to each subsequent class for additional materials to assist with diabetes management. The

following are the topics covered on each Saturday DSME class in October 2018 utilizing NDEP

4 Steps to Control Your Diabetes for Life:

- Step 1: Learn about Diabetes (10-6-2018)
- Step 2: Know Your ABCs (10-13-2018)
- Step 3: Learn How to live with diabetes (10-20-18)
- Step 4: Get routine care to stay healthy (10-27-18)

Participants arrived to the FBO at approximately 845 am each Saturday and were greeted by the Senior Pastor and the First Lady (the Senior Pastor's wife) and the FNP sole researcher. The Family Life Center room was set up with long rectangular tables with refreshments (coffee and bottled water) on a bar separating the kitchen from the learning center. Each table had pens and folders for each participant with a dish of sugar free mints and candies. The first class began with registration and completion of IRB forms for all participants that wished to take part in the research. The first DSME class on October 06, 2018 had only 5 participants due to scheduling conflict with the women's ministry. Each participant after reading and signing the IRB form completed the Diabetic History form, DKT2 and DES prior to the intervention. The sole researcher with permission of the senior pastor was able to set up a separate class for three interested female participants on Wednesday October 10, 2018. Explanation of the research project was reviewed with the three participants. After each participant read and signed the IRB form and completed the Diabetic History form, pre-intervention DKT2 and DES forms the sole researcher reviewed Class 1 content (see Appendix E). PowerPoint and handout folders with handouts were given to each participant

Each class was opened with a blessing from the church pastor and prayer for the participants and the FNP sole researcher. The pastor attended all but one DSME class and in his absence the First Lady was in attendance and a male church elder led the blessing and prayer.

Each subsequent class reviewed the previous course content by PowerPoint presentation briefly. Handouts were given to supplement participants folders and class ensued to discuss the next step in the NDEP booklet 4 Steps to Control Your Diabetes for Life (see Appendix G). The final 30 minutes of each class were devoted to open discussion and participant sharing of personal diabetic management experiences. During this time period, which often expanded the advertised meeting times by an hour, many questions were asked regarding how to manage nutrition. There was a lot of interest regarding how to manage carbohydrates on a daily basis meal by meal and snack by snack. One male participant said “I love grapes how many can I have?” another male participant asked “can I ever have barbeque chips again?” The sole researcher was able to utilize the flat screen with access to the internet and answer these two specific questions and many others. Many other searches on the internet were performed and all questions posed were answered. Those participants that were interested in utilizing technology were given internet sites to assist with nutritional management. Moreover, the sole FNP researcher brought sugar free food items to each class and placed in the center of each table for hands on experience counting carbohydrates to assist in daily diabetic nutritional management. During one of the classes a participant remarked “I had almost given up on trying to manage my diabetes until now”.

### **Protection of Human Subjects**

Protection of human subjects was guided by the oversight of the Institutional Review Board (IRB) of the University of Virginia (see Appendix D). Risks to participants were

identified prior to IRB review and included the possibility that diabetic knowledge and self-efficacy may remain the same after the culturally tailored educational intervention. Benefits to participants were identified prior to the IRB and included the potential for an enjoyable networking experience with other diabetic participants, improvement of diabetic knowledge and self-efficacy, and an ongoing support system within the FBO. Informed consent was obtained on the first day of class for each participant and on the following Wednesday October 10, 2018 by the FNP sole researcher for three other interested participants. The researcher also provided an overview of the class framework with reassurance that personal information would be kept confidential.

### **Data Analysis Plan**

All attendance sheets and data were de identified and kept by the sole researcher in a locked cabinet and no one had access to the materials except for the sole researcher. Upon completion of the 4-week culturally tailored DMSE in the FBO data was entered into SPSS. The data collected was not normally distributed and a non-parametric approach was pursued to further evaluate the data and stated hypotheses. The Wilcoxon Signed-Rank test, a non-parametric statistical test was used to compare the repeated measures of the DKT2 and DES. Descriptive statistics and results from the satisfaction survey also were entered for evaluation.

## **Results**

### **Participants**

The participant demographics and descriptive characteristics are displayed (see Tables 1-4). The demographic and descriptive characteristics are representative of all 8 participants in the study.

**Demographic data**

The participant sample was over 50 % female. All participants were self-identified African-Americans and all Portsmouth, Virginia residents. The majority of participants reported living in Portsmouth for more than 40 years. Most of the participants ages ranged between 61-80 years, however, ages spanned from 41 years to 80 years (see Table 3).

**Participant Diabetic Survey**

The majority of participants were all prescribed oral diabetic agents, aspirin, blood pressure medications and statins. One participant utilized insulin and oral diabetic agents. All participants reported having a primary care provider and none reported emergency department (ED) visits or hospital admissions within the last year. None of the participants reported having attended diabetic classes since diagnosis (see Table 3).

**Statistics****Hypothesis testing.**

**Diabetic Knowledge Test 2 (DKT2).** The first stated hypothesis, that upon completion of the Culturally Sensitive Diabetic Self-Management Education classes participant post-intervention scores would improve from pre-intervention scores was rejected (see Table 1). Scores were not normally distributed and a Wilcoxon Signed Rank Test was employed instead of parametric testing. The Wilcoxon Signed Rank Test revealed no statistical significance with pre-intervention scores and post-intervention scores,  $z = -.577, p = .564$ .

**Diabetic Empowerment Scale (DES).** The second hypothesis, that upon completion of the Culturally Sensitive Diabetic Self-Management Education classes participant post-intervention scores would improve from pre-intervention scores was met (see Table 2). A Wilcoxon Signed

Rank Test ( $z = -2.527, p = .012$ ) did achieve statistical significance with a large effect size ( $r = -0.63$ ) (see Appendix B).

**Participant Satisfaction Survey.** The third hypothesis, that the Culturally Sensitive Diabetic Self-Management Education program in a FBO would be enjoyable and high participant satisfaction scores were achieved (see Table 4). The average scores for all seven questions was greater than 96%. Several written comments stated “please return to our church to continue this program”.

### **Process Measures**

There was a total of 5 people that attended the first DSME class in the FBO as potential participants. Three other interested participants met the sole researcher on the following Wednesday for review of IRB consent, pre-intervention testing and Class 1 review with permission by the senior pastor for use of Family Center on October 10, 2018. The senior pastor of the FBO recruited through the pulpit, Wednesday night prayer meetings and through word of mouth with other church pastors. Only eight participants completed the program. The most common reasons stated given by potential participants for not being able to attend at least two of the culturally sensitive DSME classes included other competing activities within the community of Portsmouth, Virginia when the classes were held every Saturday in October 2018.

## **Discussion**

### **Summary of Results**

This quasi-experimental study examined if a Culturally Sensitive DSME program would increase Diabetic Knowledge and Diabetic Empowerment post intervention and if satisfaction scores would be favorable. DES scores (see Figure 2) reached statistical significance but DKA

scores (see Figure 1) did not reach statistical significance. This section will expound upon the study results and future implications for culturally sensitive DSME programs in FBOs and community settings. Satisfaction scores were very high with a greater than 96% rating on all questions answered by the 8 program participants.

### **Diabetic Knowledge**

The DKT2 scores for the participants did not achieve statistical significance after the culturally sensitive DSME classes. The DKT2 instrument contained 14 general questions germane to general diabetes knowledge and the final 9 questions were specific to insulin use. Note there was only one participant in the study that utilized insulin. Reviewing the 14 general diabetes knowledge questions showed a mean preintervention score of 62.50 (SD=10.63) and a postintervention mean score of 72.2 (SD=11.73). This evaluation demonstrated an increase of 9.82 points despite the lack of statistical significance demonstrated with the Wilcoxon Signed Ranks test ( $Z=-1.897$ ,  $p=.054$ ) using the entire DKT2 testing instrument in the study.

Despite the aforementioned information, the University of Michigan DKA2 test utilized in the study may not have been the right test for the intervention despite the coefficient alphas of (.77) for the general test and (.84) for the insulin subtest (Fitzgerald, et al. 2016). One of the criticisms of the DKT2 according to Fitzgerald, et al. is a lack of detail in the test questions yielding a lack of sensitivity to the many different aspects of diabetic education and training modalities (2016). Fitzgerald et al. (2016) further evaluated that this test has been translated into different languages and given to different ethnicities with consistent demonstrations of reliability and validity. There were no questions posed in the diabetic questionnaire for this study evaluating baseline education in the 8 participants but Fitzgerald et al. (2016) reported the DKA2 test was evaluated for validity with varying educational backgrounds. According to Fitzgerald et

al., although this instrument is valid and reliable for assessing overall diabetic knowledge it is not a reliable predictor of diabetic behaviors (2016). The lack of participant evaluation of Adult Literacy and Numeracy could have also impacted the DKT2 post-intervention test scores. Adult literacy in health care is defined as the ability of an adult individual to assimilate information to meet health care goals (CDC, 2012). Additionally, Adult numeracy in health care involves the use of mathematical precepts in health situation management requiring the use of mathematical skills (CDC, 2012). According to the CDC, only 12 % of adults in the U.S. achieved high literacy scores and less than 10 % had high numeracy scores (2012). Another consideration in this cohort could have been associated with advancing age there may have been visual and hearing deficiencies. These were not evaluated for and may have confounded learning resulting in lower DKT2 test results post education intervention.

