

A QUALITY INITIATIVE TO IMPROVE PRIMARY CARE SELF-MANAGEMENT  
EDUCATION FOR MEXICAN AMERICAN TYPE 2 DIABETES PATIENTS USING A  
CULTURALLY-TAILORED PROTOCOL

A Doctor of Nursing Practice Project Report

by

JENNIFER N. HARPER

BS, Stephen F. Austin State University, 2010

MS, University of Texas at Tyler, 2014

Submitted in Partial Fulfillment of the Requirements for the Degree of

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JENNIFER N. HARPER, MSN, APRN, FNP-C

This Doctor of Nursing Practice Project Report meets the standards for scope and quality of Texas A&M University-Corpus Christi College of Nursing and Health Sciences and is hereby approved.

Dr. Elizabeth Loika, DNP, PNP-C, FNP-C  
Chair

Dr. Theresa Garcia, PhD, RN  
Project Advisor

Dr. Cristi Day, DNP, FNP-C  
Content Expert

Dr. Michael Sollitto, Ph. D  
Graduate Faculty Representative

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## ABSTRACT

Type 2 diabetes mellitus is the fifth leading cause of death among the Hispanic population in America. Current data estimates up to 50% of all Hispanics born in 2000 will develop diabetes within their lifetime. Factors leading to diabetes or diabetes related complications in Hispanic patients are low English proficiency, low literacy levels, and cultural influences. A vital component to diabetes treatment is self-care behaviors. Elements vital in providing effective diabetes education should incorporate services that are person-centered, culturally relevant, and responsive to the participants' needs. The purpose of this quality improvement initiative was to increase clinical compliance with diabetes guidelines to provide timely and culturally competent diabetes self-management education and improve diabetes knowledge, self-management behaviors, and health outcomes in Mexican American patients with diabetes at a primary care clinic in East Texas, using an customized education protocol. The protocol addressed language and literacy barriers, as well as appealing to social norms with the assistance of bilingual translators, educational handouts, and telenovela diabetes educational videos created by the Agency for Healthcare Research and Quality. This quality initiative used a pre-test, post-test design to implement a change in practice instituting an improved protocol for delivering DSME to Mexican American patients with diabetes at project site over a 12-week period. The implementation of the DSME protocol at the project site resulted in a large and statistically significant increase in the frequency and quality of DSME provided by the clinic and improved patients' knowledge of diabetes and reported management activities.

# A Quality Initiative to Improve Primary Care Self-Management Education for Mexican American Type 2 Diabetes Patients Using a Culturally-Tailored Protocol

## Introduction

Type 2 diabetes mellitus (referred to as “diabetes” in this paper) is the fifth leading cause of death among the Hispanic population in America (Hu, Shi, Rane, Zhu, & Chen, 2014). Current data estimates up to 50% of all Hispanics born in 2000 will develop diabetes within their lifetime (Williams et al., 2017). This disproportionate disease burden can be correlated to the growing issues surrounding racial inequalities in America among Hispanic and other minority populations that continue to negatively impact health equality and socioeconomic status. Maintaining health inequality is costly due to direct and indirect expenses, such as increased demands needed to treat higher acuity patients, loss of wages, and productivity (La Veist, Gaskin, & Richard, 2009). Eliminating health inequalities among minorities would have reduced health care expenditures by 229.4 billion between 2003 and 2006 (La Veist, Gaskin, & Richard, 2009). Despite these overwhelming costs, health inequality continues without valid justification and has become a deep-rooted problem in America’s history, impacting diabetes prevalence and outcomes among the Hispanic population.

## Background

The impact of socioeconomic disparities adds to health care barriers ultimately limiting health care access for patients with diabetes and other chronic diseases. Obtaining quality health care in America is largely influenced by having adequate insurance coverage. Nationally, the Hispanic population has the lowest rate of healthcare coverage, with one in five uninsured (Alfaifi et al., 2017). This disparity is likely related to income status, as poverty levels within the



Hispanic population remain high with 23.6% of Hispanics living below the national poverty level versus 8.6% of non-Hispanic whites (Hu et al., 2013; Velasco-Mondragon et al., 2016). Such inequalities have created health care barriers resulting in Hispanic people being 1.9 times more likely to die from diabetes complications compared to non-Hispanic whites (Hu et al., 2016). Statistically, Hispanic Americans tend to suffer more from diabetic complications, such as chronic kidney disease (National Kidney Foundation, 2016). According to the National Kidney Foundation (2016), in 2013, 14.7% of all newly diagnosed patients with renal failure were Hispanic and compared with non-Hispanic White adults, the risk of diabetes is 66% higher in Hispanic Americans.

Other factors leading to diabetes or diabetes related complications in Hispanic patients are low English proficiency, low literacy levels, and cultural influences (Gonzalez, Berry, & Davison, 2013). Low healthcare literacy combined with language barriers are contributing to misunderstanding and miscommunication between patients and providers, which ultimately affects a large percentage of Hispanic patients and has limited their ability to comprehend skills needed for health managing. Research from Hu et al. (2013) found that 52% of Hispanics had low healthcare literacy, compared to 15% of non-Hispanics with diabetes, which led to poor health outcomes. A vital component to diabetes treatment is self-care behaviors. Treatment guidelines for diabetes focus on the importance of patient self-care rather than sole reliance on medication therapy (American Diabetes Association, 2017). The recognition of factors such as language, family, and culture, that provide motivational stimuli, foster understanding, and limit barriers is central when providing self-management education. The Hispanic population is heavily influenced by rich traditions and cultural beliefs, which impact one's perception and understanding of disease processes and treatments (Cersosimo & Musi, 2011). Familismo is a

term referring to “family comes first” and represents the strong identification Hispanic people have with family (Hu, Wallace, McCoy, & Amirehsani, 2014). Thriving on honored traditions, the Hispanic culture is collectivistic, meaning group activities are preferred, responsibility is shared, and accountability is collective among all (Centers for Disease Control and Prevention, 2012). As a consequence, most women hold a matriarchal role within the Hispanic community, giving them great control over dietary habits and common rituals within the family, but frequently place their own needs secondary to those of the family (Benavides-Vaello & Brown, 2016).

Food traditions are important in the Hispanic culture. Examples of common dietary staples frequently consumed among Hispanic people from Mexico generally include tomatoes, avocados, tortillas, tamales, beans, rice, eggs, chorizo, and aguas naturales (fresh fruit, blended with sugar and water) (The Ohio State University, 2010). Beliefs such as having a good appetite, which often leads to overeating, is associated with having good health (Centers for Disease Control and Prevention, 2012). Eating habits are instilled young. Most Hispanic children are not encouraged to eat foods they resist, as traditional practices encourage parents to respect children’s food preferences (Centers for Disease Control and Prevention, 2012). This tradition in Hispanic culture may potentially grow into a practice of unhealthy eating. With a rich variety of dietary habits reflecting their cultural heritage, it is vital to be aware of these nutritional habits since dietary content contributes largely to the development of preventable diseases (Siega-Riz, et al., 2014).

Improving diabetes education in primary care for Hispanic patients is imperative as the increasing prevalence of diabetes is first identified and managed in the primary care system. Diabetes self-management education (DSME) is an intervention important for diabetes

management, as it enriches patients' knowledge about their disease and fosters healthy behaviors needed to manage diabetes (Powers, 2017). Diabetes education for the Hispanic culture should focus on providing educational materials and activities reflective of their preferred language, preferred foods, and cultural heritage. Even though, most within the Hispanic community speak English, the Spanish language remains a key social marker in day-to-day living. Therefore, tailoring DSME interventions to reduce known barriers is essential when providing DSME for the Hispanic population.

