

Implementation of a Culturally-Tailored Diabetes Education Program in a Medically-
Underserved Community Health Clinic

Fionnuala S. Brown

Arizona State University

CULTURALLY-TAILORED DIABETES

Acknowledgments

I would like to first acknowledge the staff and volunteers at the clinic for their continued support. And to the patients at this clinic, thank you for inspiring me to begin this journey and being a source of motivation to continue.

Thank you to all the faculty and staff at ASU, especially Dr. Thrall, Dr. Velasquez, Dr. Nuñez, and Dr. Glover. Your knowledge and expertise have guided us through this remarkable time in our educational/professional path.

To Maria and Marisela, thank you for the work that you do every day in the community. Thank you for assisting me in the execution of this project. This would not have been possible without you.

To my parents, you are amazing role models. I cannot thank you enough for all your love and support throughout the years.

Terrence, all I can say is thank you. Thank you for tirelessly editing my papers and giving me all that constructive feedback through the years. But most of all, thank you for knowing that I could accomplish this goal and reassuring me that we could get through this together. I could not have done this without you.

And last, to my sweet daughters, Una and Claire. You two are the joys of my life.

CULTURALLY-TAILORED DIABETES

Abstract

Purpose: Hispanics diagnosed with type 2 diabetes mellitus (DM) have poorer health outcomes than non-Hispanic whites. Approximately one-half of all Hispanic DM patients utilize community health clinics for their DM needs. Evidence suggests that using a culturally-tailored approach to DM education can uniquely improve health outcomes in this population. The purpose of this evidence-based practice (EBP) project was to improve glycemic control in a medically underserved Hispanic community through a culturally-tailored DM education program.

Methods: This quasi-experimental pre/post design project was guided by the ACE Star Model and Leininger's Theory of Cultural Care. The affiliated University's IRB approved this project. The Diabetes Empowerment Education Program (DEEP) was implemented in a free, community clinic in a medically underserved area. Spanish speaking patients ($n = 15$) with A1C levels $> 8\text{mg/dl}$ were recruited to participate in a 6-week group educational program facilitated by community health workers. Outcomes included A1C levels, weight, and two surveys from the Michigan Diabetes Research Center - DM knowledge test and the DM empowerment scale.

Results: Paired sample t -tests were used to analyze the outcomes. The participants had an average pre-A1C of 8.82 mg/dl with post-A1C of 8.01 mg/dl ($p = .028$). Pre-knowledge test scores averaged 9.40 with post-test average of 12.07 ($p < .001$). Empowerment scores increased from 4.09 to 4.63 ($p = .001$). The reduction between the average pre-and post-weight measures were not statistically significant ($p = .681$).

Discussion: The implementation of a culturally-tailored DM educational program in a medically underserved community had a significant impact on reducing A1C levels, improving DM knowledge, and enhancing empowerment levels. Although the sample size was small and limited

CULTURALLY-TAILORED DIABETES

to one clinic, applying these programs can have a measurable clinical impact in the treatment of Hispanic DM patients. Future research can further exam how to duplicate this project on a larger scale and over a sustained period.

Keywords: (underserved) Hispanics, diabetes, group education, A1C, culture (culturally appropriate), medically underserved (areas)

Running head: CULTURALLY-TAILORED DIABETES

Implementation of a Culturally-Tailored Diabetes Education Program in a Medically-
Underserved Community Health Clinic

Type 2 Diabetes Mellitus (DM) is a complex disease that leads to disabling complications and high rates of mortality. This disease affects Hispanics at almost twice the rate of non-Hispanic whites, placing them at higher risk for morbidity and mortality from the disease (Smith-Miller, Berry, DeWalt, & Miller, 2015). Aggravating this problem is that Hispanics are more likely to live in medically underserved areas (Kaiser Family Foundation [KFF], 2008) and less likely to obtain appropriate health services than non-Hispanic whites (Ortega, Rodriguez, & Bustamante, 2015). The underserved Hispanic population often relies on community health clinics for their primary care needs (for the purpose of this paper, underserved Hispanics will be used to reference Hispanics living in medically underserved communities) (Ortega, Rodriguez, & Bustamante, 2015; White et al., 2014). These clinics are commonly inadequately resourced to educate patients regarding DM, especially with culturally appropriate education (Duggan et al., 2014; Arroyo-Johnson et al., 2016; Kane et al., 2016; Hughes, Yang, Ramanathan, & Benjamins, 2016). Numerous studies have researched DM health disparities that exist among the underserved Hispanic population and how the application of culturally tailored (CT) education can improve disease outcomes.

Problem Statement

Type 2 Diabetes Mellitus (DM) is an endocrine disorder causing a dysregulation of glucose metabolism and cellular insulin resistance (Papadakis & McPhee, 2015). It has a global impact affecting over 422 million people in 2014 (World Health Organization, 2016). In the United States, an estimated 29 million people (9.3% of the population) are diagnosed with DM (Center for Disease Control [CDC], 2016a). However, Hispanics are more affected with adverse health outcomes by the disease than non-Hispanic whites, especially those of lower

CULTURALLY-TAILORED DIABETES

socioeconomic status (SES) living in underserved areas (Smith-Miller, Berry, DeWalt, & Miller, 2014).

Hispanics are one of the largest minority groups in the U.S. and account for 15% of the population (Lai, Alfaifi, & Althemery, 2016). Hispanics have a higher incidence of DM than non-Hispanic whites (12.2% vs 7.6% respectively) (CDC, 2016b), a 66% greater risk of developing the disease (Duggan et al., 2014; Arroyo-Johnson et al., 2016) and a 50% higher death rate attributed to DM (Kane et al., 2016). Additionally, they have higher rates of diabetic retinopathy, end-stage renal disease (ESRD), and lower limb amputations (Congdon, Eldridge, & Troung, 2013; Walton, Snead, Collinsworth, & Schmidt, 2012).

The Hispanic population diagnosed with DM within Arizona (AZ) and Maricopa County is comparable to the U.S. rate of 9% (CDC, 2014). In AZ, diabetes is the 7th leading cause of death (a 38% increase in 10 years) and the 3rd leading cause of death among Hispanics (AZ Department of Health Services, 2014). Of the 1.1 million uninsured Arizonans (KFF, 2014), 17% are Hispanics (KFF, 2015b).

Purpose and Rationale

The Hispanic population is expected to increase by 13% from 2015-2020 and is projected to contribute to over 67% of the population growth by 2060 (Arroyo-Johnson et al., 2016). With this projected growth in the population of Hispanics, with many living in underserved communities, the rates of DM and related complications are expected to rise. Despite efforts by the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK, n.d.) to implement educational criteria in primary care, along with recommendations by the American Association of Diabetes Educators (AADE, 2015) to culturally tailor DM education, the underserved Hispanic population continues to experience higher rates of DM than other

CULTURALLY-TAILORED DIABETES

population groups. Placing a greater emphasis on CT DM education in community and primary care clinics that serve the underserved Hispanic population could potentially improve disease control and prevent complications (Babamoto et al., 2009).

Internal Evidence

A mobile health clinic in urban Phoenix offers healthcare to un/underinsured patients in areas that score between a 4.1-5 on a community needs index (CNI) scale. A CNI measures income, culture/language, education, housing, and insurance within a community and are scored from 1-5, with 5 signifying a community is in greater medical need (Roth & Barsi, 2005). Hispanics, many being undocumented or who cannot receive government assistance, make up a large percentage of the population of the patient population who visit the clinic.

There were over 15,000 visits in 2016 and DM was documented as the most common chronic condition treated by the clinic. Healthcare providers diagnose, treat, and manage DM and associated complications. However, due to time and financial limitations, the providers do not have the means to properly educate the diabetic patient population on DM management such as nutrition, exercise, and medication compliance. Current clinic DM education practices consists of a provider (or nurse)-based discussion with the patient, typically lasting less than 10 minutes. Consequently, patients lack sufficient education to properly self-manage their disease. Presently, the clinic is not equipped with evidence-based practice (EBP), culturally-tailored DM education for this specific population and their DM needs.

Purpose Statement

The purpose of this project is to improve glycemic control among the Hispanic patient population in a medically underserved community health clinic using language, literacy, and CT education.

CULTURALLY-TAILORED DIABETES

Background/Significance

Adult Hispanics Diagnosed with Diabetes

Several studies have described factors that place Hispanics at greater risk and affliction of DM. Some of these factors include SES, educational attainment, lower literacy levels, and lack of insurance coverage. Since the late 1990's, there has been a rising disparity of diagnosed cases of DM in relation to lower SES in the general population (Beckles & Chou, 2016). Hispanics living in the U.S. often are of lower SES, with approximately 24% living in poverty (Stepler & Brown, 2016), compared to 9% of non-Hispanic whites (KFF, 2015a). Diabetics with lower SES develop higher rates of morbidity/mortality, have poorer overall health outcomes due to less access to care and proper disease management (Hughes, Yang, Ramanathan, & Benjamins, 2016; White et al., 2014), and tend to have a life expectancy 14 years less than non-diabetics (Fleischer et al., 2016). Arroyo-Johnson and colleagues (2016) found that in addition to SES, lower levels of educational attainment are associated with a higher risk of developing DM. Approximately 61.7% of Hispanics have (or less than) a high school education and only 14.4% have a Bachelor's degree or higher (Stepler & Brown, 2016). Lower educational attainment can result in lack of engagement in medical care, lack of trust with healthcare providers, lack of comprehension of educational material, and less understanding and compliance of treatment plans and goals (Kane et al., 2016; Walton, Snead, Collinsworth, & Schmidt, 2012).

The underserved Hispanic population diagnosed with DM may have limited English proficiency and health literacy (Smith-Miller et al., 2015). According to Stepler and Brown (2016), only 34.4% of foreign-born Hispanics consider their English proficiency as very well. Patients with low health literacy are less likely to understand the components of diabetes self-management education (DSME), more apt to suffer complications related to DM, and more

CULTURALLY-TAILORED DIABETES

prone to having poor glucose control (Swavely, Vonderstarasse, Maldonado, Eid, & Etchason, 2014). These issues combined with lack of health insurance/access to care, cultural barriers, poverty and shortage of appropriate DM resources and education (Gonzalez, Berry & Davison, 2013; Walton et al., 2012), may inhibit adequate disease control and self-management in the underserved Hispanic population.

Hispanics make-up a high percentage of the uninsured, 24%, which may be higher in underserved areas (KFF, 2015b; Stepler & Brown, 2016). This results in the underserved Hispanics relying on public health care systems for primary care (White et al., 2014; Ortega, Rodriguez, & Bustamante, 2015) or the use of more costly options to treat their disease and complications. Uninsured diabetics utilize emergency departments (ED) at a higher rate than insured diabetics and have higher readmission rates to the hospital (Roberts et al., 2014). These visits and admissions contribute to the staggering overall annual cost to treat DM patients, which in 2012 was an estimated \$245 billion (Fleischer et al., 2016).

Community Health Clinics

Another factor that contributes to the complexities of DM management and poorer health outcomes among Hispanics is the heavy use of public health systems or community health clinics for primary care (White et al., 2014; Ortega, Rodriguez, & Bustamante, 2015). Ortega, Rodriguez, and Bustamante (2015) found that these clinics care for almost half of the Hispanic diabetic population, yet, Millan-Ferro and Caballero (2007) noted that these clinics are often inadequate in terms of bilingual resources/staff and CT educational material. This may be the result of community health clinics frequently operating under budget, resource, and staff limitations (Ortega, Rodriguez, & Bustamante, 2015). Furthermore, one particular study noted that Hispanics who sought medical care in these clinics described inferior care, problematic

CULTURALLY-TAILORED DIABETES

health visits, and less evidence-based care compared to Hispanics who received private services (Rodriguez, Chen, & Rodriguez, 2010; Ortega, Rodriguez, & Bustamante, 2015). Perpetuating these circumstances are that underserved Hispanics often have communication barriers that can lead to misinterpretation of medical treatments (Ortega, Rodriguez, and Bustamante, 2015), and the lack of adequate time spent with providers during appointments (Burke & O'Grady, 2012).

To enhance diabetes education in these clinics, group education may be an effective substitution to relying solely on the provider. Studies have found that group education has been a successful modality in increasing motivation and empowerment in DM individuals (Baig et al., 2015; Burke & O'Grady, 2012). This form of education may also improve the challenges Hispanics face with behavior and lifestyle changes (Baig et al., 2015). The NIDDK (n.d.) have created guidelines for clinics to use to educate self-management techniques to diabetics. These guidelines have also recommended, among other modes of delivery, the use of group classes to facilitate the content.

Culturally Tailored Diabetes Education

DM education focuses on several content areas to manage the disease. Some content areas include diet, physical activity, and weight control. However, many DM education classes do not tailor their content to cultural practices despite recommendations from the American Association of Diabetes Educators (AADE, 2015) who support the integration of cultural considerations within DM education. Additionally, targeting lower health literacy (and reading literacy) in the underserved Hispanic population can be challenging (Millan-Ferro & Caballero, 2007). Several studies have focused on the implementation and benefits of culturally appropriate DM education, many of which occurred in group settings.

CULTURALLY-TAILORED DIABETES

Millan-Ferro and Caballero (2007) described programs that applied videos, soap operas, and storytelling among low health literate patients with marked success in health changing behaviors. Chukwueke and colleagues (2014) studied Hispanic adults with DM and found a reduction in A1C, lipids, and body composition after completing a CT program. In a randomized controlled trial (RCT), Prezio and colleagues (2013) found a significant reduction in A1C levels in Hispanic adult DM patients after attending a CT education program led by community health workers (CHW). Similarly, Rothschild and colleagues (2014) conducted a RCT examining the impact of a two year CT, linguistically appropriate DSME intervention utilizing CHWs among Mexican Americans which resulted in decreased A1C levels. Furthermore, Brunk, Taylor, Clark, Williams, and Cox (2017) found that Hispanic adults with DM experience greater involvement of DM self-care after completion of a lifestyle self-management program that incorporated elements from their culture. Lastly, Ferguson, Swan, & Smaldone (2015), found that Hispanics and DSME within low-income primary care clinics, along with input from primary care providers (PCP), can have successful outcomes when the education is culturally specific and distributed in various methods (group sessions, individual, telephone).