**Diabetic Self-Empowerment.**

Diabetic self-efficacy is foundational for the diabetic patient to achieve success with diabetic self-care activities. The DES post-intervention scores were statistically significant (see Figure 2). The 8 participants attended at least two of the four Saturday classes in October 2018. The majority of the participants attended 3 out of the 4 and only 2 participants attended 2 out of the 4 classes. Each class reviewed diabetic information for approximately 60 minutes with 30 minutes devoted to open discussion, sharing of personal experiences with questions and associated support. Most classes exceeded the allotted open discussion time frame to one hour. Participant story telling of personal experiences which included frustrations of trying to adhere to nutritional guidelines ensued with robust discussion. Many nutritional questions led to internet searches and participants calculating favorite foods to include in daily food intake. One male participant resisted the fact that he may have to measure some of the foods he wanted to include

in his diet. He defended his remarks stating “I don’t have a measuring cup in my house.” All the female participants responded almost in unison “We know your wife and you do have a measuring cup in your house”! Laughter ensued by all participants and the male participant admitted “Yeah you are probably right.” The last 30 minutes to one hour of each class time was rich with participant questions and discussion.

The DES is the only instrument used to assess empowerment in the chronic disease of diabetes (Sigurdardottir & Jonsdottir, 2008). According to Sigurdardottir & Jonsdottir (2008) the DES has been used in the U.S., China, Iceland and Taiwan to assess empowerment in the diabetic patient population. Empowerment is described as a process for the diabetic patient including intrapersonal and interpersonal interactions (Sigurdardottir & Jonsdottir, 2008). The empowerment outcome desired for the diabetic patient is self-efficacy (Sigurdardottir & Jonsdottir, 2008). The four factors that impact self-efficacy are modelling behavior, mastery of skills germane to diabetic care, verbal persuasion, and reassessment of physical and emotional symptoms (Sigurdardottir & Jonsdottir, 2008). According to Johnston-Brooks, Lewis & Garg, the perception of self-efficacy positively influences diabetic self-care activities (2002).

### **Participant satisfaction**

The satisfaction scores reflected very high scores by the participants. The FBO created a familiar and safe setting for the participants. The presence of the senior pastor and the First Lady and church elders lent support and credibility to the program and approval of the setting of the church in delivery of health information and management of diabetes. You may want to include the information from the articles that support health programs in the church.

**Recruitment**

The senior pastor requested to be in control of marketing of the DSME program at his church. He communicated with his church members from the pulpit, Wednesday night prayer meetings, and he extended an invitation to neighboring churches for participation. He collaborated with the FNP sole researcher and utilized flyers during his recruiting efforts. The senior pastor reported by mid-September 2018 greater than 10 participants interested in attending the DMSE classes. The sole researcher contacted the senior pastor weekly from September 2018 through October 5th prior to the first class on October 6, 2018.

**Participation**

Over the course of the four weeks the 8 participants attended at least 2 classes out of the 4 classes with the majority attending at 3 out of the 4 total DSME classes. The senior pastor attended all but one class and the First Lady attended all the DSME classes and the class started in the same fashion with an introduction of the sole researcher and opening prayer. The participants always brought study materials and were eager to review the previous class PowerPoint for any questions before starting the materials for the assigned class. Class participation was high throughout the time allotted and many times the class exceeded the time limit.

**Strengths**

This DSME program was culturally sensitive and took place within a FBO utilizing the NDEP 4 Steps diabetic education program. Two validated instruments were utilized to assess diabetic knowledge scores and diabetic empowerment scores prior to the intervention and post intervention. The culturally sensitive DSME program support was demonstrated by the senior pastor by his presence at most of the classes and in his absence appointing a surrogate church

leader to continue support for the program in the FBO. This program study supports the feasibility of a DSME within a FBO to improve self-management of the chronic disease of diabetes. This program study also offered an alternative access to DSME to a minority group that may not attend conventional DSME in a health system or hospital. The strength of this type of design included cost efficiency and decrease in length of study time when compared to true experimental designs (Center for Innovation in Research and Teaching (CIRT), n.d.). The cost of refreshments was nominal approximately 30 United States dollars (USD) per week and the FBO was more than generous and made copies for study participants when needed. The FNP sole researcher paid for the individual copies of the NDEP booklet 4 Steps to Control Your Diabetes for Life approximately 35 USD.

In this project the FNP sole researcher served as both clinician and diabetic educator to this diabetic cohort in the FBO. This demonstrates the flexibility and cost efficiency utilizing the advanced practice nurse (APRN) as both health care provider and educator. Moreover, it supports that the APRN is an integral part of the health care team particularly in the management of the chronic disease of diabetes.

### **Limitations**

This study design was a pre-post study without random sampling therefore threatening internal validity (Center for Innovation in Research and Teaching (CIRT), n.d.). Moreover, convenience samples limit generalizability of the study findings. Bias may have been present in the design of this study and the Hawthorne effect may have occurred in the cohort of the study. The DKT2 instrument though validated may have lacked sensitivity to the 4 Steps diabetic education approach utilized in this DSME program. Also, use of the entire DKT2 may have been a limitation because 9 of the questions centered on insulin effecting post-intervention diabetic

knowledge scores. In addition, the absence of health literacy and numeracy testing could explain the lack of statistical significance in diabetic knowledge. This was a very small convenience sample and could have affected the power of the study.

### **Nursing Practice Implications**

This quality improvement project demonstrated that culturally tailored diabetic education within a faith-based organization was feasible and acceptable in the African-American diabetic community. The FBO leadership was more than generous and helpful in this project and lent credibility to the project. Church leadership verbally approved pursuing health and the management of the chronic disease of diabetes within the FBO. Delivery of culturally sensitive DMSE by nursing has a great potential for continued access and with said access increased opportunities for diabetic self-management training. This is a viable pathway for decreasing the burden of this disease in the African-American community of Portsmouth, Virginia. There also may be future collaborative opportunities with health care professionals and FBO leadership for chronic disease management. This relationship may also promote posterity of chronic disease management programs and begin to restore trust with the healthcare community. Moreover, this goal is consistent with the Healthy People 2020 goals of providing DMSE to more diabetics and possibly decreasing the disparity in this vulnerable population (CDC, 2018).

### **Implications for Further Study**

Although, this quasi-experimental study showed statistical significance in DES scores post DSME intervention in this Faith Based Organization far more robust studies are needed to reduce bias and confounding variables. Moreover, testing for diabetic knowledge should be measured utilizing a more general diabetic knowledge test. Certainly, multi-center rigorous randomized controlled trials are needed to address the long-term effects of improved diabetic

knowledge and self-efficacy. More specifically, these studies need to address the incidence of microvascular and macrovascular co-morbidities associated with DM type 2 after DSME training. There also needs to be attention focused upon the how long the DSME effects last and how often DSME should occur to maintain glycemic control. There should also be a financial analysis with attention to the impact on quality of life years and reduction of hospitalizations and emergency room use utilizing a shared medical appointment (SMA) approach incorporating DSME (Hodorowicz, 2012). The advanced practice registered nurse (APRN) is fully capable of leading the SMA for a group of patients with diabetes and according to the Center for Medicare and Medicaid Services (CMS) this will yield revenue by and evaluation and management (E/M) coding (Hodorowicz, 2012). DSME training is covered during the first year of diagnosis up to 10 hours DSME, by Medicare at 100% reimbursement without co-pay to the patient according to Hodorowicz (2012). Other beneficiaries of private insurance require 20% for the same DSME training including up to 10 hours within the first year of diagnosis and 2 hours annually after initial diagnosis (Hodorowicz, 2012). Billing providers for group DSME include physicians, registered dietitians, physician assistants, nurse practitioners, clinical nurse specialists, nurse midwives, and clinical psychologists (Hodorowicz, 2012). It is imperative that the APRN work with, billing when planning SMA visits to ascertain coverage for participants (Hodorowicz, 2012). The APRN provider could potentially see 10-12 patients with diabetes in a group setting after the participants sign a confidentiality agreement (Hodorowicz, 2012). Each SMA last 60 to 90 minutes and at the end each patient will be seen individually for evaluation and the provider may bill an E & M code for services (Hodorowicz, 2019). Hypothetically, if an APRN leads a SMA of 12 patients with diabetes and codes a 99213 Evaluation and Management (E & M) code, Medicare will pay \$ 83 dollars per patient yielding 996 dollars in 90 minutes (Hodorowicz,

2012). It would take the same APRN provider in a traditional setting seeing patients individually every 15 minutes approximately three hours to achieve similar results (Hodorowicz, 2012).

Moreover, when homogenous patient groups share these medical appointments patient satisfaction scores and clinical outcomes improve (Hodorowicz, 2012). This would be an excellent way to manage population health by targeting patients with diabetes that are not at goal and include into a SMA offering DSME training (Hodorowicz, 2012). There needs to be further study utilizing shared medical appointments for delivery of DSME training and health outcomes in patients with diabetes. Finally, there needs to be more qualitative studies to probe the patient to ensure a more patient centric approach.

### **Products of Scholarly Practice Project**

Results of this scholarly project include submission to The Journal of Nurse Practitioners adhering to the journal capstone requirements. Submission to the Virginia Council of Nurse Practitioners Annual Conference 2019 and presented poster presentation March 6-8, 2019 in Roanoke Virginia. Collaboration with FNP sole researcher's current medical group upon completion of scholarly project to implement a diabetic team to establish a diabetes center for excellence and support for Portsmouth, Virginia diabetic residents. Moreover, working with population health physician to expand DSME training to primary care offices and within the Portsmouth, Virginia community residents that utilize the Bon Secours and Mercy Health system in Hampton Roads Virginia.

### **Conclusion**

Current research demonstrates that DSME training is associated with reducing admissions and emergency department visits in the diabetes population (Powers et al. 2015). Moreover, the impact on glycemic control after DSME training is estimated to be as great as 1%

hemoglobin A 1 C reduction in patients with DM type 2 (Powers et al. 2015). Naturally, with a decrease in hemoglobin A 1 C levels the patient with DM type 2 will encounter fewer comorbidities and improved quality of life (Powers et al. 2015). Unfortunately, it also documented that DSME is underutilized in the United States (Powers, 2016). Less than 7 % of patients with diabetes with private insurance and less than 5 percent of Medicare beneficiaries have utilized DSME services (Powers, 2016). Underutilization of currently covered DSME training services coupled with continued perceptions of mistrust by this minority group display real barriers for diabetes self-management. This study showed the feasibility and acceptance of a DSME training program within a faith-based organization. An improvement in DES scores after the DSME intervention was demonstrated in the study, but did not show statistical significance in diabetes knowledge utilizing the entire 23 question DKT2 test. However, further analysis of the 14 general diabetes knowledge questions demonstrated a mean preintervention score of 62.50 (SD=10.63) and a postintervention mean score of 72.2 (SD=11.73). This evaluation demonstrated an increase of 9.82 points with the general diabetes knowledge test questions alone compared to the 23 question DKT2 test and associated Wilcoxon Signed Ranks test ( $Z=-1.897$ ,  $p=.054$ ).