### **Review of the Literature**

Most diabetes education occurs within outpatient settings, yet clinical practice has shown inconsistencies and gaps in the use of diabetes education guidelines set forth by the American Diabetes Association (ADA) and the American Association of Diabetes Educators (AADE). The ADA recommends DSME and support for all patients with diabetes at initial diagnosis, annually, during complications, and during transition of care (ADA, 2017). Less than 5% of Medicare recipients and 6.8% of privately insured patients receive outpatient DSME (Li et al., 2014; Strawbridge, Meadow, Riley, & Howell, 2015). Areas of focus for DSME may include an overview of treatment and goals, medications, glucose monitoring, physical activity, prevention and detection of acute and chronic complications, nutrition, and psychosocial issues (Powers, et al., 2015). The ADA endorses the National Standards for Diabetes Self-Management Education and Support, which are guidelines outlining nine standards that diabetes education should aim to achieve (Beck et al., 2017). According to those standards, elements vital in providing effective diabetes education should incorporate services that are person-centered, culturally relevant, and responsive to the participants' needs (Beck et al., 2017). Core competencies from the AADE (2015) support providing educational material that acknowledges cultural perceptions for

everyone. The Centers for Medicare and Medicaid Services (CMS) surveyed 4,708 medical providers across the U.S. in a variety of practice settings, regarding the use of language services to meet patients' needs. Over 80% of providers specified that Spanish was spoken by their patients (CMS, 2017). Participants were also assessed on interventions employed in their clinical practice to meet a patient's language needs. Sixteen percent reported not using any interventions to assess patients' linguistic needs and 37% of all clinical settings reported using family members as interpreters; a practice that can result in misinformation and poor outcomes (CMS, 2017). These findings indicate a gap in clinical practice regarding the provision of diabetes education recommended by clinical practice guidelines.

Disseminating educational material regarding self-care and utilizing culturally framed messages compatible to daily experiences and views has been supported by several research studies, particularly if linguistic barriers blocking the understanding of materials intended for English speaking individuals were removed (Foster, Allem, Mendez, Qazi, & Unger, 2016). The use of medical translators for written and verbal translation, to aid in healthcare understanding is a growing trend. Research conducted by Jacobs, Shepard, Suaya, and Stone (2004) on the impact of interpreter services on cost and utilization, revealed significant improvements in the delivery of preventive services and office visits. Findings from a study exploring the influence of language services on clinical outcomes for diabetes showed that patients who received 100% of their primary care visits with language services were least likely to have diabetes related emergency department visits compared to other groups, with  $p < .001$  (Hacker et al., 2012).

The use of entertainment-education, through visual-audio formats or telenovelas, have been a successful means in conveying health information. Telenovelas are a popular entertainment media in Latin America and are suggested to be a desirable form of

communication among Hispanic audiences as they are perceived to depict the daily experiences of the Hispanic/Latino population (Foster et al., 2016). Different from printed handouts or traditional formal educational videos, novela-type media appeals to individuals with lower literacy levels, aims to entertain and inform, and has the capability of tailoring health-related information to social norms or specific cultural values (Foster et al., 2016). In a study conducted in Southern California to address educational barriers among Hispanic patients with end-stage renal disease, patients had improvement in post-knowledge assessment ( $p < .001$ ) and in intended behaviors ( $p < .05$ ) after watching a telenovela series, which included bilingual characters and a story line that resonated with their cultural values (Foster et al., 2016).

The Starr County DSME study, a seminal study influential to diabetes management for the Mexican American population, demonstrated support for culturally-tailored DSME, resulting in glycosylated hemoglobin (A1C) levels decreasing by 1.2 % ( $p = 0.016$ ) in three months and patients' knowledge of diabetes increasing 14.4% in three months ( $p < 0.001$ ) (Brown, Garcia, Hanis, & Kouzekanani, 2002). Improvements in A1C levels and diabetes knowledge were evident after providing family-based education over a 12-month period, consisting of culturally-tailored weekly self-management sessions on nutrition, self-monitoring of blood glucose, exercise, and other self-care topics and 6 months of biweekly support group sessions to promote behavioral changes using bilingual Mexican American nurses, dietitians, and community workers (Brown et al., 2002). A systematic review by Chrvala, Sherr, and Lipman (2016) regarding culturally- tailored DSME interventions in minorities, found a mean A1C reduction of 0.74%, across studies, within three months. Additionally, several studies have found that culturally-tailored DSME for the Hispanic population with consistent family support, improved diabetes knowledge and A1C levels (Brown et al., 2013; Hu et al., 2016; Hu et al., 2014).

## **Description of the Problem in the Setting**

The project site is a small family practice facility in East Texas, with a majority-minority patient population. A large percentage of their patient population consisted of Hispanic patients of Mexican origin. Diabetes management was a continuous demand within this clinical practice. Diabetes education at project site was not consistent with clinical practice guidelines regarding DSME frequency and cultural relevancy. Lack of providing regular culturally relevant education was related to having limited auxiliary staff and lack of knowledge surrounding guidelines and recommendations for DSME. The problem addressed at the project site was to improve clinical compliance with ADA and AADE guidelines in providing DSME on a routine basis in a culturally sensitive manner. The need for improvement was evident after conducting staff interviews, chart reviews, and an assessment of all education interventions and materials used at the facility. This assessment revealed a lack of culturally relevant educational materials for their Mexican American population in terms of language, dietary preferences, and social norms and values. Chart reviews demonstrated a lack of routinely documented interventions such as DSME, or referrals to a diabetes educator or dietitian for newly diagnosed patients; there was also a lack of documentation addressing increasing A1C levels.

DSME is the foundation of chronic disease management to improve diabetes outcomes, but with inconsistent education, lack of cultural relevancy, and language barriers, the Mexican American population in this clinic was not receiving proper health education to understand the importance of diabetes self-care and the general principles of self-management. Not improving the diabetes education offered to these patients would have led to further decline in patient health outcomes and decreased quality of care by the clinic. Therefore, the implementation of a DSME protocol, customized for this Mexican American population, was planned. The protocol

addressed language and literacy barriers, as well as appealing to social norms with the assistance of bilingual translators, educational handouts, and telenovela diabetes educational videos created by the Agency for Healthcare Research and Quality (AHRQ, 2013). These videos can be accessed at: <https://youtu.be/ce0-wj09LyU>. AHRQ created the telenovelas series for diabetes education, to enhance patient-centered care and improve patient and community engagement in the Hispanic community (AHRQ, 2013). The creation of a protocol was meant to establish a form of accountability and consistency for improving counseling, referrals, and documentation. It was hoped the continuous use of this protocol would maximize limited resources and support long term sustainability of structured DSME for this clinic population.

### **Project Purpose and Aims**

The purpose of this quality improvement initiative was to increase clinical compliance with ADA and AADE guidelines to provide timely and culturally competent DSME and improve diabetes knowledge, self-management behaviors, and health outcomes in Mexican American patients with diabetes at the project site.