Outcome Measures/Glycated hemoglobin A1C

Studies have shown that programs that reduce A1C levels by one percent have resulted in significant decreases in mortality, coronary events, and microvascular complications (Burke & O'Grady, 2012). A glycated hemoglobin (A1C) test signifies the state of glycemia in patients with DM over a 3 month period (Papadakis & McPhee, 2015). This blood test can be used as a diagnostic tool as well as an indicator in DM management control. DM is diagnosed when an A1C level is greater than 6.4% (Papadakis & McPhee, 2015) with a goal of maintaining the level below 7% to avoid comorbidities and complications (Walton, Snead, Collinsworth, & Schmidt,

CULTURALLY-TAILORED DIABETES

2012). Yet, in eight studies that measured baseline A1C levels on Hispanics diagnosed with DM, the average mean A1C level was greater than 7.8% (Appendix F).

The problem statement, background information, and internal/external evidence have led to the clinically relevant PICO question: In the underserved adult Hispanic population diagnosed with diabetes (P) how does culturally appropriate group education (I) compare to provider-based education (C) affect A1C levels over a three month period of time (T)?

Search Strategy

Databases

The databases searched during this exhaustive literature review were the Cumulative Index to Nursing and Allied Health Literature (CINAHL) (Appendix A), PubMed (Appendix B), Cochrane Library (Appendix C), and ProQuest (Appendix D).

Search Results

The initial keywords used to search all four databases were *Hispanics AND diabetes*. The initial search yielded 606 articles in the CINAHL database (Appendix A), 858 articles in the PubMed database (Appendix B), 119 articles in the Cochrane library (Appendix C), and 432 articles in the ProQuest database (Appendix D).

After the initial search, keywords and MeSH terms were applied. These included (*underserved*) *Hispanics, diabetes, education, group education, A1C, culture (culturally appropriate), medically underserved (areas) and provider-based education*. With general keyword searches of *Hispanics, diabetes, education, and A1C* applied using the Boolean term AND resulted in a final yield of 21 articles in CINAHL (Appendix A), 39 in PubMed (Appendix B), and 24 in the Cochrane library (Appendix C). In ProQuest, the keyword terms *underserved Hispanics, culturally appropriate, diabetes education, and A1C* were applied and resulted in a

CULTURALLY-TAILORED DIABETES

final yield of 23 (Appendix D). Keyword search combinations included *Hispanics AND Diabetes AND group education OR education AND A1C AND/OR provider-based education*. Eliminating *culturally appropriate* and *underserved* in CINAHL, PubMed, and Cochrane yielded the most relevant results. Group education and provider-based education did not add any substantial, applicable results.

Inclusion/Exclusion

All searches included limits (inclusion/exclusion). Inclusion criteria consisted of articles from the past 5 years (2012-2017), peer reviewed, of the English language, and adults over 19 years of age (PubMed, 18 and older in others). Within ProQuest, infants, children, adolescents, and pregnancy/lactating were marked as exclusion criteria as well as cancer, mental health, major depression, and mood disorders to be more specific towards targeted PICOT population. During the initial search of titles, abstracts, and brief overview of content, articles that discussed Type 1 diabetes, gestational diabetes, or outcomes that did not mention A1C or glycemic control were excluded. If the study focused primarily on mental health, these studies were also excluded.

After the initial review of titles, abstracts, and overview, and discarding of duplicates, 39 articles were critically appraised, and 10 were evaluated and synthesized (Appendix E).

Critical Appraisal and Synthesis of the Evidence

Ten studies were evaluated (Appendix E) and synthesized (Appendix F). One study was a level one, systematic/meta-analysis review, seven studies were level two RCT studies, one level four longitudinal cohort study, and one study was a level six (qualitative) (Melnyk & Fineout-Overholt, 2011). All ten studies were completed in the US from 2012-2017 among uninsured or Medicaid eligible Hispanic adults with DM or at risk for DM (Appendices E&F). The majority of the participants studied were female who preferred to speak the Spanish language (Appendix

CULTURALLY-TAILORED DIABETES

F). The average age was over 50 and participants with a DM diagnoses had a mean baseline A1C of over 7.5% (one RCT studied interventional effects on participants at risk for DM) (Appendix

F). Five studies occurred in a community clinic setting, one study occurred in a community clinic and the participants' homes, two were strictly home visits, and one occurred in a church.

Six studies had a potential for bias (Appendices E & F). One study had a potential contamination bias (Baig et al., 2014), whereas other studies may have had a manipulation bias by the provider (Appendices E & F). One study did not test external validity (Rothschild et al., 2014) (Appendix F). Additionally, nine studies had very small sample sizes which (along with potential biases) may impact outside reliability, although some studies accounted for this by performing a power analysis.

There was heterogeneity among types of interventional classes and facilitators. Three studies focused on group education, three focused on group and individual sessions, and four were individual sessions. Four studies had CHWs administer the education, three had lay/peer leaders, one had a dietician, a lay/peer leader and a provider/nurse, one had the researcher/facilitator, and one had a certified diabetic educator (CDE), a lay-leader, and a provider (Appendix F). Three studies utilized technology and four distributed printed material (two of these studies utilized both). All ten studies were CT with more than half formatted in preferred language and five were literacy appropriate (Appendix F).

There was further heterogeneity among measured outcomes with those relating (directly or indirectly) to A1C levels appearing in Appendix F. Nine studies resulted in improved A1C levels (six being of statistical significance) with the non-reporting A1C study resulting in improvement in glucose monitoring. Four studies found a direct relationship between participation in classes/intervention and improvement in outcomes. Outcome improvement also

CULTURALLY-TAILORED DIABETES

directly correlated with intervention duration and follow-up time. There was a general improvement across studies with fasting blood glucose (FBG) and weight (four different studies found statistically significant results in the intervention group) and two studies showed a moderate direct relationship between A1C and FBG and A1C and weight loss. Three studies resulted in statistically significant reductions in weight and body fat and half of the studies showed non-statistical improvements in overall self-care (efficacy, knowledge, medication, nutrition, and exercise) (Appendix F).

Conclusion of the Evidence

The evidence suggests that CT DM education is effective in reducing A1C levels in the underserved Hispanic population. Research indicates that interventions that were lengthy in duration with appropriate follow-up time and had good attendance rates improved health outcomes. Significant reductions in A1C levels were found in interventional groups, as well as enhanced usual care, that applied culturally specific elements in teachings. Furthermore, although the studies were slightly heterogeneous in interventional styles, the evidence illustrates that a variety of approaches can be employed to deliver DM education to the underserved Hispanic population provided that the education is literacy and language appropriate and incorporates culturally specific elements.

Theoretical Framework

Leininger's theory of cultural care diversity and universality will help framework a CT educational program for the underserved Hispanic patients diagnosed DM. Leininger's theory identifies the importance of integrating the values and beliefs of one's culture into care practice (Shapiro, Miller, & White, 2006). Three principles considered within this theory are cultural care maintenance, cultural care accommodation, and cultural care restructuring (Leininger, 2002).

CULTURALLY-TAILORED DIABETES

The Sunrise Model (Appendix G), represents Leininger's theory of how various components of one's culture and life can influence outcomes (Leininger, 2002). Although many DM research studies focus on the theories of self-management or self-determination (Appendix E), these theories can act as supplements when combining elements of standardized education with those of the patient's cultural preferences.

Evidence-Based Practice Model

The Academic Center for Evidence-Based Practice (ACE) (Melnyk & Fineout-Overholt, 2011) model was selected for the anticipated project (Appendix H). The ACE model has subtle similarities to the nursing process (Schaffer, Sandau, & Diedrick, 2012), which may minimize reluctance by nursing staff. This model is straightforward, uncomplicated, and applicable to most practice changes which was ideal in this type of setting: Utilizing a simplistic, yet effective, EBP model may be more accepted by staff than a complex, multi-layered one.

The ACE model serves as a tool to integrate newly acquired primary research with old knowledge and current practices (Melnyk & Fineout-Overholt, 2011; Stevens, 2012). This model has been utilized by individuals and organizations to translate knowledge into practice by following a cyclic process from evidence discovery to evaluation (Schaffer, Sandau, & Diedrick, 2012). The first step is knowledge discovery where evidence is sought through research. This leads to evidence summary, step two, where the evidence retrieved is now synthesized. Step three is translation, making recommendations from evidence gathered and synthesized. Implementation, step four, is the actual execution of a practice change based on the recommendations from step three. Evaluation is the final step which assesses the execution and sustainability of the practice change (Melnyk & Fineout-Overholt, 2011).

CULTURALLY-TAILORED DIABETES

Methods

Setting

This project was implemented in a free, non-profit, mobile community healthcare clinic in a large metropolitan region in the Southwest. This clinic not only operates in this region but several others with the organization having established clinics in three other states. However, this region is unique because of the volume of patients, the number of annual visits, and encompassing the most mobile clinics of any other region. There are six clinic sites in this metropolitan area, rotating locations daily.

Administrative staff includes a chief executive officer (CEO) of the multistate organization, a chief financial officer (CFO), and a chief medical officer (CMO). In each state, there is a regional CEO and medical director, who oversee the administrative and medical operations. Because this region has the largest healthcare undertaking, additional staff include an assistant medical director, site specific nursing directors, a program director, IT staff, and an outreach/communications employee.

The individual clinic sites rely on the use of volunteers for healthcare providers, support staff, and translators. Healthcare providers consist of MDs, DOs, NMDs, and NPs. In 2017, 15,000 volunteer hours were logged and amounted to \$834,488 in donated time.

In this region, patient demographics include 55% adult female, 30% adult male, 12% geriatric, and 3% pediatrics. Patients are from diverse backgrounds, the largest being Hispanic/Latino. Over 70% of the patients have at least one chronic medical condition, with DM documented in the top three. In 2017, 1,326 DM patients were treated at the clinics for their DM care. Furthermore, all patients are medically un/underinsured with many not qualifying for any federal healthcare assistance.

CULTURALLY-TAILORED DIABETES

All operating expenses are from private grants and donations. The clinic does not charge for services rendered.

Ethics

This project was approved by the Arizona State University Institutional Review Board (IRB). A recruitment letter describing the project, risks/benefits, and voluntary participation, was translated into Spanish and was given (or read) to potential participants by healthcare providers and nurses. If patients declined to participate, they were informed that their healthcare at the clinic would not be affected. If participants voluntarily agreed to participate in this project, they were assigned a random number. Informed consent was obtained on the first day of class. All surveys, lab results, and demographic sheets were de-identified. If patients opted out of the program at any time, their healthcare was not affected at the clinic and their information would not be used for results. Patients were informed that results may be disseminated.

Intervention

Clinic staff and volunteers were briefed on an overview of the intended project and were asked to refer patients to the program who met the inclusion criteria. Inclusion criteria included patients 18 years and older with an established diagnosis of DM, a documented A1C level of > 8 mg/dl on file at the clinic, and Spanish speaking. If patients had a previous A1C > 8 mg/dl but did not have a current A1C (within the past 1-2 months), an A1C was ordered to have drawn prior to the start of the program. Exclusion criteria consisted of severe comorbidities.

Recruitment lasted for 4 weeks (4 clinic days). Eighteen patients who met the inclusion criteria were interested in attending the program. Reminder calls were performed weekly for two weeks prior to the start date with an additional call the evening before (with reminder calls

CULTURALLY-TAILORED DIABETES

occurring the evening before continuing throughout the duration of the intervention). After reminder calls, sixteen patients were able to participate.

The Diabetes Empowerment Education Program (DEEP) was the selected for this intervention. The DEEP was created by the University of Illinois Midwest Latino Health, Research, Training and Policy Center (2018) and was specifically created for lower socioeconomic, minority patients living in medically underserved communities. The DEEP is an evidence-based program that has been successful in reducing A1C levels, increasing DM knowledge, and empowering Hispanic patients diagnosed with DM (Mountain Pacific Quality Health, 2015). Recognizing the rates of illiteracy and health illiteracy among this population, language and literacy appropriate tools were specially designed to tailor the program to the needs of the participants.

The program's main objective is to teach patients self-management skills by addressing short- and long-term behavior changes. Additional objectives include increasing knowledge of the disease/risks and creating awareness of the psychosocial aspects of the disease. These objectives are achieved by concentrating on eight core content pieces that are taught throughout the program (see Appendix I for core content).

The program was conducted over twelve hours, divided into two-hour classes over six weeks. CHWs facilitated the program in an interactive style through group participation. Patients were encouraged to partake in hands-on activities and engage in discussions that promote a better understanding of the disease, complications/risks, and treatments. According to Baig and colleagues (2015), for Hispanic patients diagnosed with DM, group instruction can improve engagement, empowerment, and motivation. Each class was organized to review the previous weeks' content and discuss individual weekly goals. New material was introduced with a short

CULTURALLY-TAILORED DIABETES

lecture followed by a group activity and discussion. At the end of the six weeks, patients were given a certificate of completion.

Baseline data was collected on the first day of class. Two surveys (the DM knowledge survey and the empowerment survey) were distributed and completed as well as baseline weight was obtained. Current A1C levels were de-identified and placed with the patient's assigned number. Each weekly class commenced with patients being weighed. On the last class day, post-surveys were again dispersed and completed and a final weigh-in was documented. Six weeks after the final class, participants attended an informal class for follow-up, feedback, and to acquire a lab requisition for post-A1C.