More minority studies are needed to support the impact of DSME training on diabetes knowledge and empowerment within the FBO. The data gleaned from this study and future studies should then serve as the foundation for future diabetic policy and planning within local health systems. Evidence based research will then be able to offer fair and equitable health care to the African-American minority population with diabetes.

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Table 1. Diabetic Knowledge Test for Statistical Significance

	diabdiet2 - Diabdiet1
Z	-.577 <sup>b</sup>
Asymp. Sig. (two tailed)	-.564

**a. Wilcoxon Signed Ranks Test**

**b. Based on Positive ranks.**

Testing immediately after last DSME class.

A Wilcoxon Signed Ranks Test did not reveal statistically significant results in Diabetic Knowledge Test Scores.

Table 2. DES Table for Statistical Significance

	Total scores- Total scores 1
Z	-2.527 <sup>b</sup>
Asymp. Sig. (2-tailed)	.012

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Testing immediately after last DSME class.

A Wilcoxon Signed Ranks Test revealed statistically significant results in Diabetic Empowerment Scores.

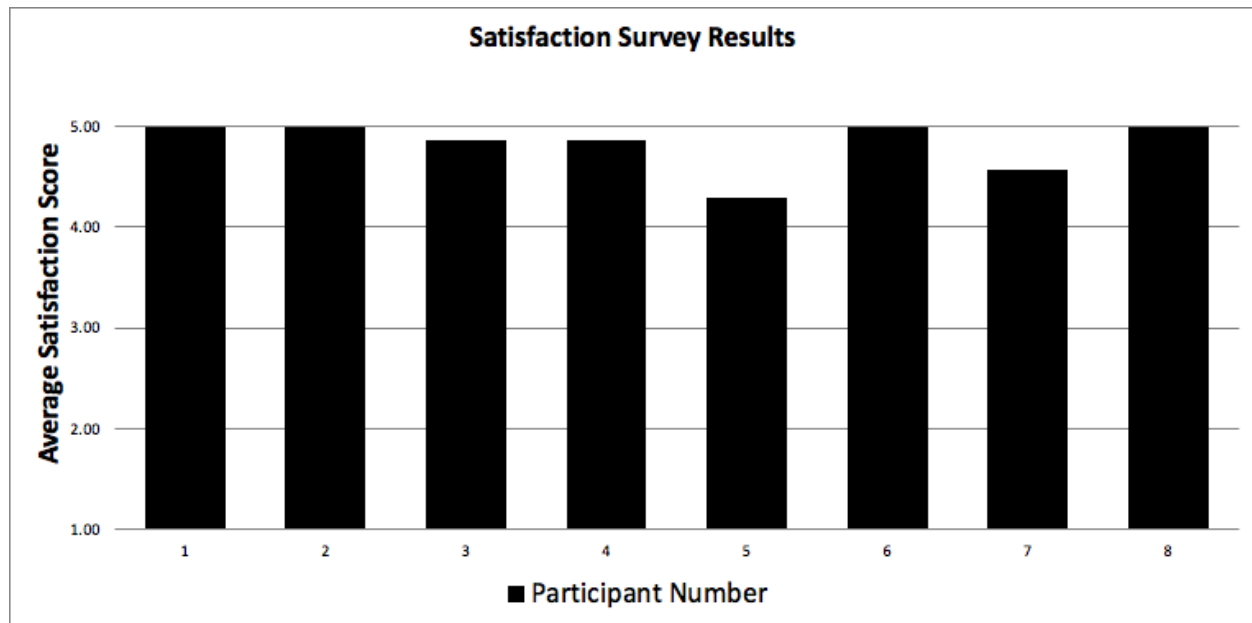
Table 3. Participant Characteristics

Variable	Frequency (%)
Do you have a PCP? Yes No	8 (100 %) 0
Length of years with diagnosis: less than 5 years 5-10 years Over 10 years	4 (50 %) 2 (25 %) 2 (25 %)
Emergency Visit within past year? Yes No	0 8 (100 %)
Hospitalization within past year? Yes No	0 8 (100 %)
Insulin Use? Yes No	1 (12.5 %) 7 (87.5 %)
Diabetic Pills? Yes No	8 (100 %) 0
Aspirin Use? Yes No	8 (100 %) 0
Cholesterol medication Use? Yes No	8 (100 %) 0
BP Medication Use? Yes No	8 (100 %) 0
Age 21-40 years Age 41-60 years Age 61-80 years Age 80 years or greater	0 (0 %) 2 (25%) 6 (75%) 0 (0%)
Gender: Female Male	5 (62.5%) 3 (37.5%)
How Long a Portsmouth, Virginia Resident? 0-10 years 11-20 years 21-40 years 40 years or greater	2 (25%) 0 (0%) 2 (25%) 4 (50%)

Ever Received DSME Training? Yes	0 (100%)
No	8 (100%)

Survey for n=8 study participants.

Table 4. Culturally Sensitive DSME Satisfaction Survey Results



Participants n = 8

## Appendix A

## DKA2 Test

ID #

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. looks 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 \*
15. Signs of ketoacidosis (DKA) include:
  - a. shakiness
  - b. sweating
  - c. vomiting \*
  - d. low blood glucose

16. If you are sick with the flu, you should:
- Take less insulin
  - Drink less liquids
  - Eat more proteins
  - Test blood glucose more often \*
17. If you have taken rapid-acting insulin, you are most likely to have a low blood glucose reaction in:
- Less than 2 hours \*
  - 3-5 hours
  - 6-12 hours
  - More than 13 hours
18. You realize just before lunch that you forgot to take your insulin at breakfast. What should you do now?
- Skip lunch to lower your blood glucose
  - Take the insulin that you usually take at breakfast
  - Take twice as much insulin as you usually take at breakfast
  - Check your blood glucose level to decide how much insulin to take \*
19. If you are beginning to have a low blood glucose reaction, you should:
- exercise
  - lie down and rest
  - drink some juice \*
  - take rapid-acting insulin
20. A low blood glucose reaction may be caused by:
- too much insulin \*
  - too little insulin
  - too much food
  - too little exercise
21. If you take your morning insulin but skip breakfast, your blood glucose level will usually:
- increase
  - Decrease \*
  - remain the same
22. High blood glucose may be caused by:
- not enough insulin \*
  - skipping meals
  - delaying your snack
  - skipping your exercise
23. A low blood glucose reaction may be caused by:
- heavy exercise \*

- b. infection
- c. overeating
- d. not taking your insulin

\*Correct Answer  
Diabetes Research and Training Center  
University of Michigan, 2015

**Diabetic Empowerment Scale (DES)****ID #**

In general, I believe that I:	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. ...know what part(s) of taking care of my diabetes that I am satisfied with.	( )	( )	( )	( )	( )
2. ...know what part(s) of taking care of my diabetes that I am dissatisfied with.	( )	( )	( )	( )	( )
3. ...know what part(s) of taking care of my diabetes that I am ready to change.	( )	( )	( )	( )	( )
4. ...know what part(s) of taking care of my diabetes that I am <u>not</u> ready to change.	( )	( )	( )	( )	( )
5. ...can choose realistic diabetes goals.	( )	( )	( )	( )	( )
6. ...know which of my diabetes goals are most important to me.	( )	( )	( )	( )	( )
7. ...know the things about myself that either help or prevent me from reaching my diabetes goals.	( )	( )	( )	( )	( )
8. ...can come up with good ideas to help me reach my goals.	( )	( )	( )	( )	( )
9. ...am able to turn my diabetes goals into a workable plan	( )	( )	( )	( )	( )

<b>In general, I believe that I:</b>	<b>Strongly Agree</b>	<b>Agree</b>	<b>Neutral</b>	<b>Disagree</b>	<b>Strongly Disagree</b>
<b>10. ...can reach my diabetes goals once I make up my mind.</b>	( )	( )	( )	( )	( )
<b>11. ...know which barriers make reaching my diabetes goals more difficult.</b>	( )	( )	( )	( )	( )
<b>12. ...can think of different ways to overcome barriers to my diabetes goals</b>	( )	( )	( )	( )	( )
<b>13. ...can try out different ways of overcoming barriers to my diabetes goals.</b>	( )	( )	( )	( )	( )
<b>14. ...am able to decide which way of overcoming barriers to my diabetes goals works best for me.</b>	( )	( )	( )	( )	( )
<b>15. ...can tell how I'm feeling about having diabetes.</b>	( )	( )	( )	( )	( )
<b>16. ...can tell how I'm feeling about caring for my diabetes</b>	( )	( )	( )	( )	( )
<b>17. ...know the ways that having diabetes causes stress in my life.</b>	( )	( )	( )	( )	( )
<b>18. ...know the positive ways I cope with diabetes-related stress.</b>	( )	( )	( )	( )	( )
<b>19. ...know the negative ways I cope with diabetes-related stress.</b>	( )	( )	( )	( )	( )
<b>20. ...can cope well with diabetes-related stress.</b>	( )	( )	( )	( )	( )
<b>21. ...know where I can get support for having and caring for my diabetes.</b>	( )	( )	( )	( )	( )