Aim#1: To improve diabetes knowledge and self-management behaviors in Mexican American patients using a DSME protocol incorporating culturally sensitive methods and materials. The specific goal was to improve diabetes knowledge as measured by the score on the Diabetes Knowledge Questionnaire-24 (DKQ-24) (Garcia, Villagomez, Brown, Hanis, & Kouzekanani, 2001) and diabetes self-care behaviors, as measured by the score on the Diabetes Self-Management Questionnaire (DSMQ) (Schmitt, Hermanns, Bernhard, & Jorg, 2013) by a combine ten points from pre-intervention to 12 weeks post-intervention and to have a significant difference between pre- and post-intervention questionnaire scores.

Aim #2: To decrease the risk of diabetes complications by lowering A1C levels in Mexican American patients at the project site. The specific goal was to decrease A1C by at least 0.5%, when comparing pre-intervention to 12-week post-intervention levels.

Aim #3: To improve DSME clinical practice at the project site by incorporating a culturally-tailored clinical education protocol to improve the provision of culturally-tailored DSME for Mexican American patients with diabetes. The specific goal was to increase dietitian referrals by 50% from pre-intervention to 12-weeks post-intervention and improve documentation of DSME addressing the seven key areas recommended by the AADE, which are: health eating, being active, glucose monitoring, medications, problem solving, risk reduction, and healthy coping.

This project sought to answer the following clinical questions: In Mexican American adults with diabetes at the project site, does the implementation of a culturally-tailored DSME protocol, improve patient A1C levels, self-care management, and diabetes knowledge? Does the implementation of a diabetes education protocol improve the provision and documentation of recommended culturally-tailored diabetes education for Mexican American adults at project site?

This project exemplified Essential VI of the American Association of Colleges of Nursing (AACN) Essentials of Doctoral Education for Advanced Nursing Practice (2006), which describes interprofessional collaboration to improve patient and population health outcomes. Providing culturally-tailored DSME for patients was accomplished using a team approach to implement practice guidelines and to improve health outcomes among Mexican American patients with diabetes.



Figure 1: Lewin's Change Theory

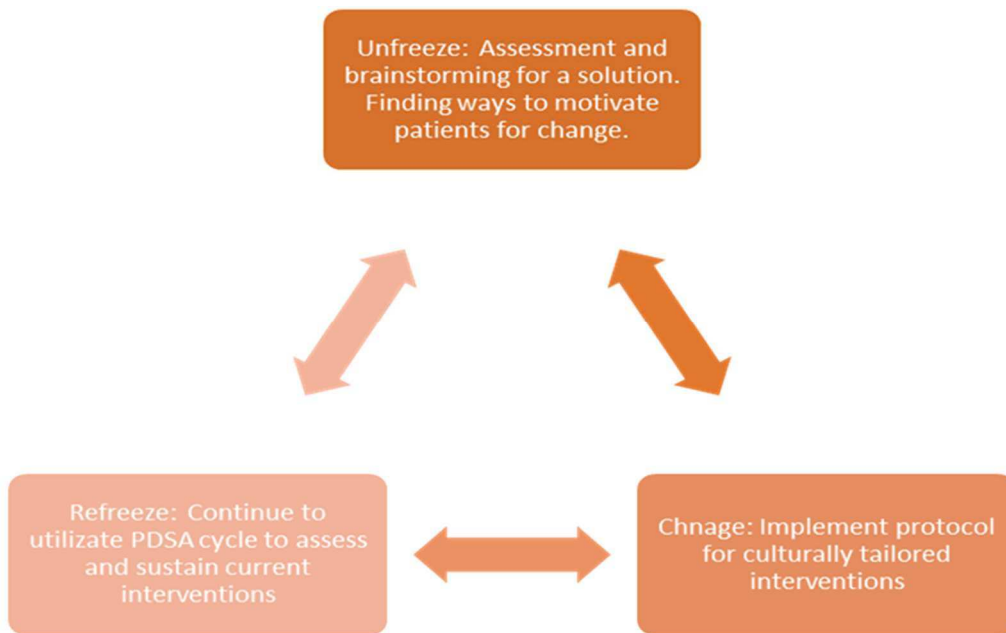
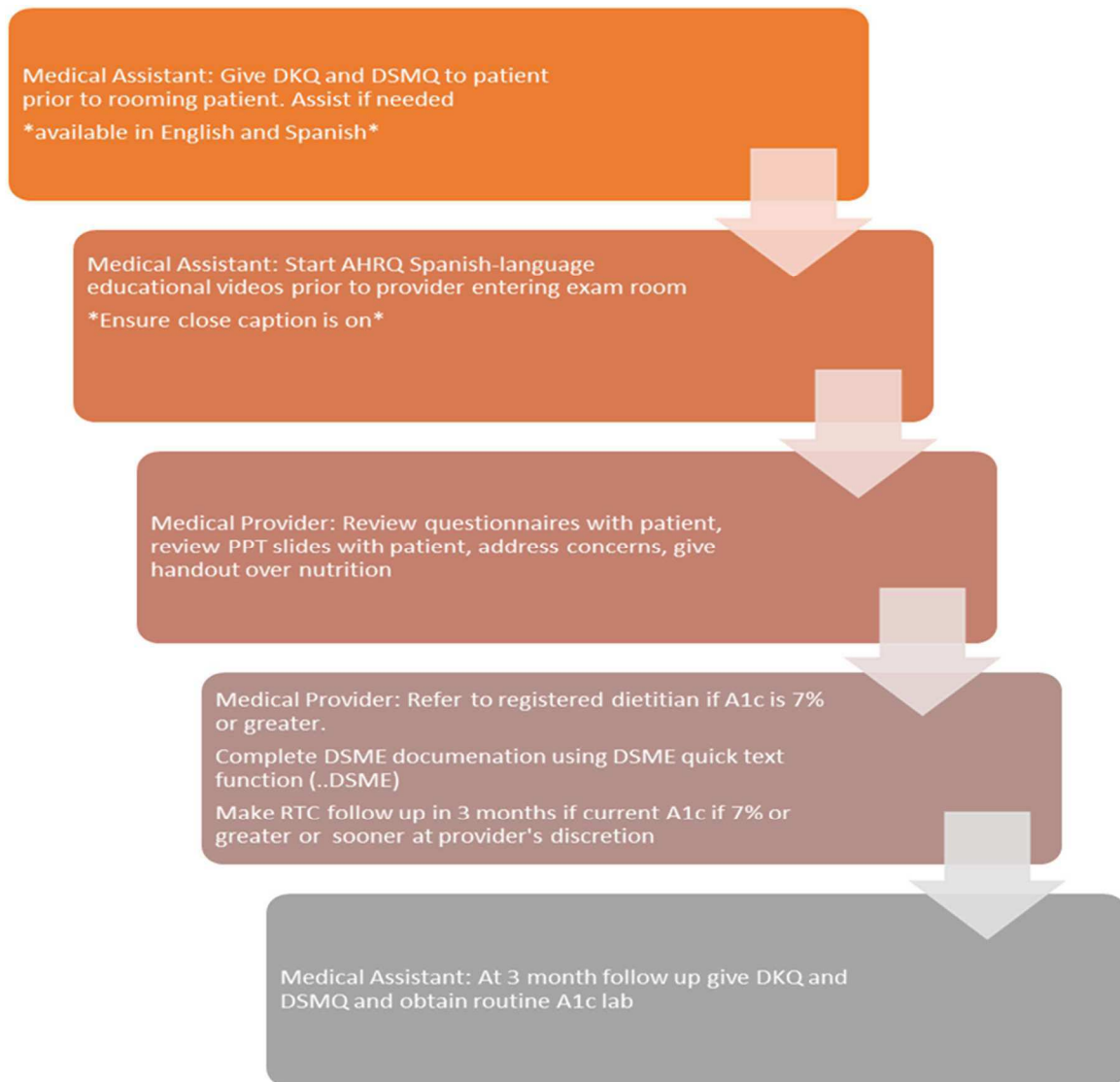