Measurement Outcomes

Hemoglobin A1C. In 1994, the American Diabetes Association recommended the use of A1Cs to manage DM care. This led to creation of The National Glycohemoglobin Standardization Program (NGSP) which oversees the calibration of A1C results (Little, Rohlfing, & Sacks, 2011). If a certified laboratory is resulting the A1C measurement, a variance greater than 0.5% is typically unlikely, although there are clinical circumstances that can alter/falsify A1C levels (anemia, renal failure) (Little, Rohlfing, & Sacks, 2011).

For this project, the primary outcome measured was changes to A1C levels. From the literature review, A1Cs were noted to be the primary outcome in previous studies with results showing statistically significant reductions. The participants' A1C were measured between one and six weeks prior to the start of the program and retested six following the completion of the program. Lab services are donated to the clinic and therefore patients did not have an out-of-pocket expense to have this tested.

CULTURALLY-TAILORED DIABETES

Weight. After evaluating the evidence, a positive correlation between weight and A1C reduction was a recurring theme. Although patients were weighed weekly using the same scale, only the first and last weights were used to analyze any changes from the intervention.

Diabetes Knowledge. Fitzgerald and colleagues (2016) noted that improving ones' knowledge regarding DM could motivate patients to change lifestyles and modify behaviors. To measure this outcome, the DM knowledge scale questionnaire created by the University of Michigan (U of M, 2017) was used. Eighteen out of the twenty questions were related to general DM information and two specific questions reserved for insulin-dependent patients. The Flesch-Kincaid scale was used to evaluate readability of this instrument and was measured at a fourth-grade level (Fitzgerald et al., 2016). The reliability from two samples studied had a combined Cronbach coefficient alpha score of $\geq .77$ (Fitzgerald et al., 2016). Validity was measured in four parts- diabetes type, duration, insulin use, and educational level- and found variable results among the two samples. However, with the samples results combined, the researchers felt confident to determine the DKT2 to be a valid instrument tool (Fitzgerald et al., 2016).

Empowerment. Empowerment and self-efficacy are outcomes that can measure willingness and ability to change behaviors and are a key component of the DEEP program (Funnell et al., 2010). The Diabetes Empowerment Scale Short Form (DES-SF) is an eight-item questionnaire reduced from the original Diabetes Empowerment Scale (U of M, 2017). This short-form questionnaire focuses on eight domains which have been grouped into three main domains. These three domains include managing psychosocial aspects of the disease, dissatisfaction/readiness for change, and setting/achieving goals. The reliability of this short-form after two trials had a Cronbach coefficient alpha score of 0.84 (U of M, 2017). The tool was deemed valid during

CULTURALLY-TAILORED DIABETES

these same trials (although no specificity was described in regards to internal vs external validity) (U of M, 2017). Questions were scored using a Likert scale.

Results

Analysis

Descriptive statistics were used to describe the sample and outcome variables. Paired sample t-tests were used to compare the pre/post means of A1C levels, weight, diabetes knowledge scores, and empowerment. Pearson correlation was used to identify any relationships between variables and outcomes. Significance was tested at $p < .05$. SPSS version 23.0 was used for data entry and analysis.

Participants

Fifteen patients ($n = 15$) completed the program (attrition 6%). The average age of participants was 55 ($SD = 8.6$), ranging from 40 to 72 years. Participants averaged 10.5 years living with DM ($SD = 8.5$), ranging from 1 to 20 years. Thirteen women (87%) and two men (13%) completed the program. All (93%) but one participant were from Mexico (one from Guatemala). All participants were Spanish speaking. Of the fifteen participants, thirteen (87%) were literate (could read and write Spanish). Approximately 46% had a primary school education or less. Six participants (40%) had participated in a previous DM program in the past. Four participants (27%) were on insulin. All participants were on at least one oral antihyperglycemic agent. For more on demographics, see Appendix J.

During recruitment, all participants had an A1C > 8 mg/dl on file; however, for accuracy new A1C levels were drawn prior to the program and four participants resulted in an A1C < 8 mg/dl. They were permitted to continue participation in the program. Additionally, one

CULTURALLY-TAILORED DIABETES

participant had an A1C drawn 2 months prior to the start of the class. This A1C was used for pre-measurement.

Outcome Results

A1C. Ten out of fourteen participants (71%) who followed-up six weeks after the intervention had a decrease in their A1C levels. There was a statistically significant reduction in pre/post-mean A1C levels. The pre-A1C mean was 8.82 mg/dl (SD = 1.7), ranging from 6.7 mg/dl to 12.1 mg/dl. The post-A1C mean was 8.07 mg/dl (SD = 1.3), ranging from 6.6 mg/dl to 10.3 mg/dl (SD = 1.18, $t = 2.45$, $df = 14$, and $p = .028$).

Weight. The reduction between the average pre-and post-weight measures were not statistically significant (SD = 5.16, $t = .42$, $df = 14$, and $p = .681$). The pre-weight was 168.13 lbs. Post-weight was 167.75. Although not statistically significant, there was individual weight loss among participants. Ten out of fifteen participants (67%) experienced weight loss during the six week program and there was a positive correlation between class attendance and weight loss ($r = .591$, $n = 15$, $p = .02$).

Diabetes Knowledge. Thirteen out of fifteen participants (87%) improved their DM knowledge. The pre-mean score was 9.4 (SD = 2.7) out of a possible 18 correct. Pre-correct scores ranged from 3 – 14 out of a possible 18 correct. The post-mean score was 12.07 (SD = 2.3). The post-scores ranged from 8 – 15 correct. This was a statistically significant improvement in diabetes knowledge (SD = 2.23, $t = -4.64$, $df = 14$, $p < .001$). There was also a positive correlation between class attendance and improved scores on the post DM knowledge test ($r = .561$, $n = 15$, $p = .03$).

On the two additional insulin questions, pre-scores ranged from three out of four insulin-dependent participants (75%) scoring correctly on a question regarding the association between

CULTURALLY-TAILORED DIABETES

blood glucose and insulin with a post-score of 100%. The second question pertained to insulin administration and meals with one participant (25%) answering correctly. Post-scores increased with 2 participants (50%) answering correctly. These were measured using frequency statistics.

Empowerment. Twelve out of fifteen (80%) participants felt more empowered. The pre-empowerment mean score was 4.09 (SD = .49). The post-empowerment mean score was 4.63 (SD = 1) which showed a statistically significant improvement (SD = .47, $t = -4.5$, $df = 14$, and $p = .001$).

See Appendix K for results table.

Discussion

Implementing the DEEP in this medically-underserved community health clinic had a statistically significant impact on outcomes measured. Pre/post data suggests that culturally-tailoring DM education can improve glycemic control by reducing A1C levels, improving diabetes knowledge, and empowering participants.

The NIDDK (2014) recommends an $A1C \leq 7$ mg/dl, although goal A1C can be patient dependent. Four participants had an $A1C < 8$ mg/dl before the start of the program, three being ≤ 7 mg/dl. At the conclusion of the program, these same three participants remained ≤ 7 mg/dl. An additional patient resulted in an $A1C \leq 7$ mg/dl in their post-A1C.

Additional factors may have played a role in the changes in A1C levels pre/post intervention. The program occurred over two major holidays which may have hindered diet compliance, A1C measurements were not exactly 12 weeks apart, and additional medications may/may not have been added to treatment plans. These factors, along with others, may have biased the results.

CULTURALLY-TAILORED DIABETES

Although weight loss was not statistically significant, there was individual weight loss among participants. Weight loss for some individuals substantially decreased. Some issues were noted after program completion that may have limited rigorous weight measurement. These issues involved the scale placed on carpet, the scale purchased at non-medical facility questioning the accuracy and validity/reliability, and lastly, the program occurring in colder months which may have contributed to heavier clothing being worn. Future studies may need to have a more rigorous approach to weighing participants; however, feedback from participants and CHWs supported weight measurement.

DM knowledge statistically improved from the first to last class. Although not all questions corresponded with the teachings of the course, they were general enough to match overall concepts taught. The test results are also a good indicator of what areas can be improved in relation to one-on-one teaching with patients/providers. The scores can also help the clinic improve their educational practices and resources. For example, in this particular DM knowledge test, all fifteen participants scored wrong on the question pertaining to foot care. Post-scores showed improvement by 40% of the participants.

Participants felt more empowered at course completion. The domain with the greatest improvement was managing psychosocial aspects of the disease. This measured patients comfort with obtaining social support, stress management, and decision-making (Anderson, Funnel, Fitzgerald, & Marrero, 2000). The participants also showed improvement in setting/achieving goals and dissatisfaction/readiness for change although one participant still disagreed with a question on the latter domain in their post-survey.

The classes were implemented in a group-setting which may have enhanced the overall quality of the program. As noted previously, studies have shown that group educational settings

CULTURALLY-TAILORED DIABETES

motivate and empower participants compared to individual sessions. This was observed in this program: Participants felt comfortable discussing their own disease management and barriers to treatment plans and compliance. Open dialogue was encouraged and in many classes, more time was spent in this type of discussion as opposed to the curriculum designed lectures. Participant led cultural discussions occurred with the focus primarily on diet and exercise. Lastly, interactive activities were well received with all participants partaking in some aspect of the events.

The DEEP utilizes community health workers (CHWs) to facilitate the program. Several high level research studies concluded that DSME courses facilitated by CHWs have had positive outcomes with A1C reduction and potentially minimizing the risk of microvascular complications (Rawlins, Toscano-Garand, & Graham, 2017). Because they are members of similar communities, CHWs have the ability to identify with patients and deliver CT education from a professional and personal experience. This was an added benefit to this project and potentially contributed to the success of the outcomes.

The abovementioned success is focused on the individual participants; however, better patient outcomes can equate to better population health. Comparing the statistically significant pre/post group means is an indicator of how successful this program may be on population health. The demographics of this project sample parallels to the population of the clinic. If the project could be reproduced to achieve similar outcomes, the clinic and the community could possibly have more health knowledgeable, empowered DM patients with controlled A1C levels.

For providers, this would allow more time to care for patients and their healthcare needs rather than trying to incorporate CT DM teachings that some providers may have limited/no experience or comfort with. Internal and external evidence indicates that providers are not always the most qualified personnel to deliver DM education to patients.

CULTURALLY-TAILORED DIABETES

Furthermore, the post-survey results would give providers a better idea of the patient's knowledge of their disease and what needs improvement or more attention. Individual treatment plans could be improved on the basis of these post-survey results with additional components added to fit their cultural needs.

Patients who adhere to treatment plans and have more controlled A1C levels are less likely to experience comorbidities from their disease (Walton, Snead, Collinsworth, & Schmidt, 2012). If individual and group A1C levels and weight continue to decrease, the risk of complications could subsequently decrease. This could result in less medication usage, fewer referrals, and less frequent healthcare visits. Financially, the clinic could experience less monetary expenses being allocated to DM medical expenses.

Sustainability is dependent on continuation of buy-in from staff, volunteers, and patients. Designating a consistent provider to follow-up with patients during and after the course could help sustain these outcomes and encourage the patients to continue applying their newly acquired skills in their everyday lives.

An additional element that could have contributed to the success of this program and would need to be considered in sustainability was the presence of a liaison between the clinic and classes. Having the clinic NP perform weekly outreaches, reminder phone calls, and being present in the classes may have impacted the attendance rate and low attrition (6%). The CHWs also appreciated the NP's presence: As they noted, it gave validation to what they were teaching. The added value of the NP along with the teachings of the CHWs was synergistic.

These suggestions for sustainability could be used for future research or EBP studies/projects. Measuring the impact the NP played in the intervention could be one area of study. Another would be the impact and sustainability of this project in all sites for all DM patients

CULTURALLY-TAILORED DIABETES

over a sustained period of time. Future DNP students could have a substantial impact on prospective studies in this population and type of setting.

Limitations

This intervention was only executed in one clinic site with a small number of participants. Unintentional bias may have influenced the outcomes and results. These biases may have included having the NP present for the classes which may have swayed attendance and compliance. The accuracy of the tools used and the rigor of the measurement may have also hindered precise results: The scale potentially being inaccurate, some A1C levels greater than 12 weeks apart, and some of the participants being illiterate and needing oral interpretation with surveys which may have allowed translation bias. Future studies would need to improve the thoroughness and consistency of these factors.

Another limitation was that there was no expense accrued by the clinic. This was a piloted program in collaboration with the CHWs' organization. The cost of these programs may limit future programs. However, the value of DM education in reducing overall healthcare expenditure for DM related complications can offset the minimal cost of the program.

Conclusion

Culturally-tailored DM education has proven successful in previous studies as manifested in the literature as well as the success in this project. Although the evidence did not indicate which program was preferential in implementation, utilizing the DEEP in conjunction with the CHWs significantly improved glycemic control in this patient population. Improving knowledge and empowering patients resulted in a reduction of A1C levels and individual weight loss.

Incorporating the DEEP, or any type of CT DM program, in the plan of care for all Hispanic DM

CULTURALLY-TAILORED DIABETES

patients living in medically underserved communities can have the potential to improve overall health outcomes while minimizing the impact of DM related complications.