<b>In general, I believe that I:</b>	<b>Strongly Agree</b>	<b>Agree</b>	<b>Neutral</b>	<b>Disagree</b>	<b>Strongly Disagree</b>
<b>22. ...can ask for support for having and caring for my diabetes when I need it.</b>	<b>( )</b>	<b>( )</b>	<b>( )</b>	<b>( )</b>	<b>( )</b>
<b>23. ...can support myself in dealing with my diabetes.</b>	<b>( )</b>	<b>( )</b>	<b>( )</b>	<b>( )</b>	<b>( )</b>
<b>24. ...know what helps me stay motivated to care for my diabetes.</b>	<b>( )</b>	<b>( )</b>	<b>( )</b>	<b>( )</b>	<b>( )</b>
<b>25. ..can motivate myself to care for my diabetes.</b>	<b>( )</b>	<b>( )</b>	<b>( )</b>	<b>( )</b>	<b>( )</b>
<b>26. ...know enough about diabetes to make self-care choices that are right for me</b>	<b>( )</b>	<b>( )</b>	<b>( )</b>	<b>( )</b>	<b>( )</b>
<b>27. ...know enough about my- self as a person to make diabetes care choices that are right for me.</b>	<b>( )</b>	<b>( )</b>	<b>( )</b>	<b>( )</b>	<b>( )</b>
<b>28. ...am able to figure out if it is worth my while to change how I take care of my diabetes.</b>	<b>( )</b>	<b>( )</b>	<b>( )</b>	<b>( )</b>	<b>( )</b>

## Diabetic Empowerment Scale/Answer Key

The DES measures the patient's  
self-efficacy related to:  
Subscales & Items

Managing the psychosocial aspects of diabetes (9 items) questions 18, 20-27

Assessing dissatisfaction (questions 1--4, 15-17), readiness to change questions (19 & 28)

Setting and achieving diabetes (questions 5-14)

The scoring of the DES is straightforward and is based on completed items. An item checked "strongly agree" receives 5 points; "agree" – 4 points; "neutral" – 3 points; "disagree" – 2 points; and "strongly disagree" receives 1 point. The numerical values for a set of items in a particular subscale (for example: items 5-14 in the "Goal Setting" subscale) are added and the total is divided by the number of items (in this case 10) in the subscale. The resulting value is the score for that subscale. An overall score for the DES can be calculated by adding all of the item scores and dividing by 28.

ID# \_\_\_\_\_

**Diabetic Participant Data Survey Questions**

1. Do you have a primary care provider? Yes or No
2. How long have you had diabetes? 1 = less than 5 years  
2 = 5-10 years, 3 = over 10 years
3. Have you been seen within the past year for diabetes? Yes or No
4. Have you been admitted within the past year for diabetes? Yes or No
5. Do you use insulin? Yes or No
6. Do you take diabetic pills? Yes or No
7. Do you take aspirin daily? Yes or No
8. Do you take cholesterol medication daily? Yes or No
9. Do you take blood pressure medication daily? Yes or No
10. What is your age? 1 = 21-40 years, 2 = 41-60 years, 3 = 61-80 years, 4 = greater than 81
11. What is your gender? 1 = male, 2 = female
12. How long have you lived in Portsmouth, Virginia? 1 = 0-10 years, 2 = 11-20 years, 3 = 30-40 years, 4 = greater than 40 years.
13. Have you ever received Diabetes Self-Management Education training? Yes or No

ID# \_\_\_\_\_

**Participant Satisfaction Survey**

**Please answer the below questions and circle how you feel about the program**

**1. Overall, I am very satisfied with this  
Diabetic Education program...**

Strongly disagree

Disagree

Neutral

Agree

Strongly Agree

**2. The Church was a great place to hold Diabetic Patient Education...**

Strongly disagree

Disagree

Neutral

Agree

Strongly Agree

**3. Group learning helped me to learn how others cope with Diabetes....**

Strongly disagree

Disagree

Neutral

Agree

Strongly Agree

**4. Group learning helped me to learn how to cope better with my diabetes...**

Strongly disagree

Disagree

Neutral

Agree

Strongly Agree

**5. I enjoyed the group conversation at the end of each class...**

Strongly disagree

Disagree

Neutral

Agree

Strongly Agree

**6. I would like to see Diabetic Education Classes continue in my Church...**

Strongly Disagree

Disagree

Neutral

Agree

Strongly Agree

**7. I enjoyed attending the Diabetic Education sessions at the Church...**

Strongly Disagree

Disagree

Neutral

Agree

Disagree

## Appendix B

**Cohen's Effect Size for Diabetic Empowerment Scores (DES)**

The formula for calculating Cohen's effect size (r) (Grande, 2015)

$$r = z / \sqrt{N_{Total}}$$

r = Cohen's effect size (small = <.1, medium = <.3, large = <.5 (Grande, 2015).

Z= the absolute value of the z statistic from Table 2.

N<sub>Total</sub> = the total number of observations for N<sub>preDES</sub> and N<sub>postDES</sub> = 8 + 8 = 16

$$r = \frac{z}{\sqrt{N_{Total}}} = \frac{z}{\sqrt{16}} = -\frac{2.525}{4} = -0.63$$

A Wilcoxon Signed Ranks Test revealed statistical significance in DES scores post DSME intervention,  $Z = -2.527, p = .012$  (see Table 2), with a large effect size ( $r = -0.63$ ).

## Appendix C

Letter requesting use of Diabetic Profile with modifications

Date: June 10, 2018  
Michigan Diabetes Research Center  
1500 E. Medical Center Drive Ann Arbor, MI 48109

To Whom it May Concern:

I am a Doctor of Nursing Practice (DNP) candidate at the University of Virginia School of Nursing. I am in the process of submitting my draft for my scholarly project dealing with Type 2 DM in the community of Portsmouth, Virginia. I would like to seek permission to utilize your Diabetic profile with some modifications. I would be happy to send the draft of the modifications for review. The original form is too lengthy for my scholarly project.

Sincerely,

Barbara G. Schimming, MSN, RN, FNP-BC  
5108 Harbor Road Suffolk, Virginia 23435  
(757) 404-4109  
Email: [barbara.schimming@gmail.com](mailto:barbara.schimming@gmail.com)

## Appendix D

## IRB Protocol Form

# Protocol Form

## B. Protocol Information

**IRB-SBS Protocol Number**  
(assigned by SBS office, leave blank):

**IRB-SBS Grant Approval number:** (If you received a Grant Approval prior to submitting a protocol, please include the number issued by our office. If you did not submit a Grant Approval Form, please leave this line blank.)

**Submission Type** (delete all those that don't apply):

**New Protocol**

Culturally Tailored Diabetic Self-Management in the African-American Type 2 Diabetic in a Faith Based Organization

**Protocol Title:**

**Principal Investigator:**

Barbara G. Schimming

Professional Title:

MSN, RN, FNP-C

School (Curry, Medical, Arts & Sciences, etc):

Nursing

Department (CISE, Family Medicine, Psychology, etc):

Graduate Nursing

Campus Box number:

800826

Mailing Address (only if campus box number is not available):

Telephone:	757 404 4109
UVA e mail address (no aliases, please): <i>Your computing ID is used for tracking your IRB CITI training.</i>	<a href="mailto:bgs6bt@virginia.edu">bgs6bt@virginia.edu</a>
Preferred e-mail address for correspondence (if applicable):	<a href="mailto:bgs6bt@virginia.edu">bgs6bt@virginia.edu</a>
You are (delete all those that don't apply):	<b>Graduate Student</b>
This research is for (delete all those that don't apply):	<b>Class project</b> <b>Doctoral Scholarly Project</b>
Primary contact for the protocol (if other than the principal investigator):	
Contact's Email:	
Contact's Phone:	
<b>Faculty Advisor:</b>	Kathryn Reid
School (Curry, Medical, Arts & Sciences, etc):	Nursing
Department (CISE, Family Medicine, Psychology, etc):	Graduate
Campus Box number:	800826
Telephone:	434 882-2276
UVA e mail address (no aliases, please): <i>Your computing ID is used for tracking on-line human subjects training.</i>	<a href="mailto:kjb@virginia.edu">kjb@virginia.edu</a>

**Other Researchers\*:**

Please list all other  
researchers in this study that  
are associated with UVA.\*  
Please provide the following  
information for each  
researcher: Name, UVA  
email address (no aliases,  
please.)

None

---

Please list all other  
researchers not associated  
with UVA.\* Please provide  
the following information for  
each researcher: Name,  
Institution, Phone Number,  
Mailing Address, Email  
Address.

None

---

**Funding Source: If  
research is funded, please  
provide the following:**

Name of the funding source  
(NIH, NFS, Robert Wood  
Johnson Foundation, etc)

None

---

Type of funding source  
(delete all that **don't** apply):

Federal grant  
Private grant (non-profit institution)  
Private grant (for profit institution)  
Local Virginia government  
Virginia Commonwealth grant (Non-UVa State fund)  
Non-Virginia government grant  
UVa grant  
Sub Contract

Describe the funding source  
(optional unless you  
selected "sub contract"  
above)

None

---

funding period (month/year):

None

---

grant number:

Not applicable

---

**Paying Participants:** If you are paying participants using State or UVa funds (including grants), you are required to complete the **UVa or State Funds Study Payment Procedures Form**. (Please describe your payment process in question 3-b in the next section.) **Please mark an "x" in the appropriate box (to the right):**

I am paying participants using State or UVa funds (including grants) and will include the UVa or State Funds Study Payment Procedures Form.

☐

I am not paying participants or I am not using State or UVa funds (including grants).

☒

**Anticipated start date for collecting and analyzing data:**

October 06, 2018

**Anticipated completion date for collecting and analyzing data:**

October 27, 2018

\* Please only list researchers that are working directly with human subjects and/or their data. All researchers listed on the protocol must complete the IRB-SBS Training or provide proof of completing IRB training at their institution. If you have any questions about whether a researcher should be listed on the protocol or if a researcher has completed training, please contact our office ([irbsbshelp@virginia.edu](mailto:irbsbshelp@virginia.edu)). Proof of training can be submitted to our office via fax (434-924-1992), by mail (PO Box 800392 Charlottesville, VA 22908-0392) or by email ([irbsbs@virginia.edu](mailto:irbsbs@virginia.edu)).