Figure 2: DSME Protocol



## Methods

### Conceptual and Theoretical Frameworks

The conceptual framework used to guide the system level change in this project was Lewin's Change Theory, created by Kurt Lewin (Kritsonis, 2004-2005). This framework was chosen because this model encourages knowledge and leadership growth. Major concepts of this theory include driving forces, restraining forces, and balance (Kritsonis, 2004-2005). The driving force facilitates change by pushing people in the desired direction. The restraining forces

decrease forces that negatively impact existing movement. Balance is when there is no movement in either of the previous forces. Stages within this model are referenced as: unfreeze, change, and refreeze (Kritsonis, 2004-2005). This framework aided in implementing changes to improve the delivery of DSME in Mexican American patients (see Figure 1). Clinical staff facilitated change by providing educational material tailored to the linguistic and cultural needs of this Mexican American population. Incorporating chart reviews to assess clinical compliance for following the protocol assisted in maintaining balance and accountability.

Practicing self-care is an integrated part of health promotion and health maintenance. Without proper education and understanding, patients lack adequate preparation to succeed. Orem's Self-Care Deficit Theory, created by Dorothea Orem, was used as the theoretical framework to guide the planning, intervention, and evaluation of this project. This theory helped to provide justification for the methods and approach used by following the central concept that nursing involves helping patients to become self-reliant and responsible (Zaccagnini & White, 2017). According to the American Association of Colleges of Nursing (2006), nursing practice can be any form of nursing intervention that influences health outcomes, either in the form of direct patient care, management of care, leadership of health organizations, or policy formation. Implementing the DSME protocol reduced barriers inhibiting understanding and provided facilitators to enhance patient intake of information and comprehension. This protocol served as a nursing intervention that influenced health outcomes, management of care, and future policy formation.

### **Ethical Issues**

This project was reviewed by the Texas A&M University-Corpus Christi Institutional Review Board (IRB) for project/study classification, and received a determination of "Not

Human Subjects Research” and permission to proceed as a Quality Improvement project (see Appendix 1). Patients’ privacy and confidentiality were protected by making sure all HIPAA and release of information forms were updated. A master list of participant names matched to unique individual identifiers and project data was locked in the medical director’s office. Only assigned identifiers were used for analysis and all results were reported in aggregate form only. All data pertaining to this project will be shredded three years after the end of the project. A letter of support was provided by the facility, agreeing to fully support the project (see Appendix 2).

### **Project Design**

This quality initiative used a pre-test, post-test design to implement a change in practice instituting an improved protocol for delivering DSME to Mexican American patients with diabetes at project site over a 12-week period. The culture at the project site was family-oriented. This was evident by the staffs’ shared ways of thinking, underlying assumptions, and respect for each other. This structure was influenced by the solo provider ownership, which played a major role in clinical flow and practice patterns. These interventions utilized all clinical staff in this setting, which took full advantage of the family-oriented culture and teamwork.

### **Intervention**

This project involved the implementation of a culturally-tailored DSME protocol using recommendations from the ADA and AADE to improve clinical compliance practice and compliance with DSME guidelines and to improve cultural sensitivity of diabetes education provided to Mexican American patients with diabetes. A convenience sample was recruited from patients seen at the project site during their routine diabetes visits. To be included in the project, participants: (1) identified as Mexican American or Hispanic/Latino; (2) were over the age of 18; (3) had a diagnosis of diabetes; and (4) volunteered to participate as part of their clinic treatment.

The DSME protocol included step-by-step guidelines for evaluating patients' understanding of diabetes and self-care activities, instructions for DSME documentation, guidelines for dietitian referrals, follow ups, and served as a guideline for patient education (see Figure 2). Patient education was culturally-tailored for this Hispanic population of primarily Mexican origin in terms of language preferences, dietary preferences, and learning styles, while adhering to the same DSME concepts as recommended by the ADA and AADE. Patient education included a Spanish-language telenovela diabetes series, created by the AHRQ, which covered diabetes concerns and myths common in the Hispanic community. The novela videos were a three-part series, with each video lasting about six minutes. All videos were in Spanish audio, with the option of Spanish or English closed captions. Patients were entertained by the soap opera delivery style of each series, that depicted the life of a middle-aged Hispanic male with a new diagnosis of diabetes. The series discussed diabetes self-management, the effects of medication noncompliance, the importance of family involvement, and management of stress. Other educational methods included a provider guided PowerPoint presentation, with interpreter services if needed, covering seven key self-care behaviors recommended by the AADE for all patients with diabetes. (See Appendix 3 for a sample slide of this power point presentation.) Again, the seven focus areas are: dietary habits, exercise, glucose monitoring, medications, problem solving, risks, and coping (American Association of Diabetes Educators, 2008).

Interventions for this protocol were chosen based on research previously referenced, as well as the facility's culture and clinical dynamics. The protocol was as follows:

1. Patients are checked in and asked if they need a translator for their visit and if they prefer Spanish or English reading materials by front clerical staff.

2. Next, pre-DKQ and pre-DSMQ are administered to the patients after vital signs are obtained by a bilingual medical assistant (MA). Both questionnaires are available in Spanish and English.
3. After questionnaires are completed, telenovela series videos are started by the MA and viewed by the patient, using a portable 10-inch tablet on a mobile, adjustable stand.
4. A medical provider reviews questionnaire with the patient, along with the self-care PowerPoint presentation. A bilingual MA remains in the room to provide interpreter services, if needed.
5. Prior to patient leaving the clinic, labs are obtained by the MA to include A1C, dietitian referral is submitted by the medical provider, and a follow up visit created by front clerical staff. Front office staff provide the nutrition handout with the discharge summary.
6. Medical provider completes the DSME documentation, using a custom EMR quick text option labeled “DSME” which states: A total of 30 minutes was used for education. Patient assessed on current diabetes knowledge and self-care behaviors. Patient educated on: Healthy eating habits, benefits of increasing physical activity, weight loss goals, importance of blood sugar monitoring, importance of medication adherence, annual and daily preventive care, risk of uncontrolled diabetes, healthy coping strategies, and community resources.
7. At three months follow up: patients are asked if they need a translator for their visit and if they prefer Spanish or English reading materials by front clerical staff. Dietitian notes are pulled by MA for provider to review. If dietitian appointment has

not been completed, patient is assessed as to reasons why by the MA who informs the medical provider.

8. Post-DKQ and post-DSMQ are administered to the patients after vital signs are obtained by the MA.
9. Medical provider to review questionnaires and address areas of concerns.
10. Prior to patient leaving, labs are obtained for A1C by the MA and follow up visit created by front clerical staff.

The impact of the Coronavirus (COVID-19) pandemic, a novel virus affecting everyone globally, caused drastic changes in healthcare during the implementation of this project. To decrease transmission and limit exposure, many primary care facilities deferred preventative visits, such as annual physicals and converted routine face-to face visits to telemedicine (Mehrotra, Chernew, Linetsky, Hatch, & Cutler, 2019). Many patients avoided healthcare settings because of local travel restrictions and fear of exposure. Elderly patients and those with pre-existing medical conditions, such as diabetes, cardiovascular, and respiratory diseases were at high risk for developing severe COVID-19 symptoms and warned to stay home as much as possible (World Health Organization, 2020).