CULTURALLY-TAILORED DIABETES

References

- American Association of Diabetes Educators. (2015). Cultural considerations in diabetes education. Retrieved from <https://www.diabeteseducator.org/docs/default-source/default-document-library/cultural-considerations-in-diabetes-management.pdf?sfvrsn=0>
- Anderson, R.M., Funnel, M.M., Fitzgerald, J.T., & Marrero, D. (2000). The diabetes empowerment scale- A measure of psychosocial self-efficacy. *Diabetes Care*, 23(6), 739-743. Doi: 10.2337/diacare.23.6.739
- Arizona Department of Health Services. (2014). Arizona State Health Assessment. Retrieved from <http://www.azdhs.gov/documents/operations/managing-excellence/az-state-health-assessment.pdf>
- Arroyo-Johnson, C., Mincey, K.D., Ackerman, N., Milam, L., Goodman, M.S., & Colditz, G.A. (2016). Racial and ethnic heterogeneity in self-reported Diabetes prevalence trends across Hispanic subgroups, National Health Interview survey, 1997-2012. *Preventing Chronic Disease*, 13(10). Centers for Disease Control and Prevention. Doi: <http://dx.doi.org/10.5888/pcd13.150260>
- Babamoto, K.S., Sey, K.A., Camilleri, A.J., Karlan, V.J., Catalasan, J., & Morisky, D.E. (2009). Improving diabetes care and health measures among Hispanics using community health workers: Results from a randomized controlled trial. *Health Education & Behavior*, 36(1), 113-126. Doi: 10.1177/1090198108325911
- Baig, A. A., Benitez, A., Locklin, C. A., Gao, Y., Lee, S. M., Quinn, M. T., . . . Little Village Community Advisory Board. (2015). Picture good health: A church-based self-management intervention among latino adults with diabetes. *Journal of General Internal Medicine*, 30(10), 1481-1490. doi:10.1007/s11606-015-3339-x

CULTURALLY-TAILORED DIABETES

- Beckles, G.L., & Chou, C.F. (2016, November 18). Disparities in the prevalence of diagnosed diabetes- United States, 1999-2002 and 2011-2014. *Morbidity and Mortality Weekly Report*, 65(45), 1265-1269. Centers for Disease Control and Prevention.
- Brown, S. A., Kouzekanani, K., García, A. A., Orlander, P. R., & Hanis, C. L. (2013). Diabetes self-management and leptin in Mexican Americans with type 2 diabetes: The Starr county border health initiative. *Diabetes Educator*, 39(6), 820-827. doi:10.1177/0145721713505153
- Brunk, D.R., Taylor, A.G., Clark, M.L., Williams, I.C., & Cox, D.J. (2017). A culturally appropriate self-management program for Hispanic adults with type 2 diabetes and low health literacy skills. *Journal of Transcultural Nursing*, 28(2), 187-194. Doi: 10.1177/1043659615613418
- Burke, R.E., & O'Grady, E.T. (2012). Group visits hold great potential for improving diabetes care and outcomes, but best practices must be developed. *Health Affairs*, 31(1), 103-109. Doi: 10.1377/hithaff.2011.0913
- Center for Disease Control and Prevention. (2014). Diagnosed diabetes: Arizona, 2014. Retrieved from <https://gis.cdc.gov/grasp/diabetes/DiabetesAtlas.html>
- Centers for Disease Control and Prevention. (2016a). Chronic disease prevention and promotion: Diabetes. Retrieved from <https://www.cdc.gov/chronicdisease/resources/publications/aag/diabetes.htm>
- Centers for Disease Control and Prevention. (2016b). National center for health statistics: Table of summary health statistics. Table A-4. Selected diseases and conditions among adults aged 18 and over, by selected characteristics: United States, 2015. Retrieved from <https://www.cdc.gov/nchs/nhis/shs/tables.htm>

CULTURALLY-TAILORED DIABETES

Chukwueke, I., Firek, A., Beeson, L., Brute, M., Shulz, E., De Leon, M., & Cordero-MacIntyre,

Z. R. (2012). The en balance spanish diabetes education program improves apolipoproteins, serum glucose and body composition in hispanic diabetics. *Ethnicity & Disease, 22*(2), 215-220.

Congdon, H.B., Eldridge, B.H., & Troung, H.A. (2013). Development and implementation of a navigator-facilitated care coordination algorithm to improve clinical outcomes of underserved Latino patients with uncontrolled Diabetes. *Journal of Health Care for the Poor and Underserved, 24*(4), 1604-1613. Doi: <http://dx.doi.org.ezproxy1.lib.asu.edu/10.1353/hpu.2013.0181>

Duggan, C., Carosso, E., Mariscal, N., Isla, I., Ibarra, G., Holte, S.,...Thompson, B. (2014). Diabetes prevention in Hispanics: Report from a randomized controlled trial. *Preventing Chronic Disease, 11*. Centers for Disease Control and Prevention. Doi: <http://dx.doi.org/10.5888/pcd11.130119>

Ferguson, S., Swan, M., & Smaldone, A. (2015). Does diabetes self-management education in conjunction with primary care improve glycemic control in Hispanic patients? A systematic review and meta-analysis. *The Diabetes Educator, 41*(4), 472-484. Doi: [10.1177/0145721715584404](http://dx.doi.org/10.1177/0145721715584404)

Fitzgerald, J.T., Funnell, M.M., Anderson, R.M., Nwankwo, R., Stansfield, R.B., & Piatt, G.A. (2016). Validation of the revised brief diabetes knowledge test (DKT2). *The Diabetes Educator, 42*(2), doi: [10.1177/0145721715624968](http://dx.doi.org/10.1177/0145721715624968)

Fleischer, N.L., Henderson, A.K., Wu, Y.H., Liese, A.D., & McLain, A.C. (2016). Disparities in Diabetes by education and race/ethnicity in the U.S., 1973-2012. *American Journal of Preventive Medicine, 51*(6), 947-957. Doi: [10.1016/j.amepre.2016.06.019](http://dx.doi.org/10.1016/j.amepre.2016.06.019)

CULTURALLY-TAILORED DIABETES

- Funnell, M.M., Brown, T.L., Childs, B.P., Haas, L.B., Hoseney, G.M., Jensen, B., Maryniuk, M.,...Weiss, M.A. (2010). National standards for diabetes self-management education. *Diabetes Care*, 33(1), 89-96. Doi: 10.2337/dc10-S089
- Gonzalez, L.S., Berry, D.C., & Davison, J.A. (2013). Diabetes self-management education interventions and glycemic control among Hispanics: A literature review. *Hispanic Health Care International*, 11(4), 157-166. Doi: <https://doi.org/10.1891/1540-4153.11.3.98>
- Heisler, M., Choi, H., Palmisano, G., Mase, R., Richardson, C., Fagerlin, A., . . . An, L. C. (2014). Comparison of community health worker-led diabetes medication decision-making support for low-income Latino and African American adults with diabetes using E-health tools versus print materials: A randomized, controlled trial. *Annals of Internal Medicine*, 161, S13-22. doi:10.7326/M13-3012
- Hughes, M.M., Yang, E., Ramanathan, D., & Benjamins, M.R. (2016). Community-based diabetes community health intervention in an underserved Chicago population. *Journal of Community Health*, 41(6), 1249-1256. Doi: 10.1007/s10900-016-0212-8
- Kaiser Family Foundation. (2008). Eliminating racial/ethnic disparities in health care: What are the options? Retrieved from <http://kff.org/disparities-policy/issue-brief/eliminating-raciaethnic-disparities-in-health-care-what/>
- Kaiser Family Foundation. (2014). How will the Uninsured in Arizona fare under the Affordable Care Act. Retrieved from <http://kff.org/health-reform/fact-sheet/state-profiles-uninsured-under-aca-arizona/>
- Kaiser Family Foundation. (2015a). Poverty rate by race/ethnicity. Retrieved from [http://kff.org/other/state-indicator/poverty-rate-by-raceethnicity/?currentTimeframe=0&selectedDistributions=white--total&selectedRows=%7B%22nested%22%22:](http://kff.org/other/state-indicator/poverty-rate-by-raceethnicity/?currentTimeframe=0&selectedDistributions=white--total&selectedRows=%7B%22nested%22%22)

CULTURALLY-TAILORED DIABETES

%7B%22all%22:%7B%7D%7D,%22wrapups%22:%7B%22united-states%22:%

7B%7D%7D%7D&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D

Kaiser Family Foundation. (2015b). Uninsured rates for the nonelderly by race/ethnicity:

Timeframe: 2015. Retrieved from [http://kff.org/uninsured/state-indicator/rate-by-](http://kff.org/uninsured/state-indicator/rate-by-raceethnicity/?currentTimeframe=0&selectedRows=%7B%22nested%22:%7B%22arizon)

raceethnicity/?currentTimeframe=0&selectedRows=%7B%22nested%22:%7B%22arizona%22:%7B%7D%7D%7D

Kane, E.P., Collinsworth, A.W., Schmidt, K.L., Brown, R.M., Snead, C.A., Barnes,

S.A.,...Walton, J.W. (2016). Improving diabetes care and outcomes with community health workers. *Family Practice*, 33(5), 523-528. Doi: <https://doi-org.ezproxy1.lib.asu.edu/10.1093/fampra/cmw055>

Lai, L.L., Alfaifi, A., & Althermery, A. (2016). Healthcare disparities in Hispanic Diabetes care:

A propensity score-matched study. *Journal of Immigrant and Minority Health*, 1-8. Doi: 10.1007/s10903-016-0505-0

Leininger, M. (2002). Culture care theory: A major contribution to advance transcultural nursing

knowledge and practices. *Journal of Transcultural Nursing*, 13(3), 189-192. Doi: 10.1177/10459602013003005

Little, R.R., Rohfling, C.L., & Sacks, D.B. (2011). Status of hemoglobin A1C measurement and

goals for improvement: From chaos to order improving diabetes care. *Clinical Chemistry*, 57(2). Doi: 10.1373/clinchem.2010.148841

Melnyk, B.M. & Fineout-Overholt,E. (2011). Evidence-based practice in nursing and healthcare:

A guide to best practice (2nd ed). Philadelphia: Lippincott, Williams & Wilkins.

CULTURALLY-TAILORED DIABETES

- Millan-Ferro, A., & Caballero, E. (2007). Cultural approaches to diabetes self-management programs in the Latino community. *Current Diabetes Report*, 7(5), 391-397. Doi: 10.1007/s11892-007-0064-9
- Mountain-Pacific Quality Health. (2015). 11th Scope of work: EDC- Everyone with Diabetes counts [powerpoint slides]. Retrieved from http://www.uwyo.edu/geriatrics/_files/docs/qualityb2_edc_deep_wy_082015.pdf
- National Institute of Diabetes and Digestive and Kidney Diseases. (n.d.). Principle 3: Provides self-management education & support. U.S. Department of Health and Human Services. Retrieved from <https://www.niddk.nih.gov/health-information/health-communication-programs/ndep/health-care-professionals/guiding-principles/principle-03-provide-self-management-education-support/Pages/default.aspx#category=communitybased-and-other-resources,4>
- National Institute of Diabetes and Digestive and Kidney Diseases. (2014). The A1C test & diabetes: What A1C target should people have? Retrieved from <https://www.niddk.nih.gov/health-information/diabetes/overview/tests-diagnosis/a1c-test#15>
- Ockene, I. S., Tellez, T. L., Rosal, M. C., Reed, G. W., Mordes, J., Merriam, P. A., . . . Ma, Y. (2012). Outcomes of a Latino community-based intervention for the prevention of diabetes: The Lawrence Latino diabetes prevention project. *American Journal of Public Health*, 102(2), 336-342. doi:10.2105/AJPH.2011.300357
- Ortega, A.N., Rodriguez, H.P., & Bustamante, A.V. (2015). Policy dilemmas in Latino health care and implementation of the Affordable Care Act. *Annual Review of Public Health*, 36, 525-544. Doi: 10.1146/annurev-publhealth-031914-122421

CULTURALLY-TAILORED DIABETES

- Papadakis, M.A., & McPhee, S.J. (2015). *Current medical diagnosis & treatment* (54th ed). New York, NY: McGraw-Hill Education
- Pérez-Escamilla, R., Damio, G., Chhabra, J., Fernandez, M. L., Segura-Pérez, S., Vega-López, S., . . . D'Agostino, D. (2015). Impact of a community health workers-led structured program on blood glucose control among Latinos with type 2 diabetes: The DIALBEST trial. *Diabetes Care*, 38(2), 197-205. doi:10.2337/dc14-0327
- Prezio, E.A., Cheng, D., Balasubramanian, B.A., Shuval, K., Kendzor, D.E., & Culica, D. (2013). Community diabetes education (CoDE) for uninsured Mexican Americans: A randomized controlled trial of a culturally tailored diabetes education and management program led by a community health worker. *Diabetes Research and Clinical Practice*, 100(1), 19-28. Doi: <http://dx.doi.org/10.1016/j.diabres.2013.01.027>
- Rawlins, W.S., Toscano-Garand, Graham, G. (2017). Diabetes management with a care coordinator improves glucose control in African Americans and Hispanics. *Journal of Education and Health Promotion*, 6(22). Doi: 10.4103/jehp.jehp_27_15
- Roberts, A.W., Crisp, G.D., Esserman, D.A., Roth, M.T., Weinberger, M., & Farley, J.F. (2014). Patterns of medication adherence and health care utilization among patients with chronic disease who were enrolled in a pharmacy assistance program. *North Carolina Medical Journal*, 75(5), 310-318.
- Rodriguez, H.P., Chen, J., & Rodriguez, M.A. (2010). A national study of problematic care experiences among Latinos with diabetes. *Journal of Health for the Poor and Underserved*, 21(2010), 1152-1168. Doi: 10.1353/hpu.2010.0923
- Roth, R., & Barsi, E. (2005). The community need index. A new tool pinpoints health care disparities in communities throughout the nation. *Health Progress*, 86(4), 32-38.

CULTURALLY-TAILORED DIABETES

Rothschild, S.K., Martin, M.A., Swider, S.M., Tumialan Lynas, C.M., Janssen, I., Avery, E.F., &

Powell, L.H. (2014). Mexican American trial of community health workers: A randomized controlled trial of a community health worker intervention for Mexican Americans with type 2 diabetes mellitus. *American Journal of Public Health, 104*(8), 1540-1548. Doi: 10.2105/AJPH.2013.301439

Saca-Hazboun, H., & Glennon, C.A. (2011). Cultural influences on health care in Palestine.