## C. Description of the Research Study

1. **Study Overview:** Give a brief overview of your project. Consider the following when framing your response:

- What is your purpose in conducting this research? What makes the project interesting and worth doing?
- Include information about the study's logistics (where and when it will be conducted, what instruments you will use, etc). What will you be asking participants to do, and what do you hope to learn from these activities?
- If your study has more than one phase, please clearly map out the different phases.
- If your study is a multi-site study, please describe.

**Response 1: (enter response below this header)**

The purpose of the research is to assess if the application of a four-week culturally tailored diabetic education program in an African-American church influences participant diabetic knowledge and diabetic self-efficacy.

The study is interesting because it will take place in Portsmouth, Virginia a designated part of the Diabetes Belt. The Diabetes Belt is a distinction given by the Center for Disease Control for higher prevalence of Diabetes. Portsmouth Virginia is the only city in the state with this distinction. According to the census bureau 54 % of the Portsmouth's residents are African American. If approved this study will take place at Celestial Baptist Church every Saturday from 0930-1200 noon. The pastor will be in attendance as well as the health ministry volunteers at the church. Recruitment will take place from the church pulpit and also through church health fairs and two other sister churches are also in the recruitment plan. Two instruments will be utilized to measure pre-intervention diabetic knowledge and diabetic self-efficacy. The Diabetic Knowledge Test (DKT) and the Diabetic Empowerment Scale (DES) from the University of Michigan. The patient's will be asked to attend the four classes on how to manage diabetes and to stay healthy utilizing the 4-Steps (How to manage your diabetes for life). The patients' will be asked to complete the pre-intervention and post-intervention test and a satisfaction survey at the end of the program. The program is set up to encourage group sharing and coping with the chronic disease of diabetes. It is hopeful that the voluntary participants will enjoy the setting and the education process of learning how to live with diabetes.

1. **Participants: Please describe as best you can the population(s) you plan to work with.** Please describe them in the terms that are most pertinent to your project. We need to understand how working with them will further your research objectives and what steps need to be taken in order to minimize risk to them.  
**Please respond to questions a-e in this section.**

a. Please fill in the following blanks below. If you are working with more than one population, please provide information for each group.

**Response 2-a: (enter response below this header)**

Age: 21 and older  
Gender: females and males  
Race: African-American  
Estimated number of participants: 20

b. Describe how participants will be identified and selected to participate in the study. Are there specific populations that you will be targeting and if so, why? Are there potential participants that you will exclude from the study and if so, why?

**Response 2-b: (enter response below this header)**

Voluntary recruitment through the Church

c. Is the population and/or individual participant “[risk-sensitive](#)”? (You will have an opportunity to discuss the risks in more detail in the “Risks” section.) Is the population and/or individual participant “[vulnerable](#)”? (This issue relates to the participant’s capacity consent; you will have an opportunity to discuss your consent procedures in more detail in the “Consents” section.)

**Response 2-c: (enter response below this header)**

Voluntary, no identifying participant information will be collected.

d. Will you deceive and/or withhold information from the participants about the study? If so, please justify why deception and/or withholding information from the participants is necessary and describe the deception. Using deception requires specific consent forms and processes; please describe this process in the **Consent section** under **Response 3-a** and **3-b**.

**Response 2-d: (enter response below this header)**

No

e. What special experience or knowledge do you have that will allow you to work productively and respectfully with your participants? What special experience or knowledge does your faculty sponsor have in relation to your research participants?

**Response 2-e: (enter response below this header)**

Family Nurse Practitioner in family medicine. Treating the chronic disease of diabetes for over 20 years.

3. **Consent:** [Consent](#) is an on-going process that starts when you first inform your participant about the study through your recruitment/advertising efforts and ends when the participant's data are no longer needed. The federal regulations require a [formal consent process](#) takes place where you provide participants with specific information about the study (usually provided in the consent form, see General Consent Template) and the participants are required to sign the form. Not [every study will fit this](#) mold and there are some [alternative methods](#) for conducting the formal consent procedure. **In general, the Board needs to understand how participants will be recruited and consented to participate in the study.** Please note that if your study qualifies for [exemption](#), you will not be required to follow the federal regulations for consent, but the Board may require that you provide information about the study to the participant. **Please respond to questions a-d in this section.**

- a. How will you [approach/recruit](#) participants to participate in your research? **Please provide all materials used to contact participants in this study. These materials could include letters, emails, flyers, advertisements, etc. If you will contact participants verbally, please provide a script that outlines what you will say to participants.**

**Response 3-a: (enter response below this header)**

The recruitment will come through the pulpit from the pastor as a voluntary opportunity for diabetic education offered by a Family Nurse Practitioner in the Doctoral Program at the University of Virginia.

- b. What is your [consent process](#)? Who will present the consent information and how will it be presented? How will you [document consent](#)? Are your participants able to sign a form, and if not, how will you document consent? Will you use more than one form (if you use more than one version of the consent form, **each form needs to have a unique title in order for our staff to keep track of the different forms**)? When and where will participants receive the consent form? Who will give them the consent form? Will you pay participants?

**Response 3-b: (enter response below this header)**

The participants will sign a general consent form at the first-class October 06, 2018. This information will be stored in the UVA box. Note if the participant cannot sign consent. Verbal consent may be obtained with two witnesses.

- c. Are any of your participants [unable to consent](#) (i.e. vulnerable population)? These populations include (but are not limited to): minors (participants under the legal age of consent), prisoners, and participants with diminished mental capacity. These participants generally need a parent (or surrogate) consent form and a participant assent form (prisoners being the likely exception unless they are minors too).

**Response 3-c: (enter response below this header)**

No

- d. What is your [relationship](#) to your participants? Do you know them personally or hold any position of authority over them? Do any of the researchers (including the faculty advisor) have positions of authority over the participants, such as grading authority, professional authority, etc.? Are there any relevant financial relationships?

**Response 3-d: (enter response below this header)**

No

4. **[Materials/Data collected](#)**: For most SBS studies, the risk to participants often lies in the information that is collected from them. Thus the manner in which the data are collected, how they are stored, and how the data are reported in your research is an important part of determining the risk to participants. When you develop your procedures, consider **minimizing or eliminating the collection of [identifying information](#)** where possible and **provide justification** as to why it needs to be collected. **Please respond to questions a-d in this section.**

- a. Are any of the [data already collected](#)? (If you are only using archival data, please use the Archival Data protocol form instead of this form.) Are the data [publicly available](#) or part of a [private collection](#)? Please describe the data set(s) and provide a list of data fields you will use (when applicable). What will you do to protect the [confidentiality](#) of the pre-existing data?

**Response 4-a: (enter response below this header)**

No data has been collected. The data will be coded by utilizing numerical system and an A will be utilized for pre-intervention data and a B will be utilized on all post-intervention data.

b. What will you do to protect the [privacy](#) of your participants? Describe the [process for collecting data](#) from your participants. What will you do to protect the [confidentiality](#) of your participants? Describe the kinds of information you will gather and the material forms it will take. Describe the level to which the participant's identity will be known, if that information will be collected (and why), and how the [identifying information](#) will be linked with the participant's data. If you don't intend to collect identifying information, describe your process for keeping the data anonymous.

**Response 4-b: (enter response below this header)**

As aforementioned the forms will be numbered with an A for pre-intervention and a B for post-intervention

c. Will you use audio recordings, photographs, video recordings or other similar [data recording devices](#)? Please justify why it is necessary to use these devices, how you will use them, and what you will do with the data after they are collected.

**Response 4-c: (enter response below this header)**

No

d. How will your materials be [stored](#)? Discuss both how you plan to store it while you are collecting and actively analyzing it, and your [long-term plan](#) for maintaining it when the active research phase is finished. How will your data be reported in your study? Will you report the results in aggregate or will individual data be discussed?

**Response 4-d: (enter response below this header)**

UVA box system, the results will be reported in aggregate

5. **Risks:** Almost any intervention into other people's lives carries with it the potential to cause them social, psychological, physical, or legal harm. However, not every interaction will put a participant at risk beyond what is considered [minimal](#). **Please describe to the Board the potential risks and the probability of harm to the participants in your study.**

In this section, consider the following when framing your response:

- [Describe the risks](#) to the participants in your study. Does your study include "risk-sensitive" participants (as identified in the Participants section)? What is the probability that harm could occur?
- Describe what you will do to [minimize those risks](#). Describe what you will do if a [harmful situation occurs](#).
- Would a loss of [confidentiality](#) of any of your materials put participants at risk? If so, how will you prevent this from happening?

**Response 5: (enter response below this header)**

Possible risk to the participants may include that they did not enjoy the culturally sensitive diabetic education approach, that they did not perceive an increase in diabetic self-efficacy or diabetic knowledge.

A loss of materials would not put any of the voluntary participants at risk because of the numeric coding system and no collection of identifying data from the participants.

1. **Benefits:** Benefits help to outweigh the risks to the participants, though not every study will have direct benefits to the participants. In this section, consider the following when framing your response:

- Will there be any benefits to the participants in your study? If so, what are they?
- What is the general importance of the knowledge you expect to gain?

**Response 6: (enter response below this header)**

Culturally sensitive diabetic education, no cost to the participant, may increase diabetic knowledge and self-efficacy which may improve glycemic control and reduce comorbidities. The general importance of this study is to evaluate if culturally sensitive diabetic education offered in an accepted and nurturing environment will influence the participant perception of diabetic knowledge, diabetic self-efficacy and better manage the chronic disease or diabetes.