The pandemic affected the project team's ability to implement the DSME protocol exactly as planned. The initial implementation of the DSME protocol was started on March 25<sup>th</sup>, 2020. Travel restrictions or shelter in place orders were enforced on March 28<sup>th</sup>, 2020 in East Texas. Even though medical appointments were still allowed and considered essential services, the fear of the unknown impacted overall daily office visit census, forcing the project site to reduce their office hours and utilize alternative means to reach their patients through telehealth and home visits. Traditional face-to-face visits were still accepted, but the rapid changes that

resulted from COVID-19 limited clinical practice changes related to diabetes education to allow for changes needed to adapt to home and telehealth visits.

Changes to medical appointments resulted in significantly lower patient participation in the project. The initial plan for this diabetes education protocol was to reevaluate each patient's understanding of diabetes knowledge, changes to self-management behaviors over the past 8 weeks, and A1C results during their three month follow up visit. However, due to unforeseen circumstances caused by COVID-19, participating patients were contacted via phone for post-questionnaire results by the project director and a medical translator during week 12 of the project because their follow up visits occurred after the deadline for the first cycle of this QI initiative.

### **Data Collection**

Data collected during this project included the DKQ-24 and DSMQ questionnaire data, documentation by the medical provider of dietitian referrals, diabetes assessment, education, counseling documentation, and A1C results on initial visit and 12 weeks after the initial visit. The MAs collected the specimens for A1C during week 1 and were to obtain A1C labs during the follow-up visit. MAs collected all questionnaires at each office visit, initiated the educational videos during each office visit, and translated as needed. The medical provider was responsible for initiating dietitian referrals, reviewing patient education with patients, distributing nutrition educational materials, and completing the DSME documentation. The project director was responsible for completing bi-weekly chart reviews to monitor compliance in use of the protocol, phone follow-ups to patients, and data analysis. An outside medical translator translated during phone follow ups.



## **Measurement Tools**

The DKQ-24 was created to measure diabetes knowledge in Mexican Americans in the Starr County study conducted by Garcia et al. (2001). This questionnaire was intended to assess diabetes knowledge at baseline and 3 months later using 24 YES/NO statements. An example statement was: A diabetic diet consists mostly of special foods. Response choices were either “Yes”, “No”, or “I do not know” (Garcia et al., 2001). Only correct responses were summed for the total score. Higher scores were associated with greater diabetes knowledge. Researchers found the DKQ-24 attained a reliability coefficient of 0.78 in their Mexican American adult population (Garcia et al., 2001). Construct validity was suggested by the significant difference in participant knowledge in the experimental versus the control groups and after intervention. Because the control group also received education if questions were asked, their knowledge level post-intervention, although significantly less than the intervention group, also increased, which also supports the validity of the instruction (Garcia et al., 2001).

The DSMQ was a 16-item questionnaire created at the Research Institute of the Diabetes Academy Mergentheim, to assess diabetes self-care activities relatable to A1C measurements (Schmitt et al., 2013). Questionnaire statements were divided into four parts, consisting of glucose management, dietary control, physical activity, and health care use. Response choices were rated using a four-point Likert scale: applies to me very much=3, applies to me to a considerable degree=2, applies to me to some degree=1, and does not apply to me=0 (Schmitt et al., 2013). Scoring this questionnaire required reversing negatively worded items, so that higher values reflected better self-care. Examples of negatively and positively worded items, respectively were: “My diabetes self-care is poor” and “I keep all doctors’ appointments recommended for my diabetes treatment” (Schmitt et al., 2013). The internal consistency of the

DSMQ in German adult patients with type 1 and type 2 diabetes was adequate with a Cronbach's alpha of 0.84, which indicates good reliability (Schmitt et al., 2013). The A1C levels of the participants were analyzed through an external diagnostic laboratory, regulated by the Clinical Laboratory Improvement Amendments, which ensure quality laboratory testing (Centers for Medicare and Medicaid services, 2020). Epic EMR <sup>TM</sup> was used for chart reviews to assess DSME documentation and dietitian referrals.

### **Analysis**

Outcomes to be measured include diabetes knowledge, self-management behaviors, A1C, DSME documentation, and RD referrals. The first aim of this project was to improve diabetes knowledge and self-management behaviors in Mexican American patients at the project site. This was measured using the DKQ-24 and DSMQ and analyzed using pre- and post-intervention mean scores and paired t-tests to check for significance. The second aim of this project was to decrease the risk of diabetes complications in these patients. This was measured using A1C levels comparing mean A1C at the initial visit to mean A1C levels at the 12-week follow-up visit. Due to COVID-19 delays, the 12-week follow-up A1C levels will be collected and assessed by the facility in the 2<sup>nd</sup> cycle of this quality initiative. The third aim of this project was to improve DSME clinical practice. Clinical practice changes were measured using data from the EMR, which included frequency of dietitian referrals and DSME documentation, and were analyzed using frequencies and percentage changes.

## **Results**

### **Nature of Setting and Improvement Intervention**

This quality initiative to improve diabetes education was initiated at the project site, unintentionally coincidental, with the peak of the COVID-19 pandemic. A staff meeting was

held to review data supporting the clinical need for changes in the delivery of diabetes education and plans to implement the DSME protocol during a pandemic. Staff morale and support for the project was high because the facility had recently hired their second bilingual MA who was expected to ease the feasibility of providing translation services without overloading staff. Even though a pandemic had been declared, no changes to the protocol were made during the beginning stages of implementation because clinical operations were still functioning at normal capacity.

Quality improvement initiatives were not a common process for this primary care clinic, thus leadership and staff at the project site were supportive and eager to improve their diabetes education procedures. The actual course of the intervention, and deviations due to the pandemic, are summarized in Table 1 and discussed further below.

This change initiative started as proposed for all patients who met the criteria and seen while in the clinic. Recommendations from the CDC and World Health Organization generated by COVID-19 caused the clinic to implement stricter infection control procedures. This included requiring all patients and staff to wear a medical or cloth mask. Everyone entering the facility was screened for COVID-19 symptoms, which included a three-question questionnaire assessing respiratory symptoms, recent fever, body aches or chills, and known exposure. Individuals were also required to have their temperature checked. Anyone with positive symptoms was asked to wait in their car until the medical provider could assess them further. This change in clinic flow resulted in only allowing one patient in the clinic at a time and a decrease in overall patient volume. Limiting clinic capacity to one patient at a time, prompted discussion of ways to keep visits short and precise. To help alleviate the amount of time patients would require completing all DSME, which was estimated to take about 30 minutes, potential participants were checked in

at a separate entrance and completed all education in a separate closed-door room. The time to complete the education was influenced by the literacy level of the patient. Most patients, even though the questionnaires were available in Spanish, required further assistance with reading and explaining the questions or statements on the questionnaires by the MA. All patient areas were cleaned after each encounter. Moving patients needing diabetes education to a separate entrance minimized clinic traffic and allowed for more patients to be seen.

A significant factor in enhancing self-care behaviors is improving dietary habits. Part of the education component in the DSME protocol was referring patients to a dietitian to reinforce and elaborate on nutritional topics. Dietitian services within the area had to limit their practice and defer new referrals because of recommendations by local governments and health officials, asking health care providers to defer non-emergent visits or procedures to reduce the spread of COVID-19. Even though dietitian services were not scheduling new patients during this project cycle, all referrals were initiated and flagged for clerical staff to follow-up on monthly.