Clinical Journal of Oncology Nursing, 15(3), 281-286. Doi: <http://dx.doi.org.ezproxy1.lib.asu.edu/10.1188/11.CJON.281-286> (Appendix G image)

Schaffer, M.A., Sandau, K.E., & Diedrick, L. (2012). Evidence-based practice models for organizational change: Overview and practical applications. *Journal of Advanced Nursing, 69*(5), 1197-1209. Doi: 10.1111/j.1365-2648.2012.06122.x

Shapiro, M.L., Miller, J., & White, K. (2006). Community transformation through culturally competent nursing leadership: Application of theory of culture care diversity and universality and tri-dimensional leader effectiveness model. *Journal of Transcultural Nursing, 17*(2), 113-118. Doi: 10.1177/1043659605285413

Smith-Miller, C.A., Berry, D.C., DeWalt, D., & Miller, C.T. (2015). Type 2 Diabetes self-management among Spanish-speaking Hispanic immigrants. *Journal of Immigrant and Minority Health, 18*(6), 1392-1403. Doi: 10.1007/s10903-015-0271-4

Stepler, R., & Brown, A. (2016). Statistical portrait of Hispanics in the United States. Pew Research Center. Retrieved from <http://www.pewhispanic.org/2016/04/19/statistical-portrait-of-hispanics-in-the-united-states/>

Stevens, K. R. (2012). *Star Model of EBP: Knowledge Transformation*. Academic Center for Evidence-based Practice. The University of Texas Health Science Center at San Antonio.

CULTURALLY-TAILORED DIABETES

Swavely, D., Vorderstrasse, A., Maldonado, E., Eid, S., & Etchason, J. (2014). Implementation and evaluation of a low health literacy and culturally sensitive diabetes education program.

Journal for Healthcare Quality: Official Publication of the National Association for Healthcare Quality, 36(6), 16-23. doi:10.1111/jhq.12021

University of Illinois at Chicago Midwest Latino Health Research, Training and Policy Center. (2018). DEEP Program. Retrieved from <http://mwlatino.uic.edu/deep-program/>

University of Michigan, Diabetes Research Center. (2017). Tools for health professionals: Survey instruments. Retrieved from http://diabetesresearch.med.umich.edu/Tools_Survey_Instruments.php#des

Walton, J.W., Snead, C.A., Collinsworth, A.W., Schmidt, K.L. (2012). Reducing diabetes disparities through the implementation of a community health worker-led diabetes self-management education program. *Family & Community Health*, 35(2), 161-171. Doi: 10.1097/FCH.0b013e31824651d3

White, R.O., Eden, S., Wallston, K.A., Kripalani, S., Barto, S., Shintani, A., & Rothman, R.L. (2014). Health communication, self-care, and treatment satisfaction among low-income diabetes patients in a public health setting. *Patient Education and Counseling*, 98 (125), 144-149. doi: <http://dx.doi.org.ezproxy1.lib.asu.edu/10.1016/j.pec.2014.10.019>

World Health Organization. (2016). Diabetes: Fact sheet. Retrieved from <http://www.who.int/mediacentre/factsheets/fs312/en/>

CULTURALLY-TAILORED DIABETES

Appendix A

Figure A

CINAHL search

	Search ID	Search Terms	Search Options	Actions
<input type="checkbox"/>	S11	hispanics AND diabetes AND MW cultural AND group education AND A1C	Limiters - Published Date: 20120101-20171231; English Language; Peer Reviewed; Age Groups: All Adult Search modes - Boolean/Phrase	View Results (0) View Details Edit
<input type="checkbox"/>	S10	hispanics AND diabetes AND MW cultural AND group education AND A1C	Limiters - Published Date: 20120101-20171231; English Language; Peer Reviewed; Age Groups: All Adult Search modes - Boolean/Phrase	View Results (0) View Details Edit
<input type="checkbox"/>	S9	hispanics AND MJ diabetes AND cultural AND education AND A1C	Limiters - Published Date: 20120101-20171231; English Language; Peer Reviewed; Age Groups: All Adult Search modes - Boolean/Phrase	View Results (2) View Details Edit
<input type="checkbox"/>	S8	hispanics AND diabetes AND provider AND education AND A1C	Limiters - Published Date: 20120101-20171231; English Language; Peer Reviewed; Age Groups: All Adult Search modes - Boolean/Phrase	View Results (2) View Details Edit
<input type="checkbox"/>	S7	hispanics AND diabetes AND provider-based AND education AND A1C	Limiters - Published Date: 20120101-20171231; English Language; Peer Reviewed; Age Groups: All Adult Search modes - Boolean/Phrase	View Results (0) View Details Edit
<input type="checkbox"/>	S6	hispanics AND diabetes AND group education AND A1C	Limiters - Published Date: 20120101-20171231; English Language; Peer Reviewed; Age Groups: All Adult Search modes - Boolean/Phrase	View Results (4) View Details Edit
<input type="checkbox"/>	S5	hispanics AND diabetes AND culturally appropriate AND education AND A1C	Limiters - Published Date: 20120101-20171231; English Language; Peer Reviewed; Age Groups: All Adult Search modes - Boolean/Phrase	View Results (0) View Details Edit
<input type="checkbox"/>	S4	hispanics AND diabetes AND education AND A1C	Limiters - Published Date: 20120101-20171231; English Language; Peer Reviewed; Age Groups: All Adult Search modes - Boolean/Phrase	View Results (21) View Details Edit
<input type="checkbox"/>	S3	hispanics AND diabetes AND education	Limiters - Published Date: 20120101-20171231; English Language; Peer Reviewed; Age Groups: All Adult Search modes - Boolean/Phrase	View Results (163) View Details Edit
<input type="checkbox"/>	S2	hispanics AND diabetes	Limiters - Published Date: 20120101-20171231; English Language; Peer Reviewed; Age Groups: All Adult Search modes - Boolean/Phrase	View Results (606) View Details Edit
<input type="checkbox"/>	S1	hispanics AND diabetes	Limiters - Published Date: 20120101-20171231; English Language; Peer Reviewed; Age Groups: All Adult Search modes - Boolean/Phrase	View Results (606) View Details Edit

CULTURALLY-TAILORED DIABETES

Appendix B

Figure B

PubMed search

Cancel Clear

Search or [Add to history](#)

History [Download history](#) [Clear history](#)

Search	Query	Items found	Time
#58	Search hispanics AND diabetes AND cultural AND education AND A1C Sort by: Author Filters: published in the last 5 years; English; Adult: 19+ years	5	01:19:36
#57	Search hispanics AND diabetes AND providers AND education AND A1C Schema: all Sort by: Author Filters: published in the last 5 years; English; Adult: 19+ years	0	01:19:21
#56	Search hispanics AND diabetes AND providers AND education AND A1C Sort by: Author Filters: published in the last 5 years; English; Adult: 19+ years	0	01:19:21
#55	Search hispanics AND diabetes AND provider AND education AND A1C Sort by: Author Filters: published in the last 5 years; English; Adult: 19+ years	2	01:18:50
#54	Search hispanics AND diabetes AND provider-based education AND A1C Schema: all Sort by: Author Filters: published in the last 5 years; English; Adult: 19+ years	0	01:18:42
#53	Search hispanics AND diabetes AND provider-based education AND A1C Sort by: Author Filters: published in the last 5 years; English; Adult: 19+ years	0	01:18:42
#52	Search hispanics AND diabetes AND culturally appropriate group education AND A1C Schema: all Sort by: Author Filters: published in the last 5 years; English; Adult: 19+ years	0	01:18:27
#51	Search hispanics AND diabetes AND culturally appropriate group education AND A1C Sort by: Author Filters: published in the last 5 years; English; Adult: 19+ years	0	01:18:27
#50	Search hispanics AND diabetes AND group education AND A1C Sort by: Author Filters: published in the last 5 years; English; Adult: 19+ years	38	01:18:10
#49	Search hispanics AND diabetes AND education AND A1C Sort by: Author Filters: published in the last 5 years; English; Adult: 19+ years	39	01:17:45
#48	Search hispanics AND diabetes AND education Sort by: Author Filters: published in the last 5 years; English; Adult: 19+ years	225	01:17:03
#43	Search hispanics AND diabetes Sort by: Author Filters: published in the last 5 years; English; Adult: 19+ years	856	01:16:55
#47	Search hispanics AND diabetes Sort by: Author Filters: published in the last 5 years; Adult: 19+ years	858	01:16:52
#45	Search hispanics AND diabetes Sort by: Author Filters: Adult: 19+ years	2661	01:16:46
#46	Search hispanics AND diabetes Sort by: Author	3608	01:16:39

CULTURALLY-TAILORED DIABETES

Appendix C

Figure C

Cochrane Library search

The screenshot displays the Cochrane Library search interface. At the top, the Cochrane Library logo is on the left, and the text 'trusted evidence. informed decisions. Better health.' is in the center. On the right, there are links for 'Log in / Register'. Below the header, there are tabs for 'Search', 'Search Manager', 'Medical Terms (MeSH)', and 'Browse'. A search bar contains the text 'hispanics and diabetes'. Below the search bar, there is a list of search results, each with a number, a description, and a count. The results are as follows:

Item	Description	Count
#1	hispanics and diabetes	119
#2	MeSH descriptor: [Hispanic Americans] explode all trees	1142
#3	MeSH descriptor: [Diabetes Mellitus, Type 2] explode all trees	11301
#4	MeSH descriptor: [Education] explode all trees	23388
#5	MeSH descriptor: [Hemoglobin A, Glycosylated] explode all trees	4719
#6	Hispanic Americans and Diabetes Mellitus, Type 2 and Education and Hemoglobin A, Glycosylated	24
#7	Hispanics Americans and Diabetes and culturally appropriate and education and A1C	1
#8	Hispanic Americans and diabetes and group education and A1C	24
#9	Hispanic Americans and diabetes and provider education and A1C	8
#10	Hispanics and diabetes and cultural education or provider education and A1C	92
#11	Hispanics and diabetes and cultural group education or provider education and A1C Online Publication Date from Jan 2012 to Jan 2017	28
#12		N/A

At the bottom of the interface, there are buttons for 'Clear Strategy', 'Search Help', and 'Save Strategy'. There is also a 'Save strategy' section with a 'Strategy Name' field and a 'Comments' field.

CULTURALLY-TAILORED DIABETES

Appendix D

Figure D

ProQuest search

Set	Search	Databases	Results	Actions
S18	underserved hispanica AND culturally appropriate AND diabetes group education OR provider-based education AND A1C ✓ Limits applied Databases: 57 databases searched View list Limited by: Peer reviewed Narrowed by: Entered date: 2012 - 2017; Exclude: Subject: mental health; mental disorders; children & youth; mental depression; cancer; adolescent; child; major depression	57 databases	128*	Actions
S16	underserved hispanica AND culturally appropriate AND diabetes group education OR provider-based education AND A1C ✓ Limits applied Databases: 57 databases searched View list Limited by: Peer reviewed	57 databases	321*	Actions
S15	underserved hispanica AND culturally appropriate AND diabetes education OR provider-based education AND A1C ✓ Limits applied Databases: 57 databases searched View list Limited by: Peer reviewed Narrowed by: Entered date: 2012 - 2017; Exclude: Subject: children & youth; adolescent; child; cancer; mental health; mental depression; mental disorders; psychology	57 databases	125*	Actions
S11	underserved hispanica AND culturally appropriate AND diabetes education OR provider-based education AND A1C ✓ Limits applied Databases: 57 databases searched View list Limited by: Peer reviewed	57 databases	325*	Actions
S10	underserved hispanica AND culturally appropriate AND diabetes education AND A1C ✓ Limits applied Databases: 57 databases searched View list Limited by: Peer reviewed Narrowed by: Entered date: 2012 - 2017	57 databases	23*	Actions
S9	underserved hispanica AND culturally appropriate AND diabetes education AND A1C ✓ Limits applied Databases: 57 databases searched View list Limited by: Peer reviewed	57 databases	34*	Actions
S8	underserved hispanica AND diabetes education AND A1C ✓ Limits applied Databases: 57 databases searched View list Limited by: Peer reviewed Narrowed by: Entered date: 2012 - 2017	57 databases	54*	Actions
S7	underserved hispanica AND diabetes education AND A1C ✓ Limits applied Databases: 57 databases searched View list Limited by: Peer reviewed	57 databases	78*	Actions
S6	underserved hispanica AND diabetes education ✓ Limits applied Databases: 57 databases searched View list Limited by: Peer reviewed Narrowed by: Entered date: 2012 - 2017; Language: English Exclude: Subject: adolescent; children & youth; child;	57 databases	432*	Actions
S4	underserved hispanica AND diabetes education ✓ Limits applied Databases: 57 databases searched View list Limited by: Peer reviewed Narrowed by: Entered date: 2012 - 2017	57 databases	498*	Actions
S3	underserved hispanica AND diabetes education ✓ Limits applied Databases: 57 databases searched View list Limited by: Peer reviewed	57 databases	908*	Actions