**IRB Approval**

Dear Barbara Schimming and Kathryn Reid:

PO Box 800826      The Institutional Review Board for the Social and Behavioral Sciences has approved your research project entitled "Culturally Tailored Diabetic Self-Management in the African-American Type 2 Diabetic in a Faith Based Organization." You may proceed with this study. Please use the enclosed Consent Form(s) as the master for copying forms for participants.

Research was expedited under the following category:

7-Research on individual or group characteristics or behavior

This project # 2018-0358-00 has been approved for the period August 22, 2018 to August 21, 2019. If the study continues beyond the approval period, you will need to submit a continuation request to the Review Board. If you make changes in the study, you will need to notify the Board of the changes.

Sincerely,

Tonya R. Moon, Ph.D.

Chair, Institutional Review Board for the Social and Behavioral Sciences

## Appendix E

Culturally Sensitive DSME class materials

**STEP1:**

Learn about diabetes.

What is diabetes?

There are three main types of diabetes:

*Type 1 diabetes* – Your body does not make insulin. This is a problem because you need insulin to take the sugar (glucose) from the foods you eat and turn it into energy for your body. You need to take insulin every day to live.

*Type 2 diabetes* – Your body does not make or use insulin well. You may need to take pills or insulin to help control your diabetes. Type 2 is the most common type of diabetes.

*Gestational (jest-TAY-shun-al) diabetes* – Some women get this kind of diabetes when they are pregnant. Most of the time, it goes away after the baby is born. But even if it goes away, these women and their children have a greater chance of getting diabetes later in life. You are the most important member of your health care team.

You are the one who manages your diabetes day by day. Talk to your doctor about how you can best care for your diabetes to stay healthy. Some others who can help are:  
dentist diabetes doctor diabetes educator dietitian eye doctor foot doctor

*How to learn more about diabetes.*

Take classes to learn more about living with diabetes. To find a class, check with your health care team, hospital, or area health clinic. You can also search online.

Join a support group — in-person or online — to get peer support with managing your diabetes. Read about diabetes online. Go to [www.YourDiabetesInfo.org](http://www.YourDiabetesInfo.org).

*Take diabetes seriously.*

You may have heard people say they have “a touch of diabetes” or that their “sugar is a little high.” These words suggest that diabetes is not a serious disease. That is not correct. Diabetes is serious, but you can learn to manage it.

People with diabetes need to make healthy food choices, stay at or get to a healthy weight, move more every day, and take their medicine even when they feel good. It’s a lot to do. It’s not easy, but it’s worth it!

*Why take care of your diabetes?*

Taking care of yourself and your diabetes can help you feel good today and in the future. When your blood sugar (glucose) is close to normal, you are likely to:

have more energy be less tired and thirsty need to pass urine less often heal better have fewer skin or bladder infections

You will also have less chance of having health problems caused by diabetes such as:  
heart attack or stroke

eye problems that can lead to trouble seeing or going blind

pain, tingling, or numbness in your hands and feet, also called nerve damage

kidney problems that can cause your kidneys to stop working | teeth and gum problems

*Actions you can take*

Ask your health care team what type of diabetes you have.

Learn where you can go for support.

Learn how caring for your diabetes helps you feel good today and in the future.

**STEP 2:****Know your diabetes ABCs.**

Talk to your health care team about how to manage your A1C, Blood pressure, and Cholesterol. This can help lower your chances of having a heart attack, stroke, or other diabetes problems.

*A for the A1C test (A-one-C).*

What is it?

The A1C is a blood test that measures your average blood sugar level over the past three months. It is different from the blood sugar checks you do each day.

Why is it important?

You need to know your blood sugar levels over time. You don't want those numbers to get too high. High levels of blood sugar can harm your heart, blood vessels, kidneys, feet, and eyes.

What is the A1C goal?

The A1C goal for many people with diabetes is below 7. It may be different for you. Ask what your goal should be.

*B for Blood pressure.*

What is it?

Blood pressure is the force of your blood against the wall of your blood vessels.

Why is it important?

If your blood pressure gets too high, it makes your heart work too hard. It can cause a heart attack, stroke, and damage your kidneys and eyes.

What is the blood pressure goal?

The blood pressure goal for most people with diabetes is below 140/90. It may be different for you. Ask what your goal should be.

*C for Cholesterol (ko-LESS-tuh-ruhl).*

What is it?

There are two kinds of cholesterol in your blood: LDL and HDL.

LDL or "bad" cholesterol can build up and clog your blood vessels. It can cause a heart attack or stroke.

HDL or "good" cholesterol helps remove the "bad" cholesterol from your blood vessels.

What are the LDL and HDL goals?

Ask what your cholesterol numbers should be. Your goals may be different from other people. If you are over 40 years of age, you may need to take a statin drug for heart health.

Actions you can take

Ask your health care team:

what your A1C, blood pressure, and cholesterol numbers are and what they should be. Your ABC goals will depend on how long you have had diabetes, other health problems, and how hard your diabetes is to manage.

what you can do to reach your ABC goals

Write down your numbers on the record at the back of this booklet to track your progress.

**STEP 3:****Learn how to live with diabetes.**

It is common to feel overwhelmed, sad, or angry when you are living with diabetes. You may know the steps you should take to stay healthy, but have trouble sticking with your plan over time.

This section has tips on how to cope with your diabetes, eat well, and be active.

*Cope with your diabetes.*

Stress can raise your blood sugar. Learn ways to lower your stress. Try deep breathing, gardening, taking a walk, meditating, working on your hobby, or listening to your favorite music. Ask for help if you feel down. A mental health counselor, support group, member of the clergy, friend, or family member who will listen to your concerns may help you feel better.

Eat well.

*Make a diabetes meal plan with help from your health care team.*

Choose foods that are lower in calories, saturated fat, trans fat, sugar, and salt.

Eat foods with more fiber, such as whole grain cereals, breads, crackers, rice, or pasta.

Choose foods such as fruits, vegetables, whole grains, bread and cereals, and low-fat or skim milk and cheese.

Drink water instead of juice and regular soda. 8

When eating a meal, fill half of your plate with fruits and vegetables, one quarter with a lean protein, such as beans, or chicken or turkey without the skin, and one quarter with a whole grain, such as brown rice or whole wheat pasta.

*Be active.*

Set a goal to be more active most days of the week. Start slow by taking 10-minute walks, 3 times a day.

Twice a week, work to increase your muscle strength. Use stretch bands, do yoga, heavy gardening (digging and planting with tools), or try push-ups.

Stay at or get to a healthy weight by using your meal plan and moving more.

*Know what to do every day.*

Take your medicines for diabetes and any other health problems even when you feel good. Ask your doctor if you need aspirin to prevent a heart attack or stroke. Tell your doctor if you cannot afford your medicines or if you have any side effects.

Check your feet every day for cuts, blisters, red spots, and swelling. Call your health care team right away about any sores that do not go away.

Brush your teeth and floss every day to keep your mouth, teeth, and gums healthy.  
Stop smoking. Ask for help to quit. Call 1-800-QUITNOW (1-800-784-8669).

Keep track of your blood sugar. You may want to check it  
one or more times a day.

Use the card at the back of this booklet to keep a record of your blood sugar numbers.

Be sure to talk about it with your health care team.

Check your blood pressure if your doctor advises and keep a record of it.

Talk to your health care team.

Ask your doctor if you have any questions about your diabetes.

Report any changes in your health.

*Actions you can take*

Ask for a healthy meal plan.

Ask about ways to be more active.

Ask how and when to test your blood sugar and how to use the results to manage your diabetes.

Use these tips to help with your self-care.

Discuss how your diabetes plan is working for you each time you visit your health care team.

**STEP 4:****Get routine care to stay healthy.**

*See your health care team at least twice a year to find and treat any problems early.*

*At each visit, be sure you have a:*

blood pressure check

foot check

weight check

review of your self-care plan

Two times each year, have an:

A1C test. It may be checked more often if it is over 7.

Once each year, be sure you have a:

cholesterol test

complete foot exam

dental exam to check teeth and gums

dilated eye exam to check for eye problems

flu shot

urine and a blood test to check for kidney problems

At least once in your lifetime, get a:

pneumonia (nu-mo-nya) shot

hepatitis B (HEP-uh-TY-tiss) shot

**Medicare and diabetes.**

*If you have Medicare, check to see how your plan covers diabetes care.*

Medicare covers some of the costs for:

1 diabetes education 1 diabetes supplies 1 diabetes medicine 1 visits with a dietitian 1 special shoes, if you need them

Actions you can take

Ask your health care team about these and other tests you may need. Ask what your results mean.

Write down the date and time of your next visit.

Use the card at the back of this booklet to keep a record of your diabetes care.

If you have Medicare, check your plan.

Things to Remember:

1 You are the most important member of your health care team. 1 Follow the four steps in this booklet to help you learn how

to manage your diabetes. 1 Learn how to reach your diabetes ABC goals. 1 Ask your health care team for help.

**My Diabetes Care Record***How to use the record.*

First read the shaded bar across the page. This tells you:

I the name of the test or check-up

I how often to get the test or check-up

I what your personal goal is (for A1C, blood pressure, and cholesterol)

Then, write down the date and results for each test or check-up you get. Take this card with you on your health care visits. Show it to your health care team. Talk about your goals and how you are doing.

A1C – At least twice each year

My goal: \_\_\_\_

Date

Result

Blood Pressure (BP) – At each visit

My goal: \_\_\_\_

Date

Result

Cholesterol – Once each year

My goal: \_\_\_\_

Date

Result

13

TEAR HERE

My Diabetes Care Record

*How to use the record.*

Use this page to write down the date and results of each test, exam, or shot.