Patient volumes continued to decrease as the spread of COVID increased. This had a ripple effect, causing the clinic to reduce office hours and staff. Home and telehealth visits were offered to increase patient visits, but with limitations. To reduce exposure for everyone, measures were put in place to ensure the visits were as concise as possible. Due to the time needed to complete all education required for the DSME protocol, patients seen in the home did not receive the same education as those seen in the clinic. Home patients were given the same bilingual nutrition educational handouts, with plans to complete the DSME during their next clinic visit.

## **Changes in Care Processes and Clinical Outcomes**

Data for this quality initiative was compiled from a pre-implementation and post-implementation group. The pre-implementation group included 52 Mexican American adult patients diagnosed with diabetes seen at the project site one month prior to the implementation of the DSME protocol. The post-implementation group included 23 patients, meeting project criteria, seen 1-12 weeks after the implementation of the DSME protocol. The pre-implementation group was 78.8% female and 21.2% male, with a mean age of 54.71 and mean A1C of 7.55%. The post-implementation group was 73.9% female and 26.1 % male, with a mean age of 59.22 and a mean A1C of 7.87%. Age, gender, weight, and body mass index (BMI) were comparable in both groups and presented further in Table 2. Data collected for the pre-implementation group was used to determine changes in clinical practice. Of the 23 patients in the post-implementation group, due to the pandemic, only 6 patients completed post-questionnaire responses before the end of the project. Because these patients were not able to attend their follow-up visit within the project timeframe (12 weeks), the PD obtained follow-up questionnaire data by telephone. The other 17 patients who could not be reached by phone will receive follow-up questionnaires when they are able to return to the clinic for a follow-up visit.

In patients who completed both pre-and post-questionnaires, post-DKQ scores ( $M=19.33$ ) were higher than pre-DKQ scores ( $M=14.16$ ), with a mean change of 5.17, which was less than the 10-point increase which was the initial goal. When a paired t-test was run, despite the low sample size, a significant increase in diabetes knowledge was found ( $t(5) = 3.187, p = .024$ ). Post-DSMQ scores ( $M=35.00$ ) were increased from pre-DSMQ ( $M=34.83$ ) but were not statistically significant ( $p=.940$ ). (Refer to Table 3). Post-intervention A1C levels could not be

collected during the project period due to the pandemic but will be measured in the second cycle of the quality initiative, when patients are able to safely return to the clinic for follow-up.

Changes in clinical practice and protocol compliance were measured by frequency of scheduling three month follow up visits, dietitian referrals, and diabetes education as documented by providers in the EMR. Scheduling three-month follow-ups for patients with A1C levels at 7% or above post-implementation was 100%, compared to 63.5% pre-implementation. Dietitian referrals were 100% post-implementation, compared to 0% pre-implementation. Pre-implementation DSME documentation was 0%, compared with 100% post-implementation DSME documentation. (Refer to Table 3.)

During the scheduling phase of the phone follow ups, patients verbalized concerns and questions regarding COVID-19. Much time was spent during these phone follow-ups educating patients on COVID-19 transmission, infection control measures, symptoms, and when to seek to professional medical care. A Likert scale questionnaire of strongly disagree, disagree, neutral, agree, and strongly agree was used to evaluate patients' perceptions of the education presented during each patients' office visits and if COVID-19 impacted their understanding. Four questions were asked during the phone follow ups for the DKQ and DSMQ questionnaires. (Refer to Appendix 4.) Patients felt the education was beneficial to their health with 100% strongly agreeing with this statement. All patients thought the education was easy to understand, with 100% agreeing with this statement. Patients felt the education acknowledged their cultural background, with 83.3% agreeing and 16.7% strongly agreeing. Most patients reported not feeling overwhelmed by the education presented during the office visit, with 66.7% agreeing with this statement and 33.3% responding neutral. Those who were neutral stated they felt overwhelmed in general due to the COVID pandemic, stating reasons of fear and confusion.

## Discussion

The purpose of this quality improvement initiative was to increase the quality of the clinic's DSME practice by 50%, to improve diabetes knowledge and self-management behaviors by ten points, and health outcomes by improving A1C levels by 0.5% in Mexican American patients with diabetes at the project site. The goal of improving diabetes knowledge and self-management behaviors was not met, as the mean scores improved by five points, however there was a statistically significant improvement in knowledge, albeit in a very small sample. The improvements in the clinic's DSME practices, surpassed the goal of improving by 50%. The implementation of the DSME protocol at the project site resulted in a large and statistically significant increase in the frequency and quality of DSME provided by the clinic and improved patients' knowledge of diabetes and reported management activities. The DSME protocol instituted consistency to the clinic's diabetes education for their Mexican American patients as evidenced by improvements in documentation of DSME assessment and counseling, dietitian referrals, and scheduled 3-month follow up visits. Improvements in meeting patients' language requirements were achieved by assessing each patients' needs prior to their visit and providing educational materials reflective of their language preference. The improvements in diabetes knowledge were statistically significant, although the sample was small. Ideally, having improvements in diabetes knowledge should reflect in self-care behaviors, especially over time, as follow-up visits are instituted, and educational content is reviewed. Changes to diabetes self-care behaviors were small but improving and could have been a reflection of the changes to the protocol due to the pandemic and the small sample size available for this cycle of the initiative.

The accuracy of data collected during this quality initiative may have been influenced by several factors. Although the results showed positive changes in diabetes knowledge, changes in

diabetes self-care behaviors were not significant. Data obtained from questionnaire responses may have been influenced as most patients needed each question or statement read to them and explained in great detail. Having to obtain post questionnaire responses via phone follow ups and typically outside of clinic work hours, required all phone follow up to be completed with a different medical translator then used in the clinical settings. Changing translators may have resulted in differences in explanation and translating to patients, thus affecting lack of reported changes in self-care behaviors. As previously mentioned, a barrier impacting a large percentage of Hispanic peoples' ability to comprehend skills needed for self-care management is low literacy skills. Health literacy is defined as having the tools and capacity to understand basic health care information to aid in self-management (Howe et al., 2016). Lack of consistency in translating was likely not conducive in supporting health literacy. Findings from Lion et al. (2015) found that Spanish-language video interpretation had greater effects on diagnosis comprehension compared to Spanish-language telephone interpretation, suggesting that communication is more effective when parties can see one another. This face-to-face interaction allowed the interpreter to better understand nonverbal cues, which is an added assurance when assessing understanding (Lion et al., 2015).

Evidence-based diabetes guidelines from the ADA, when followed, have been shown to decrease diabetes-related complications (American Diabetes Association, 2017). In this project, the implementation of DSME evidence-based protocol improved patients' diabetes knowledge and provider and clinic staff compliance with ADA guidelines. Similar findings were evident in studies implementing ADA guidelines and culturally-tailored interventions. Changes in clinical practice were evident in a quality improvement study aimed at improving diabetes quality of care and outcomes after the implementation of ADA guidelines within a primary care clinic serving a



Hispanic community (Marcial & Graves, 2019). Initially, primary care providers' attitudes and knowledge of diabetes guidelines were assessed, using the Diabetes Attitude Survey. Based on the results, a two-hour educational module was created to inform providers on current ADA clinical practice guidelines. After the educational module, notable improvements in clinical practice were achieved, ranging from 40%-80% (Marcial & Graves, 2019).