Appendix E

Table 1

Evaluation Table

Citation	Theory/ Conceptual Framework	Design/ Method	Sample/ Setting	Major Variables & Definitions	Measurement/ Instrumentation	Data Analysis (stats used)	Findings/ Results	Level/Quality of Evidence; Decision for practice/ application to practice
<p>Baig, A.A. (2015). Picture good health: A church-based self-management intervention among Latino adults with diabetes.</p> <p>Funded by grants from NIDDK, Univ of Chicago Clinical and Translational Science award, Chicago Center for Diabetes Translation Research</p> <p>Authors declare no conflicts of interest</p> <p>Potential bias due to self-reporting and social desirability</p> <p>USA</p>	<p>Self determination theory emphasizing the importance of intrinsic motivation that underlies behavior change</p> <p>Framework- CPBR</p>	<p>Design- Quantitative experimental Community based RCT pilot study</p> <p>Purpose- To assess the impact of a multi-faceted church-based DSM intervention on T2D outcomes among Lat adults for 8 weekly group classes</p> <p>AR-20% at 3 mo and 18% at 6 mo</p>	<p>N- 100 IG n- 50 CG n- 50</p> <p>Inclusion- ≥18, self-reported dx of T2D by MD</p> <p>Exclusion- preg, Gestational T2D, active cancer tx, dialysis, unable to attend classes/f/u or give consent</p> <p>Setting- South Lawndale Chicago, 75% MXA decent,</p>	<p>IV- Church based CT group DSME program “Picture Good Health/Imiginate una Buena Salud”</p> <p>Main Outcome DV1- A1C Secondary DV2- LDL DV3- BP DV4- wt DV5- T2D self-care</p> <p>* CG had enhanced UC (90 min lecture on DSME</p>	<p>DV1 & 2- venipuncture DV3- average of 2nd and 3rd readings DV4- no mention DV5- SDSCA scale</p>	<p>t test (continuous variables)</p> <p>Pearson X² (categorical variables)</p> <p>I effect- linear mixed models</p> <p>P<0.05</p>	<p>DV1- IG and CG ↓ (0.32%, 95% CI:-0.62%, -0.02%) at 3 mo, Not ss at 6 mo DV2-4, no ss btwn 2 arms, DV5- IG ↓ high fat foods on more days than CG (-1.34 days, 95% CI:-2.22,-0.46), ↑participation in exercise on more days (1.58 days, (95% CI: 0.24, 2.92)</p> <p>Both groups ↑SFE Neither group improved knowledge</p>	<p>LOE- II Strengths- Well designed RCT, IG effective in DV5, outcome findings consistent with other previous research, appropriate tools for low-literacy, peer leader which has had + outcomes in other studies, strong behavioral approach in leadership, low attrition Weaknesses- IG was not ss than CG, no ss improvement in IG or CG at 6 mo, insuff group contact, lack of contact with PCP, small N, peer leader lacked frequent feedback about teaching, only MXA studied, self-reporting, insufficient f/u time, potential contamination bias, lack of individual I eval, no reported p values- threatens validity Conclusion- although no chg in gly, LDL, and wt, +chg in SFE with ↑in phy act and ↓in high-fat foods resulting in possible improvements over time of DM. implementation of cultural/religious aspect which may have positive outcome Application- low cost and personnel, focused on culture and religion, similar patient demographics</p>

Act- activity; **adh-** adherence; **AHCQR** – Agency for Health Care Quality and Research; **AGM-** antiglycemic med; **Apo-** apolipoproteins; **AR-** attrition rate; **BF-** breastfeeding; **Biling-** bilingual; **BMI-** body mass index; **BP-** blood pressure; **BSM-** behavioral self-management; **btwn-** between; **BWT-** total body weight; **C-** community; **Cat-** categorical; **CBPR-** Community-based participatory research; **Cent-** center; **CES-D-**Center for epidemiological studies depression scale; **CG-** control group; **chg-** change; **CHW-** Community Health Worker; **CMA-** Cobas Mira Autoanalyzer; **CoDE-** Community diabetes education; **Com-** complications; **Con-** controlled; **CT-** culturally tailored; **DIALBEST-**Diabetes among Latinos best practices trials; **dev-** development; **DSME-** diabetes self-management education; **DV-**dependent variable; **dx-** diagnose(d); **eval-** evaluation; **FBG-** fasting blood glucose; **FG-** focus group; **FQHC-** Federally qualified health center; **FT-** full time; **F/u-** follow-up; **Glu-** glucose; **Gly-** glyceimic; **GSM-** glucose sel-monitoring; **His-** Hispanic; **HOMA-IR-** homeostasis model assessment; **HPLP-** Primus Diagnostics boronate affinity high performance liquid chromatography method; **I-** intervention; **IDEALTel-** Informatics for Diabetes Education and Telemedicine; **IG-** interventional group; **imp-** implementation; **inc-** increase; **ind-** independent; **IV-** independent variable; **Lat-** Latino; **LCS-** longitudinal cohort study; **LHL-** low health literacy; **LME-** linear mixed effects; **LT-** life threatening; **MA-** meta-analysis; **MATCH-** MXA Trial of CHW; **Med-** medication; **Min-** Minority; **mo-** months; **MXA-** Mexican American; **N-** number of studies; **n-** number of participants, **NDSR-**Nutrition Data System for Research Software; **NHLBI** – National Heart, Lung, and Blood Institute; **NIDDK-** National Institute for Diabetes and Digestive and Kidney Diseases; **PC-** primary care; **POC-** point of care; **Preg-** pregnant; **PRISMA-** Preferred Reporting Items for SR and MA; **Prg-** program; **pts-** patients; **r-** ration; **RA-** research assistant; **rel-** relationship; **RCT-** randomized controlled trials; **REACH-** Racial and Ethnic Approaches to Community Health; **sat-** satisfaction; **SDSCA-**summary of diabetes self-care activities; **SF-12-** Short form 12; **SFE-** self-efficacy; **SP-** Spanish; **SR-** systematic review; **SS-** statistically significant; **T2D-** Type II Diabetes Mellitus, **T1D-** type I Diabetes Mellitus; **trig-** triglycerides; **tx-** treatment; **UC-** usual care; **Unin-** uninsured; **V-** variable; **VDCHAASC-** Vanderbilt Diabetes Center Hormone Assay & Analytical Service Core; **Wt-** weight; **≠-** No improvement;

CULTURALLY-TAILORED DIABETES

Table 1

Evaluation Table

<p>Brown, S. (2013). Diabetes self-management and leptin in Mexican Americans with Type 2 Diabetes: The Starr County border health initiative</p> <p>Funded through grants from NIH</p> <p>Conflicts of interest not mentioned in article</p> <p>Bias not reported nor perceived</p> <p>USA</p>	<p>Does not say; however, can conclude behavioral change theory. Culturally focused theoretical frameworks may also be used</p>	<p>Design- Quantitative correlational secondary analysis from ongoing RCT</p> <p>Purpose- Characterize leptin in MXA with poorly con T2D; examine rel among leptin and T2D status (BMI and A1C); and explore the effects of CT DSME on leptin</p> <p>AR- secondary analysis from ongoing study</p>	<p>Sample- 252 in original study; n= 109 of a subsample had leptin levels completed at 12 mo</p> <p>Inclusion- verified T2D, 35-70,</p> <p>Exclusion- preg, maj com</p> <p>Setting- Starr County, TX; borders Nor Mex, maj of pop MXA; 38% live below poverty line; Med underserved area</p>	<p>IV- 26 educational CT DSME</p> <p>IV1- Male</p> <p>IV2- Female</p> <p>IV3-Time</p> <p>IV4- sex</p> <p>IV5- age</p> <p>Primary Outcomes</p> <p>DV1- Leptin</p> <p>DV2- A1C</p> <p>DV3- BMI</p> <p>Other measurements</p> <p>DV4- FBG</p> <p>* CG received UC; offered IV after 12 mo of initial study</p>	<p>DV1&2- fasting blood samples</p> <p>DV3-wt- balance beam scale, ht- stadiometer= BMI</p>	<p>SPSS 19.0</p> <p>Correlation and stepwise regression</p> <p>ANOVA</p> <p>2 tailed level of sig, P≤.05</p>	<p>Baseline findings of DV1-</p> <p>-DV1+DV2 (r = -0.23, p=.02, n=108), Weak direct association</p> <p>-DV1+DV3(r = 0.52, p<.001, n=109), Strong direct Association</p> <p>-DV1+IV2 (r= 0.38, p<.001, n =109), Moderate direct association</p> <p>DV1+DV4(r=-0.23, p=.02, n=109) Weak direct association</p> <p>-IV2>IV1 ↑DV1 (7.3±8.5ng/dl, n=39), t(107)=4.3, p<.001</p> <p>Stepwise Linear Regression</p> <p>- DV3, IV4, and DV2 attributed to 36% baseline DV1 variance-</p>	<p>LOE- II Strengths- extensive data and research on sex and BMI and correlation to leptin, CT does appear to make a difference with BMI and glycemia and participants appear more involved with CT DSME. Moderate correlation btwn leptin and BMI. Good study on MXA women and burden of DM.</p> <p>Weaknesses- I had no effect on DV1, needs more research to determine if leptin is useful determinant to improve T2D. Weak correlation btwn leptin and A1C and FBG. Further research needed. Did not include cost analysis.</p> <p>Conclusion- Improvement in lifestyle can improve gly con, however, in this study, only for 6 mo (was not ss at 12 mo). Leptin is higher in females and can ↑with wt gain, insulin/sulfa therapy. ↓with phy activity. Strong corr btwn BMI and leptin as well as moderate association with female gender and leptin.</p> <p>Application- Similar demographics. CT applicable. Did not report cost of leptin level analysis and therefore may not be cost effective.</p>
---	---	---	--	---	---	--	--	---

Act- activity; **adh-** adherence; **AHCQR** – Agency for Health Care Quality and Research; **AGM-** antiglycemic med; **Apo-** apolipoproteins; **AR-** attrition rate; **BF-** breastfeeding; **Biling-** bilingual; **BMI-** body mass index; **BP-** blood pressure; **BSM-** behavioral self-management; **btwn-** between; **BWT-** total body weight; **C-** community; **Cat-** categorical; **CBPR-** Community-based participatory research; **Cent-** center; **CES-D-** Center for epidemiological studies depression scale; **CG-** control group; **chg-** change; **CHW-** Community Health Worker; **CMA-** Cobas Mira Autoanalyzer; **CoDE-** Community diabetes education; **Com-** complications; **Con-** controlled; **CT-** culturally tailored; **DIALBEST-** Diabetes among Latinos best practices trials; **dev-** development; **DSME-** diabetes self-management education; **DV-** dependent variable; **dx-** diagnose(d); **eval-** evaluation; **FBG-** fasting blood glucose; **FG-** focus group; **FQHC-** Federally qualified health center; **FT-** full time; **F/u-** follow-up; **Glu-** glucose; **Gly-** glycemic; **GSM-** glucose sel-monitoring; **His-** Hispanic; **HOMA-IR-** homeostasis model assessment; **HPLP-** Primus Diagnostics boronate affinity high performance liquid chromatography method; **I-** intervention; **IDEALTel-** Informatics for Diabetes Education and Telemedicine; **IG-** interventional group; **imp-** implementation; **inc-** increase; **ind-** independent; **IV-** independent variable; **Lat-** Latino; **LCS-** longitudinal cohort study; **LHL-** low health literacy; **LME-** linear mixed effects; **LT-** life threatening; **MA-** meta-analysis; **MATCH-** MXA Trial of CHW; **Med-** medication; **Min-** Minority; **mo-** months; **MXA-** Mexican American; **N-** number of studies; **n-** number of participants; **NDSR-** Nutrition Data System for Research Software; **NHLBI** – National Heart, Lung, and Blood Institute; **NIDDK-** National Institute for Diabetes and Digestive and Kidney Diseases; **PC-** primary care; **POC-** point of care; **Preg-** pregnant; **PRISMA-** Preferred Reporting Items for SR and MA; **Prg-** program; **pts-** patients; **r-** ration; **RA-** research assistant; **rel-** relationship; **RCT-** randomized controlled trials; **REACH-** Racial and Ethnic Approaches to Community Health; **sat-** satisfaction; **SDSCA-** summary of diabetes self-care activities; **SF-12-** Short form 12; **SFE-** self-efficacy; **SP-** Spanish; **SR-** systematic review; **SS-** statistically significant; **T2D-** Type II Diabetes Mellitus; **T1D-** type I Diabetes Mellitus; **trig-** triglycerides; **tx-** treatment; **UC-** usual care; **Unin-** uninsured; **V-** variable; **VDCHAASC-** Vanderbilt Diabetes Center Hormone Assay & Analytical Service Core; **Wt-** weight; **≠-** No improvement; ***- ss**

CULTURALLY-TAILORED DIABETES

Table 1

Evaluation Table

							<p>(F(3,107)=19.7, p<.001) Contributors -DV3 26.6% p<.001 -IV4 4.9% p=.007 -DV2 4.8% p=.006 -IV3 effect was ss with baseline-3mo as ↑DV1 and not ss after 3 mo. I with IV3 had no ss on DV1. IV3 +IV4 had ss for IV2 with ↑in first 3 mo but ↓3-6 mo</p> <p>IV2 DV4 change baseline-12 mo ss predicted DV1 change (p<.05)</p> <p>IV1 DV3 change baseline-12 mo ss predicted DV1 change (p<.001)</p> <p>DV2 IV + DV2 (p=0.46*, n=106) at 6 mo and (p=.45, n=106) at 12 mo- not ss NO effect on leptin</p>
--	--	--	--	--	--	--	--