Each Visit

Date

Result

Foot check

Review self-care plan

Weight check

Review medicines

Once a Year

Date

Result

Dental exam

Dilated eye exam

Complete foot exam

Flu shot

Kidney check

At least Once

Date

Result

Pneumonia shot

Hepatitis B shot

## Appendix F

## Pastoral Recruitment Script

There is an opportunity for participation in a voluntary research study at Celestial Baptist Church in October 2018. The research study will take place at our church and will take place each Saturday in October 2018 offering diabetic education classes. Those interested need to be over 18 years of age, resident of Portsmouth, Virginia and have Type 2 Diabetes. If you are interested contact the Pastoral staff of Celestial Baptist Church for sign up. Those that sign up will be contacted by the researcher, Barbara G. Schimming.

Recruitment Flyer and sign-up sheet

## **Come Learn About How You Can Control Your Diabetes for Life.....**



**Ask Your Pastor About the Details and Sign Up for  
Meetings Starting Saturdays in October 2018 At Celestial  
Baptist Church or call the Church Office at (757) 673-0644.**

## DSME Sign-up Sheet

[illegible]

Appendix G

**Class Schedule/ Class 1 October 06, 2018**

**9:30 - 10:00 am ..... Registration completion of diabetic history form**

**(coffee, tea, water station)**

**10:00 - 10:30 am..... Welcome from Pastor**

**10:30 - 11:00 am.....Completion of DK and DES**

**11:00 - 11:30 am..... Review Step 1: Learn about Diabetes**

**11:30 - 12:00 noon..... Discussion**

**Class Schedule/Class 2 October 13, 2018**

**9:30 am - 10 am .....Registration/ sign in (Coffee, Tea, Water, station)**

**10:00 am - 10:30 am.....Welcome from Pastor**

**10:30 am - 11:30 am.....Review Step 2: Know your diabetes ABCs**

**11:30 am - 12:00 noon.....Discussion**

**Class Schedule /Class 3 October 20, 2018**

**9:30 am - 10:00 am .....Registration and sign in (coffee, tea, water station)**

**10:00 am - 1030 am .....Welcome from Pastor**

**10:30 am - 1130 am .....Review Step 3/Manage Your Diabetes**

**1130 am - 1200 noon.....Discussion**

**Class Schedule /Class 4 October 27, 2018**

**9:30 am - 10:00 am .....Registration and sign in (coffee, tea, water station)**

**10:00 am - 1030 am .....Welcome from Pastor**

**10:30 am - 11:15 am .....Review Step 4/Get Routine Care to Avoid  
Problems**

**11:15 am - 1200 noon.....Discussion/complete DKS, DES post test**

**CHOOSING HEALTHY FOODS AT THE BUFFET TABLE*****Tips for African Americans with Diabetes***

Buffets can be a fun way to share meals with family and friends. Whether at a potluck party or a restaurant, buffets offer lots of tasty dishes you may not eat every day. However, they also can be challenging, especially if you have diabetes. How can you stay healthy and still enjoy your favorite dishes? You can do it by planning ahead, choosing wisely, and watching how much you eat. So, grab your plate and head for the buffet.

**WHEN YOU GO**

- Plan ahead. Before you go, think about the foods that might be served on the buffet. Decide which foods will help keep your blood sugar under control and which foods you want to avoid.
- Check out all that's offered on the buffet. Before you serve yourself, look at all the options first, then choose one or two favorite treats along with healthier items to round out your meal.
- Watch your portions. Many of your favorite foods may have a lot of fat, sugar, or salt. Take very small portions of deep-fried foods, fatty foods like bacon or pork, cheesy foods, and desserts.
- Come prepared. If possible, bring a low-fat main dish so you'll have something healthy to eat. Let people know what ingredients you used. This will be helpful for your friends and family members who are also trying to watch what they eat.

**VEGETABLE TIPS**

- Fill half of a 10-inch plate (the size of a regular dinner or paper plate) with colorful, non-starchy vegetables, such as broccoli, bell peppers, green beans, collard greens, turnip or mustard greens, carrots, cabbage, eggplant, and spinach.
  - Choose fresh or steamed vegetables that are light on salad dressing, cheese, or cream. If you can, make your own dressing for salads with a little olive oil and vinegar.
  - Watch out for vegetable dishes loaded with butter and cheese, like casseroles and vegetables with sauce.
  - Take just a taste of vegetable dishes cooked with fats like lard or high-fat meats such as ham hocks or pork belly.
- GRAINS AND STARCHES**

- Take only as much grain (like rice or bread) or starchy vegetables (like potatoes, sweet potatoes, or green peas) to fill 1/4 of your plate.
- Choose high-fiber grains like steamed brown rice, whole wheat bread, and cornbread.
- Serve yourself brown rice and whole grain breads. Avoid using butter or margarine on bread, rice, and other grains and starches.
- Take small portions or avoid starches with heavy sauces like macaroni and cheese and potato salad.

## **DRINK TIPS**

- Drink water, unsweetened coffee or brewed tea, or other sugar-free beverages.

- If you drink alcoholic beverages, limit drinking to no more than one a day for women and two a day for men. Always drink alcohol with food, and never on an empty stomach.

National Diabetes Education Program For more information call 1-800 CDC-INFO (800-232-4636). TTY 1-(888) 232-6348 or visit [www.cdc.gov/info](http://www.cdc.gov/info). To order resources, visit [www.cdc.gov/diabetes/ndep](http://www.cdc.gov/diabetes/ndep).

## **PROTEIN TIPS**

- Take 2–5 ounces of protein such as chicken or other lean meat, fish, or bean dishes (like black-eyed peas); enough to fill 1/4 of your plate.
- Pick dishes with baked or grilled lean meat (like chicken without the skin or beef with the fat cut off), fish, or shrimp.
- Try turkey burgers, and top off your burgers, hot dogs, and sandwiches with fresh veggies and mustard rather than mayonnaise and cheese.
- If you can, trim the skin and fat off any meat you eat.
- Take just a taste of meats that are breaded, fried, or cooked with a lot of fat or heavy sauces, like fried chicken, chicken wings, sweet and sour chicken, and braised pork or beef.
- Choose protein-rich bean dishes. Baked beans and black-eyed peas are good choices. But take only small amounts of bean dishes cooked with added sugar and fat.

## **SWEET TIPS**

- Fruit is an excellent source of fiber, vitamins, and minerals. Choose fresh, canned, or frozen fruits with no added sugar. Try pears, apples, strawberries, or melons, or a fruit salad without sugar or whipped cream.
- Try to have only a small serving of foods that are high in sugar and/or fat, like cookies, cake, cobblers, or pies. Or skip the sweets altogether.

## Appendix H

## Submission to Journal of Nurse Practitioners

## Submission requirements

*Papers should be written in a scholarly format using references generally no older than 5 years. Writing should be at the level for physicians and experienced NPs.*

Please prepare the following items for submission:

1. *Abstract* - create a concise and factual abstract that does not exceed 100 words and that summarizes the article content. References should be avoided.
2. *Keywords* - List at least 5 words that best describe your article and would identify it through a standard search engine.
3. *Cover letter* - indicate who you are, a very brief summary of your article, and why you believe it would fit with *JNP*'s mission; also state that the manuscript has not been and will not be submitted elsewhere for publication.
4. *Conflict of interest statement* - During the online submission process, you will be required to upload this signed Conflict of Interest form [here](#) Use a separate form for you and each coauthor.
5. *Title page* - include title of the manuscript; name of authors in order in which they should appear; an affiliation, address, phone number, and e-mail address for each author; author byline; and funding sources. Please identify the corresponding author who will receive all correspondence. Student authors should indicate their anticipated date of graduation.
6. *Word count* - create a page that lists only the total number of words in the submission—not just the main text.
7. *Blinded manuscript* - make no reference to the geographic location, the institution at which the work or study was conducted, or any of the names or affiliations of the authors. Generic terms should be used instead (region, university, medical center, etc).
8. *Tables and figures (if appropriate)* - separately label and save each table and high-resolution figure file. Figure legends (number and explanation) should be included at the end of the blinded manuscript, not as part of the figure file.

Identify sources for all tables and submit written permission to publish copyrighted tables or images that you wish to reprint or adapt.



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Instructions for Authors from The Journal of Nurse Practitioners. The Journal for Nurse Practitioners (2018)


## Appendix I

## Poster Presentation Virginia Counsel of Nurse Practitioners (VCNP) Annual conference

Culturally Tailored Diabetic Self-Management Education in the African-American Type 2 Diabetic in a Faith Based Organization

Barbara G. Schimming RN, MSN, FNP-BC, DNPc





SCHOOL of NURSING

### Introduction

African-Americans experience a higher prevalence of Type 2 diabetes. Moreover, they also experience a heavier disease burden evidenced by increased morbidity and mortality. Diabetic self-care is an integral part of effective diabetic management and essential for glycemic control. Statistical significance in research has shown achieving glycemic control has been associated with patient engagement with diabetic self-care activities. Moreover, the construct of self-efficacy has shown positive effects on diabetes self-care activities. The church is a culturally sensitive and empowering setting for DSME training.

### Objectives

The Purpose of this study was to examine if the application of a culturally tailored diabetic education program in an African-American Church influenced participant perception of diabetic knowledge and diabetic self-efficacy.

**Hypotheses Testing:**

- Culturally tailored Diabetes Self-Management Education (DSME) will improve diabetic knowledge in participants.
- Culturally tailored DSME will improve participant perception of diabetic self-efficacy.
- Culturally tailored DSME will yield high satisfaction scores.