A systematic review of 13 randomized controlled trials demonstrated that the most successful DSME interventions for Hispanic patients with diabetes were culturally-tailored to account for culturally specific needs of the community it targeted (Ferguson, Swan, & Smaldone, 2015). Mean A1C reduction was greater in Hispanic patients receiving culturally-tailored DSME ( $M=-0.42$ ) compared to those not receiving DSME interventions sensitive ( $M=0.03$ ) to cultural norms and customs (Ferguson et al., 2015). The sustainability of a culturally-tailored DSME and the impact on A1C was demonstrated when comparing the effects of diabetes education over 18 months in a study conducted by (Spencer et al., 2018). This two-part study followed two programs over 6 months. One was a culturally-tailored community health worker (CHW)-led DSME program and the other was an enhanced usual care (EUC) program. The the culturally-tailored CHW-led program was randomized into two groups, one a CHW only and the other a CHW plus a peer leader (CHW+PL) led DSME, followed for 12 months. The CHW intervention had greater improvements in A1C at 6 months ( $p<0.001$ ) compared to the EUC ( $p<0.05$ ) and the CHW+PL ( $p<0.01$ ) maintained significant A1C improvements over 12 months compared to the CHW only led program (Spencer, et al., 2018).

Data obtained from post-intervention questionnaire responses by phone may have been influenced because patients were not able to ask questions face-to-face, and because a different medical translator was used, thus there could have been a lack of consistency in translation. As

previously mentioned, a barrier impacting a large percentage of Hispanic peoples' ability to comprehend skills needed for diabetes self-care management is low literacy skills. Health literacy is defined as having the tools and capacity to understand basic health care information to aid in self-management (Howe et al., 2016). Consistency in translating is essential in supporting health literacy. Findings from Lion et al. (2015) found that Spanish-language video interpretation had greater effects on diagnosis comprehension compared to Spanish-language telephone interpretation, suggesting that communication is more effective when parties can see one another. This face-to-face interaction allowed the interpreter to better understand nonverbal cues, which is an added assurance when assessing understanding (Lion, et al., 2015).

### **Limitations**

The enforcement of travel restrictions, intended to slow the transmission of COVID-19, resulted in major limitations for the intervention and data collection period of this project. These COVID-related restrictions impacted clinical operations, resulting in decreased clinical hours, staff, and patient census. These unavoidable changes to the project resulted in a smaller than desired sample size. Despite the small sample size, clinically and statistically significant changes were still realized in provider practice and patient knowledge. A1C scores at the 12-week follow-up visit could not be evaluated within this project period but will be followed by the clinic when patients can safely return for follow-up and labs

### **Clinical Implications**

Lewin's Change Theory not only guided positive clinical practice and patient knowledge changes at the project site, but also assisted in adapting to factors that caused a negative force during the project, namely the strain placed on the clinic and patient due to the COVID-19 pandemic. The impact COVID-19 had on primary care practices during the timeframe of this

project was profound, but it also impacted day-to-day living. The rapid emergence of COVID-19 led to increased fear of infection, school closures, scarceness of food and toiletry items, employment insecurities, and changes to social behaviors (Park et al., 2020). These types of changes can lead to the inability to meet self-care needs (Brooks et al., 2020). Furthermore, these changes may have inhibited the patient's ability to fulfill the concept of familism or familismo, which is an important value for the Hispanic population. Principles of familismo are: to uphold the commitment to provide material and emotional support, to assist the family with problem solving, and to serve as a role model (Villatoro, Morales, & Mays, 2014). Family in the Hispanic culture serves as a natural support system, that has become limited during the COVID-19 pandemic, due to social distancing recommendations. During times of stress, seeking comfort from family is a natural way to cope, that is now restricted to reduce the spread of COVID-19, but may also have a negative impact on well-being and overall self-care behaviors (Park, et al., 2020). Consequently, attempting to make changes to self-care behaviors during a crisis or pandemic, could yield inconsistent results. As this quality initiative continues, to help mitigate barriers to diabetes self-management created by the stress associated with a pandemic, increased emphasis should be given to mental health assessments, evaluating each patient's stressors, coping skills, and initiating mental health referrals, as needed.

Table 1: Actual Course on Intervention

Month	Original Plan	Issue Encountered	Revised Plan	Outcome
Mid-March	⌚ DSME protocol initiated for in clinic use only	⌚ Travel restrictions enforced by local government due to COVID pandemic ⌚ Clinic only allowing 1 patient in at a time	⌚ No changes to protocol. Increased infection control measures ⌚ To allow patients to completed questionnaires, AHRQ novela videos, and PPT diabetic patients were check in using empty closed off space attached to clinic	⌚ Helped to increased patient flow
April	⌚ Dietitian referrals for all diabetic patients ⌚ Reduced in clinic patient volume	⌚ Dietitian deferring referrals due to COVID-19 pandemic ⌚ Daily clinic census reduced. Clinic hours and staffing reduced. Home and telehealth visits start ⌚ Medical provider wanting to limited time and people in patients'	⌚ Dietitian referral were still initiated for future scheduling ⌚ Patients were encouraged to keep in clinic appointments ⌚ Home patients were given culturally-tailored nutrition handouts	⌚ Patients unable to complete dietitian referrals prior to return appointment or phone follow up ⌚ Reduce patient participation ⌚ Unable to capture home and telehealth visits

May-Mid June	🕒 Reevaluation of knowledge, self-care behaviors, and A1C scores to be completed at follow up appointment	🕒 Most return office visits to occur late June- early July	🕒 Patients called to complete questionnaires via phone	🕒 Post A1c scores not obtained
		🕒 Infection control concerns related to COVID- 19		

Table 2: Patient Demographic Characteristics

	Pre-Implementation Group (N = 52)	Post-Implementation Group (N = 23)
	Mean (SD) or %	Mean (SD) or %
Age (years)	54.71 (12.0)	59.22 (9.4)
Gender		
Female	78.8	73.9
Male	21.2	26.1
Insurance Type		
Self-pay	17.3	10.9
Private	53.8	88.1
Medicare	26.9	1.0
Medicaid	1.9	
Preferred Language *		
English		8.69
Spanish		91.30
Weight		
All	177.04 (36.2)	175.43 (33.2)
BMI		
All	29.05 (5.6)	30.07 (4.7)
BMI Category		
Normal	25.0	13.0
Overweight	40.4	47.8
Obese	34.6	39.1
Pre-A1C scores	7.55 (1.8)	7.87 (1.7)

\* Preferred Language determined by language in which participant completed surveys.

Table 3: Results

	Post-Implementation Group (N = 6)	<i>Paired t-test p value</i>
	Mean (SD) or %	
Diabetes Knowledge		
Pre-DKQ	14.16(3.65)	0.024
Post-DKQ	19.33(1.96)	
Self-Care Behaviors		
Pre-DSMQ	34.83(5.60)	0.940
Post-DSMQ	35.00(7.26)	
Clinical Practice		
Pre-Scheduling follow-ups	63.5	
Post-Scheduling follow-ups	100	
Dietitian referrals	100	
DSME documentation	100	

### Conclusion

Diabetes globally affects all populations. Learning that cultural habits define lifestyle habits is crucial when educating patients on behavior change to improve their health. Going forward, primary care policies and procedures should examine cultural influences when considering best practices in treatment and education. The findings from this quality improvement project provide evidence supporting the need to incorporate DSME, following recommendations from the ADA and AADE into all primary care settings, taking into account special considerations in addressing health disparities and cultural differences.