Act- activity; **adh-** adherence; **AHCQR** – Agency for Health Care Quality and Research; **AGM-** antiglycemic med; **Apo-** apolipoproteins; **AR-** attrition rate; **BF-** breastfeeding; **Biling-** bilingual; **BMI-** body mass index; **BP-** blood pressure; **BSM-** behavioral self-management; **btwn-** between; **BWT-** total body weight; **C-** community; **Cat-** categorical; **CBPR-** Community-based participatory research; **cen-** center; **CES-D-**Center for epidemiological studies depression scale; **CG-** control group; **chg-** change; **CHW-** Community Health Worker; **CMA-** Cobas Mira Autoanalyzer; **CoDE-** Community diabetes education; **Com-** complications; **Con-** controlled; **CT-** culturally tailored; **DIALBEST-**Diabetes among Latinos best practices trials; **dev-** development; **DSME-** diabetes self-management education; **DV-**dependent variable; **dx-** diagnose(d); **eval-** evaluation; **FBG-** fasting blood glucose; **FG-** focus group; **FQHC-** Federally qualified health center; **FT-** full time; **F/u-** follow-up; **Glu-** glucose; **Gly-** glyceimic; **GSM-** glucose sel-monitoring; **His-** Hispanic; **HOMA-IR-** homeostasis model assessment; **HPLP-** Primus Diagnostics boronate affinity high performance liquid chromatography method; **I-** intervention; **IDEALTel-** Informatics for Diabetes Education and Telemedicine; **IG-** interventional group; **imp-** implementation; **inc-** increase; **ind-** independent; **IV-** independent variable; **Lat-** Latino; **LCS-** longitudinal cohort study; **LHL-** low health literacy; **LME-** linear mixed effects; **LT-** life threatening; **MA-** meta-analysis; **MATCH-** MXA Trial of CHW; **Med-** medication; **Min-** Minority; **mo-** months; **MXA-** Mexican American; **N-** number of studies; **n-** number of participants, **NDSR-**Nutrition Data System for Research Software; **NHLBI** – National Heart, Lung, and Blood Institute; **NIDDK-** National Institute for Diabetes and Digestive and Kidney Diseases; **PC-** primary care; **POC-** point of care; **Preg-** pregnant; **PRISMA-** Preferred Reporting Items for SR and MA; **Prg-** program; **pts-** patients; **r-** ration; **RA-** research assistant; **rel-** relationship; **RCT-** randomized controlled trials; **REACH-** Racial and Ethnic Approaches to Community Health; **sat-** satisfaction; **SDSCA-**summary of diabetes self-care activities; **SF-12-** Short form 12; **SFE-** self-efficacy; **SP-** Spanish; **SR-** systematic review; **SS-** statistically significant; **T2D-** Type II Diabetes Mellitus, **T1D-** type I Diabetes Mellitus; **trig-** triglycerides; **tx-** treatment; **UC-** usual care; **Unin-** uninsured; **V-** variable; **VDCHAASC-** Vanderbilt Diabetes Center Hormone Assay & Analytical Service Core; **Wt-** weight; **≠-** No improvement; ***-** ss

CULTURALLY-TAILORED DIABETES

Table 1

Evaluation Table

<p>Brunk, D.R. (2017). A culturally appropriate self-management program for Hispanic adults with type 2 Diabetes and low health literacy skills</p> <p>Funding from financial award from Univ of VA School of Nursing No conflict of interest with research, authorship, publication</p> <p>Bias potential due to related to participant self-selection and facilitator was Spanish-speaking</p> <p>USA</p>	<p>Literature Appropriate current lit review with qual and quant studies identifying a gap and the need for culturally appropriate edu I</p>	<p>Study design- Qualitative study using a phenomenological approach to assess how T2D His adults with LHL skills feel about a DSME I</p> <p>Theoretical- Patient-Center Care model incorporating theories of behavioral change Cognitive, Attitudinal, Instrumental, Behavioral, Social. Culturally competent</p> <p>Method- FG using Active learning approach used for a lifestyle mod prog- simple structure focusing on GSM, low gly foods, and reducing sed behaviors/inc exercise</p>	<p>Sample N- 9 n- 8 c T2D n- 1 c fam identified by providers/staff, contacted by phone</p> <p>Inclusion- T2D, >18, Sp as primary lang, not preg</p> <p>Setting- rural CHC underserved area</p> <p>AR- 0</p>	<p>Data Collection <i>Descriptive Clarity</i></p> <p>Recorded feedback around 4 themes transcribed and placed in appropriate nodes. Narrative summary</p> <p>Author shares potential for bias and limitations</p>	<p>Data Collection <i>Procedural Rigor</i></p> <p>Recorded digitally</p> <p>4 2-hr class/focus group sessions</p> <p>Participants discussed experiences</p> <p>Interactive format</p> <p>Group discussion facilitation</p>	<p>Data Analysis Hermeneutical phenomenology approach</p> <p>Translations by <i>Mest interpreters</i>-unintelligible and unnecessary items omitted</p> <p>Transcriptions on NVivo10-common concepts- 4 maj nodes generated- data saturation</p> <ol style="list-style-type: none"> 1. Information and knowledge 2. Motivation and barriers to behavior change 3. Experiences with new self-management behaviors 4. Personal responsibility for disease management 	<p>Overall Rigor</p> <p>Credible- + member checking, group facilitator checking feedback with group members, authors met frequently</p> <p>Transferable-adequate description of setting, study, and sample</p> <p>Dependable-consistent findings r/t data, thoroughness in data reporting/findings</p> <p>Confirmable- high risk for bias due to participant self-selection and facilitator delivered content</p>	<p>LOE- VI</p> <p>Strengths- Improvement in self-awareness, findings supported previous research in DSME and empowerment, valid tool, attempt to ensure rigor, low AR</p> <p>Implications- importance of integrating culture competent care and appropriate level of health literacy to pts to ↓morbidity and mortality, esp in T2D Hip population,</p> <p>Limitations- Bias reported, small N, very low health literary skills than anticipated causing design/impl adjustment throughout study, short I</p> <p>Application- similar pts/clinic, repeated sentiments in both settings, nodes are applicable in DSME education</p>
---	---	--	--	--	---	--	--	---

Act- activity; **adh-** adherence; **AHCQR** – Agency for Health Care Quality and Research; **AGM-** antiglycemic med; **Apo-** apolipoproteins; **AR-** attrition rate; **BF-** breastfeeding; **Biling-** bilingual; **BMI-** body mass index; **BP-** blood pressure; **BSM-** behavioral self-management; **btwn-** between; **BWT-** total body weight; **C-** community; **Cat-** categorical; **CBPR-** Community-based participatory research; **cen-** center; **CES-D-**Center for epidemiological studies depression scale; **CG-** control group; **chg-** change; **CHW-** Community Health Worker; **CMA-** Cobas Mira Autoanalyzer; **CoDE-** Community diabetes education; **Com-** complications; **Con-** controlled; **CT-** culturally tailored; **DIALBEST-**Diabetes among Latinos best practices trials; **dev-** development; **DSME-** diabetes self-management education; **DV-**dependent variable; **dx-** diagnose(d); **eval-** evaluation; **FBG-** fasting blood glucose; **FG-** focus group; **FQHC-** Federally qualified health center; **FT-** full time; **F/u-** follow-up; **Glu-** glucose; **Gly-** glyceimic; **GSM-** glucose sel-monitoring; **His-** Hispanic; **HOMA-IR-** homeostasis model assessment; **HPLP-** Primus Diagnostics boronate affinity high performance liquid chromatography method; **I-** intervention; **IDEALTel-** Informatics for Diabetes Education and Telemedicine; **IG-** interventional group; **imp-** implementation; **inc-** increase; **ind-** independent; **IV-** independent variable; **Lat-** Latino; **LCS-** longitudinal cohort study; **LHL-** low health literacy; **LME-** linear mixed effects; **LT-** life threatening; **MA-** meta-analysis; **MATCH-** MXA Trial of CHW; **Med-** medication; **Min-** Minority; **mo-** months; **MXA-** Mexican American; **N-** number of studies; **n-** number of participants, **NDSR-**Nutrition Data System for Research Software; **NHLBI** – National Heart, Lung, and Blood Institute; **NIDDK-** National Institute for Diabetes and Digestive and Kidney Diseases; **PC-** primary care; **POC-** point of care; **Preg-** pregnant; **PRISMA-** Preferred Reporting Items for SR and MA; **Prg-** program; **pts-** patients; **r-** ration; **RA-** research assistant; **rel-** relationship; **RCT-** randomized controlled trials; **REACH-** Racial and Ethnic Approaches to Community Health; **sat-** satisfaction; **SDSCA-**summary of diabetes self-care activities; **SF-12-** Short form 12; **SFE-** self-efficacy; **SP-** Spanish; **SR-** systematic review; **SS-** statistically significant; **T2D-** Type II Diabetes Mellitus; **T1D-** type I Diabetes Mellitus; **trig-** triglycerides; **tx-** treatment; **UC-** usual care; **Unin-** uninsured; **V-** variable; **VDCHAASC-** Vanderbilt Diabetes Center Hormone Assay & Analytical Service Core; **Wt-** weight; **≠-** No improvement; ***-** ss

CULTURALLY-TAILORED DIABETES

Table 1

Evaluation Table

<p>Chukwueke, I. (2012). The <i>En Balance</i> Spanish diabetes education program improves apolipoproteins, serum glucose, and body composition in Hispanic diabetics</p> <p>Funded by grants Health Service Research and NIH award</p> <p>Conflicts of interest not mentioned in article</p> <p>Bias not reported nor perceived</p> <p>USA</p>	<p>Does not say; however, can deduce self-management theory.</p> <p>Culturally focused theoretical frameworks may also have been used</p>	<p>Design- Quantitative Quasi-experimental LCS</p> <p>Purpose- to identify if a CT education prog targeting His would improve gly control as well as chol, wt, and fat distribution over a 3 mo time</p> <p>AR- 23% rate (10 dropped due to lack of transportation)</p>	<p>N= 44 T2D His adults initially, 34 completed and included in results</p> <p>Inclusion- T2D for > 5 years, BMI 21-47 kg/m²</p> <p>Excluded- preg, BF, hx of drug/ETOH, impaired mental status, glucocorticoid therapy, unstable CV/hepatic/neuro/endocrine/or maj systemic disease; pacemakers</p> <p>Setting- Does not mention</p>	<p>IV- Participation in <i>En Balance</i> program</p> <p>DV1- FPG DV2- A1C DV3- insulin DV4- chol DV5- HDL DV6- LDL DV7- chol/HDL r DV8- Trig DV9- Apo A1 DV10- Apo A2 DV11- Apo C2 DV12- Apo C3 DV13- Apo E DV14- BMI DV15- BWT DV16- DXA, trunk fat kg DV17- DXA, trunk fat % DV18- DXA, total fat kg DV19-DXA, total lean mass kg DV20- total fat, %</p> <p>* No control present</p>	<p>Body composition-DXA scan</p> <p>Fasting blood samples\</p> <p>Southwestern Food Frequency questionnaire</p> <p>Dietary intake-Metabolize Nutrient Anaylsis System</p> <p>DV15- balance scale Ht- stadiometer</p>	<p>SPSS</p> <p>Log transformations</p> <p>Spearman's product-moment Correlation</p> <p>Sample t tests</p> <p>DV1-DV13 P<.005*(ss)</p> <p>DV14-DV20 P<.01*(ss)</p>	<p>Baseline-3 mo changes-</p> <p>DV1- ↓95% CI (8.43,37.99) p=.003*</p> <p>DV2- ↓95% CI (.43,1.16) p<.001*</p> <p>DV3- ↓95%CI (-1.84,2.53), p=.753,</p> <p>DV4- ↓95%CI (-6.81,17.99), p=.366,</p> <p>DV5-↑95%CI (-6.80,-1.62) p=.002* (p<.005)</p> <p>DV6-↓95%CI (-4.62,14.57), p=.300</p> <p>DV7-↑95%CI (.20, .77) P<.001*</p> <p>DV8- ↓95%CI (-9.56,56.44), p=.158</p> <p>DV9-↑95%CI (-60.66,32.94) p=.551</p> <p>DV10-↑95%CI (-25.41,16.56) p=.671</p> <p>DV11-↑95%CI (-25.72,11.36) p=.437</p> <p>DV12- ↓95%CI (-13.74,15.45), p=.906</p> <p>DV13- ↓95%CI (-10.60,3.39), p=.302,</p> <p>DV14- ↓95% CI (-.14,1.04) p=.132</p> <p>DV15- ↓95%CI(.20, 1.68)p=.015*</p>	<p>LOE- IV</p> <p>Strengths- validated tools, reliable, improved gly con, improved wt, lipids, chol, CT DM prog improves DM, thorough in explanation of apo in relation to DM. Direct relationship among variables of FPG and A1C, chol and Apo E, and Apo A1and ApoA2.</p> <p>Weaknesses- short term, lack of CG which may question reliability, no cost analysis for apol, methods did not seem as rigorous as other studies, not high level of evidence, small N with no reported power analysis, brief I overview</p> <p>Conclusion- application of CT DSME prog targeting His pop can have a positive impact on DV that impact DM, especially A1C, wt, certain chol./lipid levels</p> <p>Application- CT prog feasible, apo tests unlikely feasible, similar pts,</p>
---	---	--	---	--	--	---	---	---