### Material and Methods

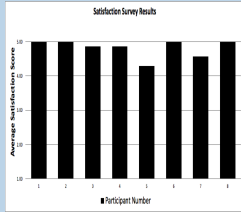
- Quasi-Experimental design
- Wilcoxon Signed Ranks test /SPSS
- Setting utilized Faith Based Organization (FBO) in Portsmouth, Virginia
- 8 participants self-identified African-American and residents in Portsmouth, Virginia with DM type 2
- Pre-intervention testing and post-intervention testing
- Diabetic Knowledge Test 2 (DKT2)
- Diabetic Empowerment Scale (DES)
- Diabetic Participation Data Survey
- Participation Satisfaction Survey
- Classes held every Saturday from 9 am to noon in October 2018 utilizing National Diabetic Education Program (NDEP) materials: 4 Steps to Manage Your Diabetes for Life
  - Step 1: Learn about diabetes (10-06-2018)
  - Step 2: Know your diabetes ABCs (10-13-2018)
  - Step 3: Learn how to live with diabetes (10-20-2018)
  - Step 4: Get routine care to stay healthy (10-27-2018)
  - Things to remember
  - My Diabetes Care Record

### Results

Diabetic Knowledge Scores (DKT2) were not statistically significant. Wilcoxon Signed-Ranks Test revealed no statistical significance from pre-intervention and post-intervention scores,  $z = -.577$ ,  $p = .564$ .

Diabetic Empowerment Scale scores were statistically significant. Wilcoxon Signed-Rank Scores revealed statistical significance from pre-intervention and post-intervention scores,  $z = -2.527$ ,  $p = 0.12$  with a large effect size ( $r = -0.63$ ).

Participant Satisfaction Scores showed above 96 % for all 7 questions asked.



Participant Number	Average Satisfaction Score
1	0.98
2	0.98
3	0.98
4	0.98
5	0.98
6	0.98
7	0.98

### Conclusions

Current research demonstrates that DSME training is associated with reducing admission and emergency room visits within the diabetic population. Moreover, the impact on glycemic control after DSME is estimated to be as great as 1% decrease. Unfortunately, it is documented that DSME is underutilized in the United States. Less than 7% in diabetics with private insurance and less than 5% in those with Medicare. Underutilization of currently covered DSME coupled with continued mistrust of the health care system by this minority group exposes a barrier to achieving diabetic self-management.

This study showed:

- Feasibility
- Acceptance by the African-American diabetic community for a program within the FBO
- Participant Satisfaction Scores greater than 96%
- Statistical significance demonstrated post DSME intervention
- More robust studies are needed to further assess diabetic knowledge, diabetic self-efficacy in the minority diabetic community

### References

- Available upon request.

### Contact

- barbara.schimming@gmail.com

## Appendix J

## Summary of Culturally Sensitive DSME Studies

<b>Author/Study Design</b>	<b>Subjects, Setting/Date collection time frame</b>	<b>Outcomes based upon study aims</b>	<b>Limitations</b>
Creamer et al. (2014) meta-analysis	33 RCTs worldwide literature culturally appropriate diabetic health education (7453 participants). Studies spanned 2007-2013	The effects of a culturally appropriate health education program for ethnic minority communities. Culturally appropriate defined as education tailored to cultural or religious beliefs and linguistic skills of the community. Extracted for scoping review study results for diabetic knowledge and self-efficacy (SE) for African-Americans. Outcomes for diabetic knowledge increase statistically significant at 3, 6, 12, months in the intervention group. SE outcomes 3-4 months, 6 months, and 12 months, not statistically significant when compared to standard of care.	Participants not blinded. Performance bias could have been high. Cost effectiveness not discussed for interventions. No Data shown past 2 years for sustainability of diabetic knowledge and self-efficacy. Heterogeneity associated with knowledge assessment tools and could have affected outcomes.
Newlin et al. (2012) Meta-analysis (pre-experimental design and quasi-	18 studies reviewed 2012 Black Americans with Type 2 DM	Review faith-based health literature pertinent to Black Americans with Type	Most studies examined failed to have guiding theoretical

experimental design)		2 DM. 18 studies reported significant health gains: reduction in weight, blood pressure control, blood glucose decrease, lipid analysis decrease, increase in diabetic knowledge.	framework. As such it is difficult to conclude what interventions are responsible for the outcomes reported. Statistical control for covariates was not conducted.
Wisdom et al. (2002) Exploratory/Pilot Feasibility Study	African-Americans with Type 2 DM were recruited from FBO, community, or PCP into a Diabetes Self-Management Education Program in Faith Based Organization (FBO) over a 12-month period.	Recruitment outcomes: 61% from Healthcare system 22% from community 15% from FBO Class attendance higher with those recruited by FBO (greater than 4 classes).	No randomization. Unable to identify which components contributed to the recruitment results.
Samuel-Hodge et al. (2006). RCT	24 Churches recruited from the Diabetes Wellness Network (African-American Type 2 DM) for participation/groups into a Special Intervention (SI) or Minimal Intervention (MI). 2001-2003 duration.	Evaluation for culturally sensitive intervention of diabetes self-management education in African-American adults with Type 2 DM in church setting. No significant differences between the SI and MI groups.	25% of churches did not have enough volunteers and randomization was not performed. No outcome data for 8 and 12 month follow up measures in the SI and MI groups for hemoglobin A 1 C, physical activity, weight or psychosocial factors (self-efficacy).
Polzer & Shandor (2005). Literature Review	African-American spirituality and health, diabetes, diabetes self-management. 55 articles reviewed 1980-2004.	Summarizing data dealing with African-Americans and health and diabetic self-management. Qualitative studies discussed culturally sensitive diabetic	Limited to African-Americans of Judeo-Christian faith. Other practices of spirituality not included affecting generalizability.

		education programs including God, prayer, meditation, support from church members reported as huge support and help with problem solving. God centric themes and that God works through others (educators, nurses, health care workers). Some reported ambivalence over self-care and faith.	
Chlebowy et al. (2010) Descriptive/comparative design	91 adult Type 2 DM participants enrolled for classes at two different sites. 64% Caucasian participants 30 % African-American participants attended a 2 day program	Determine Self-Efficacy (SE) differs by race (controlling for age and duration of Type 2 DM). Determine if SE differs by gender (controlling for age and duration of Type 2 DM). Determine if there is an interaction between social demographics, duration of Type 2 DM and prediction for SE. Outcomes: SE does not differ by age, sex or race. The only significant predictor of SE was education. (b=.334, t=3.171, p=0.002).	Small sample size over 48.3% of sample size college educated or technical school educated possibly affected the results.
Whitney et al. (2017) Qualitative feasibility study	13 African-Americans with Type 2 DM participated in small focus groups (5-7 members). Utilizing Theory of	Outcomes: 5 Themes emerged from focus groups: <ul style="list-style-type: none"> <li>Faith as a motivator for diabetic</li> </ul>	Feasibility study. No outcome data obtained. Further research merited assessing measurable effects of this type of

	<p>Planned Behavior a moderator explored beliefs about spirituality and diabetes self-care. Results audiotaped. Setting in New Beginnings Church/Chicago. Two part methodology: Informative Qualitative work 60 minute focus groups (n=5-7 participants, Pilot testing themes identified in focus groups used collaboratively with clergy New Beginnings Church to develop and guide Diabetic self-management program.</p>	<p>behavior change.</p> <ul style="list-style-type: none"> <li>● Intertwining physical and spiritual health</li> <li>● Coping/stress</li> <li>● Church and community support</li> <li>● Patient and health care provider communication</li> </ul> <p>Curriculum for Diabetic Self-Management Education (DSME): Traditional DSME was adapted in the following ways:</p> <ul style="list-style-type: none"> <li>● Biblical Scripture included in PowerPoint slides</li> <li>● Scripture was embedded in take home goal-setting worksheets.</li> </ul> <p>Incorporated prayer in all classes and led by group members.</p>	<p>intervention. Weak design.</p>
Collins-McNeal et al. (2012) Qualitative Feasibility Study	<p>Cohort of 12 African-Americans with Type 2 DM participated in a 12- week study in the Southeastern part of the U.S. in church setting.</p>	<p>The study was implemented to assess the feasibility of a 12-week Church-Based Culturally Targeted (CBCT) diabetes self-management education series.</p>	<p>Small sample size. There was test/retest approach. Group participants were middle to older aged affecting generalizability. Weak study design.</p>

		<p>Participants were middle aged to older African-Americans with Type 2 DM. Audiotaped focus groups revealed participants perceived no significant differences in diabetic self-management. Moreover, no significant perceived differences in physical activity or glucose monitoring. Anecdotally, participants including clergy reported the program was culturally appropriate and acceptable.</p>	
<p>Goddu et al. (2015) Qualitative design</p>	<p>36 African-American part of Diabetic Empowerment Program agreed to participate in this study in 2 federally funded healthcare centers and 1 academic center site. 7 interviewers and 4 focus groups were conducted in Chicago. Guided by Larkey &amp; Hecht Model on narrative influences.</p>	<p>All participants reported that the film shown, personal experiences and participation in role-play positively influenced diabetic empowerment and self-efficacy. All 3 mediators of Larkey &amp; Hecht's model: Transportation, Identification and Social proliferation were mentioned in the recorded responses. However, the construct of Social proliferation was mentioned more and reported to have a larger impact on disease attitudes and empowerment and the</p>	<p>The majority of the participants were females. Which of the constructs truly yielded the reported diabetic attitude and empowerment changes? Weak design</p>

		ability to make the changes needed to live successfully with the chronic disease of diabetes.	
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## Clinical Guideline/Standard of Care for DSME

National Diabetic Education Program Center for Disease Control (2016)	4 Key Steps for teaching diabetic self-management: <ol style="list-style-type: none"><li>1. Learn about diabetes</li><li>2. Know your diabetes ABCs</li><li>3. Learn how to live with diabetes</li><li>4. Get routine care to stay healthy</li></ol>
Standards of Medical Care in Diabetes-2018 Abridged for Primary Care Providers American Diabetic Association (2018)	Diabetic Self-Management Education (DSME) <ul style="list-style-type: none"><li>● All people with diabetes should participate</li><li>● DSME should be continually monitored as part of routine diabetic care</li><li>● DSME should be patient centric delivered individually, group, or using technology</li><li>● 4 critical times for DSME: at diagnosis, yearly, complications of care and transitions of care (expert consensus driven)</li><li>● DSME can improve outcomes and reduce cost and should be adequately reimbursed by third-party payers (expert consensus driven).</li></ul>