The practice of providing equitable and culturally competent healthcare continues, even during the midst of a pandemic or other unexpected crisis. Learning to manage chronic illness during times of stress, needs to be emphasized more in primary care. Health care providers need to prepare patients with skills and resources needed to continue self-care efforts during periods of unexpected stress. Barriers presented during COVID-19 exposed deficiencies in health care

delivery. The use of telehealth is a growing industry and has advanced considerably but remains underutilized. Having familiar alternative modes of healthcare delivery in place, integrating cultural needs of individual patients and patient groups, would eliminate the need to defer medical appointments when global or local crises arise. Making available reliable, flexible, and culturally-tailored avenues to achieve continuity of care and education outside of the traditional healthcare setting would be beneficial in maintaining and increasing access to care for all populations.

***[To update the Table of Contents with new chapters, subheadings, and page numbers, hover over the Table of Contents and right click. Select the option “Update Field” and “Update Entire Table”.***

***To ensure your Table of Contents is double-spaced, highlight all text and right click. Select Paragraph and set line spacing to double.***



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## APPENDIX 1: Determination Letter from IRB



TEXAS A&M UNIVERSITY  
CORPUS CHRISTI

OFFICE OF RESEARCH COMPLIANCE  
Division of Research and Innovation  
6900 OCEAN DRIVE, UNIT 5844  
CORPUS CHRISTI, TEXAS 78412  
O 361.825.3497

Human Subjects Protection Program

Institutional Review Board

DATE: January 28, 2020  
TO: Elizabeth Lotka, College of Nursing and Health Sciences  
CC: Jennifer Harper, Student  
FROM: Office of Research Compliance  
SUBJECT: Not Human Subjects Determination

Activities meeting the DHHS definition of research or the FDA definition of clinical investigation and involves human subjects are subject to IRB review and approval.

On January 28, 2020, the Texas A&M University-Corpus Christi Institutional Review Board reviewed the following submission:

Type of Review:	Not Human Subjects Determination
Title:	A Quality Improvement Initiative to Improve Diabetes Self-Management Education in Hispanic Adults with Type 2 Diabetes
Project Lead:	Elizabeth Lotka
IRB ID:	TAMU-CC-IRB-NHS- 2020-01-007
Funding Source:	None
Documents Reviewed:	600.02 Form "LJ Not Human Subjects Research Request_JHarper2020 600.02 Template "LJ Quality Improvement Project_JHarper2020

Texas A&M University-Corpus Christi Office of Research Compliance determined that the proposed activity does not meet the DHHS definition of research or the FDA definition of a clinical investigation.

Therefore, **this project does not require IRB approval.** You may proceed with this project.

This determination applies only to the activities described in the documents reviewed. **Any planned changes require submission to the IRB to ensure that the research continues to meet criteria for a non-human subject research determination.**

Please do not hesitate to contact me with any questions at [irb@tamucc.edu](mailto:irb@tamucc.edu) or 361-825-2497.

Respectfully,

Matthew R.  
Gaynor, J.D.  
Digitally signed by  
Matthew R. Gaynor, J.D.  
Date: 2020.01.28  
16:02:38 -0600

Office of Research Compliance

## APPENDIX 2: Letter of Support



September 25, 2019

Dr. Sara Baldwin  
Associate Dean for Academic Programs  
College of Nursing and Health Sciences  
Texas A&M University – Corpus Christi  
6300 Ocean Drive  
Corpus Christi, TX 78412

Dear Dr. Baldwin,

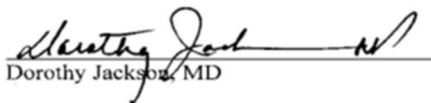
The purpose of this letter is to provide Jennifer Harper, a Doctor of Nursing Practice student at Texas A&M University College of Nursing and Health Sciences, support in conducting a quality improvement project at Phoenix Health Center. The project, Outpatient Quality Improvement to Decrease Diabetes Complications among Hispanics with Type 2 Diabetes, which entails implementing culturally tailored, family-based diabetes interventions.

The purpose of this project is to decrease diabetes complications in Hispanics with type 2 diabetes, using culturally tailored, family-based interventions for diabetes self-management education. Phoenix Health Center was selected for this project because the clinic's Hispanic patient population has a high rate of diabetes diagnoses. Jennifer Harper *is not* employed at this institution but has an interest in improving care at this facility.

I, Dorothy Jackson, MD, administrator at Phoenix Health Center, do hereby fully support Jennifer Harper in the conduct of this quality improvement project, Outpatient Quality Improvement to Decrease Diabetes Complications among Hispanics with Type 2 Diabetes, which entails implementing culturally tailored, family-based diabetes interventions at Phoenix Health Center.

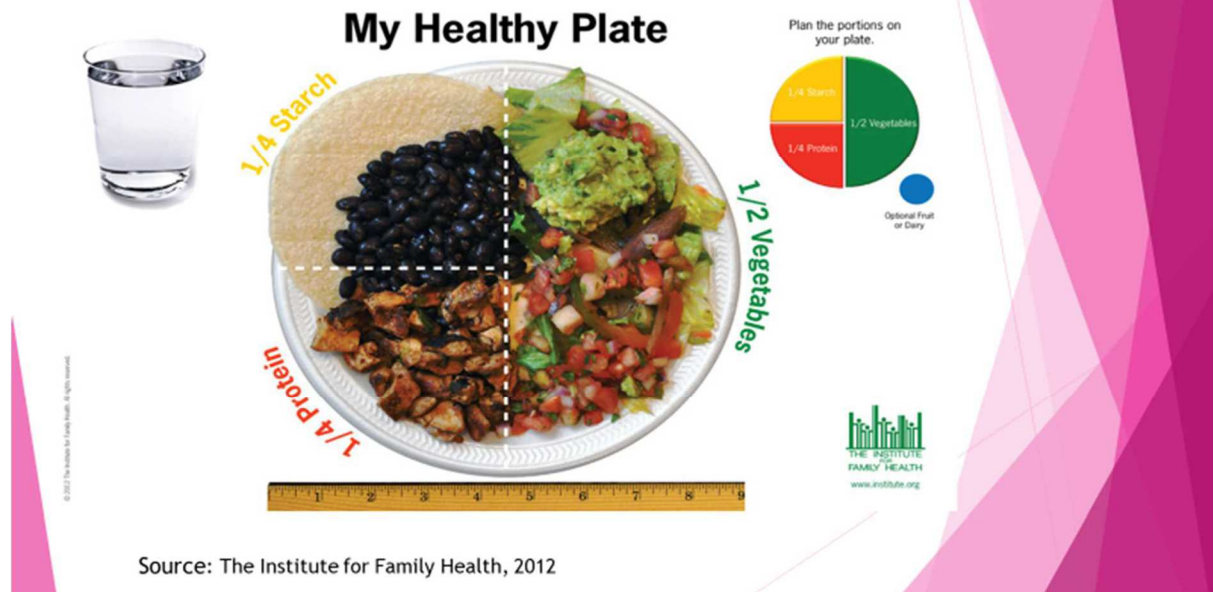
I also approve Jennifer Harper to access protected health information (PHI) for purposes of conducting this quality improvement project. She has signed a HIPAA release form.

Sincerely,

  
Dorothy Jackson, MD

## APPENDIX 3: Sample self-care power point slide

### Healthy Eating



#### APPENDIX 4: DSME Survey

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
The education I received was beneficial to improving my health.					
The education presented was easy to understand to incorporate into my daily activities.					
I felt this material acknowledged my cultural heritage.					
I did not feel overwhelm with the amount of education material presented.					