Act- activity; **adh-** adherence; **AHCQR** – Agency for Health Care Quality and Research; **AGM-** antiglycemic med; **Apo-** apolipoproteins; **AR-** attrition rate; **BF-** breastfeeding; **Biling-** bilingual; **BMI-** body mass index; **BP-** blood pressure; **BSM-** behavioral self-management; **btwn-** between; **BWT-** total body weight; **C-** community; **Cat-** categorical; **CBPR-** Community-based participatory research; **Cent-** center; **CES-D-** Center for epidemiological studies depression scale; **CG-** control group; **chg-** change; **CHW-** Community Health Worker; **CMA-** Cobas Mira Autoanalyzer; **CoDE-** Community diabetes education; **Com-** complications; **Con-** controlled; **CT-** culturally tailored; **DIALBEST-** Diabetes among Latinos best practices trials; **dev-** development; **DSME-** diabetes self-management education; **DV-** dependent variable; **dx-** diagnose(d); **eval-** evaluation; **FBG-** fasting blood glucose; **FG-** focus group; **FQHC-** Federally qualified health center; **FT-** full time; **F/u-** follow-up; **Glu-** glucose; **Gly-** glyceic; **GSM-** glucose sel-monitoring; **His-** Hispanic; **HOMA-IR-** homeostasis model assessment; **HPLP-** Primus Diagnostics boronate affinity high performance liquid chromatography method; **I-** intervention; **IDEALTel-** Informatics for Diabetes Education and Telemedicine; **IG-** interventional group; **imp-** implementation; **inc-** increase; **ind-** independent; **IV-** independent variable; **Lat-** Latino; **LCS-** longitudinal cohort study; **LHL-** low health literacy; **LME-** linear mixed effects; **LT-** life threatening; **MA-** meta-analysis; **MATCH-** MXA Trial of CHW; **Med-** medication; **Min-** Minority; **mo-** months; **MXA-** Mexican American; **N-** number of studies; **n-** number of participants, **NDSR-** Nutrition Data System for Research Software; **NHLBI** – National Heart, Lung, and Blood Institute; **NIDDK-** National Institute for Diabetes and Digestive and Kidney Diseases; **PC-** primary care; **POC-** point of care; **Preg-** pregnant; **PRISMA-** Preferred Reporting Items for SR and MA; **Prg-** program; **pts-** patients; **r-** ration; **RA-** research assistant; **rel-** relationship; **RCT-** randomized controlled trials; **REACH-** Racial and Ethnic Approaches to Community Health; **sat-** satisfaction; **SDSCA-** summary of diabetes self-care activities; **SF-12-** Short form 12; **SFE-** self-efficacy; **SP-** Spanish; **SR-** systematic review; **SS-** statistically significant; **T2D-** Type II Diabetes Mellitus; **T1D-** type I Diabetes Mellitus; **trig-** triglycerides; **tx-** treatment; **UC-** usual care; **Unin-** uninsured; **V-** variable; **VDCHAASC-** Vanderbilt Diabetes Center Hormone Assay & Analytical Service Core; **Wt-** weight; **≠-** No improvement; ***-** ss

CULTURALLY-TAILORED DIABETES

Table 1

Evaluation Table

							<p>DV16- ↓95% CI (.27,.95)p=.001*</p> <p>DV17- ↓95% CI (.28,1.31)p=.003*</p> <p>DV18- ↓95% CI (.43,1.38)p=.000*</p> <p>DV19-↓95% CI (-.21,.66)p=.000*</p> <p>DV20-↓95% CI (.22,.97)p=.003*</p> <p>DV9+DV10- r=.559, p<.001 Direct strong relationship</p> <p>DV13+DV4= r=.746, p<.001 Direct strong relationship</p> <p>DV2+DV1= r.563, p=.001 Direct moderate relationship</p>	
<p>Ferguson, S. (2015). Does diabetes self-management education in conjunction with primary care improve glycemic control in Hispanic patients? A systematic and Meta-analysis</p> <p>Funding N/A Conflicts of interest not mentioned in article</p>	<p>Does not say; however, can deduce self-management theory</p>	<p>Design- Quantitative SR and MA. PRISMA guidelines Purpose- evaluate the effectiveness of DSME intervention delivered in conjunction with</p>	<p>N= 625 studies identified SR n= 13 MA n= 11</p> <p>N- 2976 T2D</p> <p>Inclusion- education in PC or community setting, needed regular PC f/u</p>	<p>IV- DSME IV1- DSME design IV2- CT IV3- provider type IV4- duration IV5- DSME provider contact hrs IV6- attendance (attrition) IV7- setting IV8- PCP involvement IV9- country of origin</p>	<p>Cochrane Collaboration’s tool for RCT bias</p>	<p>MA Random effects MA model</p> <p>Effect size</p> <p>Cochrane Q and I stats</p> <p>Subgroup analysis to</p>	<p>Subgroup analysis- no ss diff for IV4 and IV5 (However, IV had a ss ↓in DV when ≥12 mo I duration) IV1+DV- p<.001* btwn groups (95% CI) IV2- DV-p<.001* btwn groups</p>	<p>LOE- 1 Strengths- well designed, rigorous study, current literature, valid tools, well described study findings, Medium effect size in reducing A1C levels from baseline to post I Weaknesses- DV only assessed in detail in one study, short f/u in half of studies, heterogeneity btwn studies which did not allow for conclusive DSME style</p>

Act- activity; **adh-** adherence; **AHCQR** – Agency for Health Care Quality and Research; **AGM-** antiglycemic med; **Apo-** apolipoproteins; **AR-** attrition rate; **BF-** breastfeeding; **Biling-** bilingual; **BMI-** body mass index; **BP-** blood pressure; **BSM-** behavioral self-management; **btwn-** between; **BWT-** total body weight; **C-** community; **Cat-** categorical; **CBPR-** Community-based participatory research; **Cent-** center; **CES-D-**Center for epidemiological studies depression scale; **CG-** control group; **chg-** change; **CHW-** Community Health Worker; **CMA-** Cobas Mira Autoanalyzer; **CoDE-** Community diabetes education; **Com-** complications; **Con-** controlled; **CT-** culturally tailored; **DIALBEST-**Diabetes among Latinos best practices trials; **dev-** development; **DSME-** diabetes self-management education; **DV-**dependent variable; **dx-** diagnose(d); **eval-** evaluation; **FBG-** fasting blood glucose; **FG-** focus group; **FQHC-** Federally qualified health center; **FT-** full time; **F/u-** follow-up; **Glu-** glucose; **Gly-** glyceic; **GSM-** glucose sel-monitoring; **His-** Hispanic; **HOMA-IR-** homeostasis model assessment; **HPLP-** Primus Diagnostics boronate affinity high performance liquid chromatography method; **I-** intervention; **IDEALTel-** Informatics for Diabetes Education and Telemedicine; **IG-** interventional group; **imp-** implementation; **inc-** increase; **ind-** independent; **IV-** independent variable; **Lat-** Latino; **LCS-** longitudinal cohort study; **LHL-** low health literacy; **LME-** linear mixed effects; **LT-** life threatening; **MA-** meta-analysis; **MATCH-** MXA Trial of CHW; **Med-** medication; **Min-** Minority; **mo-** months; **MXA-** Mexican American; **N-** number of studies; **n-** number of participants, **NDSR-**Nutrition Data System for Research Software; **NHLBI** – National Heart, Lung, and Blood Institute; **NIDDK-** National Institute for Diabetes and Digestive and Kidney Diseases; **PC-** primary care; **POC-** point of care; **Preg-** pregnant; **PRISMA-** Preferred Reporting Items for SR and MA; **Prg-** program; **pts-** patients; **r-** ration; **RA-** research assistant; **rel-** relationship; **RCT-** randomized controlled trials; **REACH-** Racial and Ethnic Approaches to Community Health; **sat-** satisfaction; **SDSCA-**summary of diabetes self-care activities; **SF-12-** Short form 12; **SFE-** self-efficacy; **SP-** Spanish; **SR-** systematic review; **SS-** statistically significant; **T2D-** Type II Diabetes Mellitus, **T1D-** type I Diabetes Mellitus; **trig-** triglycerides; **tx-** treatment; **UC-** usual care; **Unin-** uninsured; **V-** variable; **VDCHAASC-** Vanderbilt Diabetes Center Hormone Assay & Analytical Service Core; **Wt-** weight; **≠-** No improvement; * - ss

CULTURALLY-TAILORED DIABETES

Table 1

Evaluation Table

<p>Bias not reported nor perceived</p> <p>USA</p>		<p>PC among His adults c T2D</p>	<p>Exclusion- primary prevention, no gly con as outcome, non-English, duplicate sample populations, CG with other intervention other than PC</p> <p>Setting- PCP clinics</p>	<p>DV- A1C</p>		<p>examine heterogeneity</p> <p>Funnel plot and N test for bias</p>	<p>IV3+DV-p<.001* btwn groups (95% CI)</p> <p>IV6+DV-p<.001* btwn groups</p> <p>IV9+DV-p<.001* btwn groups (and p<.001* reported for Puerto Ricans having ss ↓in DV with 95% CI - 1.23,0.48 and Cochran Q of 32.6)</p> <p>No reports of IV7 and IV*</p> <p>MA- pooled effects -.02 (95% CI, -0.42 to -0.07, p=.01)- sm effect size</p> <p>Heterogeneity- high within and btwn (Cochrane Q=45.8, p<.001, I²=78.2)</p> <p>Sensitivity analysis- widened correlation assumption from 0.25 to 0.75 btwn and postI A1C values- pooled effect -0.25 (95% CI, -0.42 to -0.07) and -0.34 (95% CI,</p>	<p>Conclusion- Glyc con can be achieved with HIS pop in PC setting with DSME that is CT. No ss in regards to I duration and provider contact hrs. SS shown with design, CT, provider type, attendance to class, and country of origin</p> <p>Application- applicable to PICOT and clinic setting, similar patients, feasible information, need more research on appropriate DSME style</p>
---	--	----------------------------------	--	-----------------------	--	---	--	--

Act- activity; **adh-** adherence; **AHCQR** – Agency for Health Care Quality and Research; **AGM-** antiglycemic med; **Apo-** apolipoproteins; **AR-** attrition rate; **BF-** breastfeeding; **Biling-** bilingual; **BMI-** body mass index; **BP-** blood pressure; **BSM-** behavioral self-management; **btwn-** between; **BWT-** total body weight; **C-** community; **Cat-** categorical; **CBPR-** Community-based participatory research; **Cent-** center; **CES-D-**Center for epidemiological studies depression scale; **CG-** control group; **chg-** change; **CHW-** Community Health Worker; **CMA-** Cobas Mira Autoanalyzer; **CoDE-** Community diabetes education; **Com-** complications; **Con-** controlled; **CT-** culturally tailored; **DIALBEST-**Diabetes among Latinos best practices trials; **dev-** development; **DSME-** diabetes self-management education; **DV-**dependent variable; **dx-** diagnose(d); **eval-** evaluation; **FBG-** fasting blood glucose; **FG-** focus group; **FQHC-** Federally qualified health center; **FT-** full time; **F/u-** follow-up; **Glu-** glucose; **Gly-** glyceimic; **GSM-** glucose sel-monitoring; **His-** Hispanic; **HOMA-IR-** homeostasis model assessment; **HPLP-** Primus Diagnostics boronate affinity high performance liquid chromatography method; **I-** intervention; **IDEALTel-** Informatics for Diabetes Education and Telemedicine; **IG-** interventional group; **imp-** implementation; **inc-** increase; **ind-** independent; **IV-** independent variable; **Lat-** Latino; **LCS-** longitudinal cohort study; **LHL-** low health literacy; **LME-** linear mixed effects; **LT-** life threatening; **MA-** meta-analysis; **MATCH-** MXA Trial of CHW; **Med-** medication; **Min-** Minority; **mo-** months; **MXA-** Mexican American; **N-** number of studies; **n-** number of participants, **NDSR-**Nutrition Data System for Research Software; **NHLBI** – National Heart, Lung, and Blood Institute; **NIDDK-** National Institute for Diabetes and Digestive and Kidney Diseases; **PC-** primary care; **POC-** point of care; **Preg-** pregnant; **PRISMA-** Preferred Reporting Items for SR and MA; **Prg-** program; **pts-** patients; **r-** ration; **RA-** research assistant; **rel-** relationship; **RCT-** randomized controlled trials; **REACH-** Racial and Ethnic Approaches to Community Health; **sat-** satisfaction; **SDSCA-**summary of diabetes self-care activities; **SF-12-** Short form 12; **SFE-** self-efficacy; **SP-** Spanish; **SR-** systematic review; **SS-** statistically significant; **T2D-** Type II Diabetes Mellitus, **T1D-** type I Diabetes Mellitus; **trig-** triglycerides; **tx-** treatment; **UC-** usual care; **Unin-** uninsured; **V-** variable; **VDCHAASC-** Vanderbilt Diabetes Center Hormone Assay & Analytical Service Core; **Wt-** weight; **≠-** No improvement; ***-** ss

CULTURALLY-TAILORED DIABETES

Table 1

Evaluation Table

							-0.57 to -0.10)- sm effect size Publication bias not present	
<p>Heisler, M. (2014). Comparison of community health worker-led diabetes medication decision-making support for low-income Latino and African American adults with diabetes using e-Health tools versus print materials: A randomized Control trial</p> <p>Funded by AHCQR and NIDDK</p> <p>Conflicts of interest not mentioned in article</p> <p>Potential bias- one center studied, CHWs were BH specialist- may reduce need for support resources</p> <p>USA</p>	<p>Guiding framework- The REACH Detroit partnership used CBPR principles for the dev, imp, and eval</p>	<p>Design- Quantitative experimental computerized randomization RCT. All blinded initially; RA remained blinded</p> <p>Purpose- to examine outcomes btwn CHW use of tailored interactive i-tool vs printed material</p> <p>AR- 6% (12, 6 from each arm, los to f/u)</p>	<p>N- 188 IG n- 93 CG n- 95</p> <p>Inclusion- A1C >7.5% in past 6 mo or concerned about T2D med during assessment</p> <p>Exclusion- < 21, terminal H, ETOH or drug abuse, condition affecting participation, preg, and no answer by phone</p> <p>Setting- FQHC in SW Detroit serving 13,000 pts with 47,099 visits in 2012</p>	<p>IV1-- CHW + iDecide IV2- CHW + printed material</p> <p>DV1- Improved med decision conflict DV2- AGM knowledge DV3- sat c clarity AGM info DV4- sat c helpful in AGM info DV5- SFE DV6- chg in T2D distress DV7- med adh DV8- A1C</p>	<p>Self-reported measures via survey 0-100</p> <p>DV8- Bayer DCA 2000+ point of care</p>	<p>Two-sided tests btwn iDecide & printed</p> <p>T-tests for normally distributed scales</p> <p>Wilcoxon rank-sum tests for non-distributed</p> <p>Person's chi-square</p> <p>ES- 0.30-0.40 in primary outcomes</p> <p>P=0.05</p>	<p>Baseline-3mo (95% CI) IV1 + DV1- Improvement (p<.001) IV2+DV1- Improvement (p<.001) *Btwn groups not ss (p=0.3)</p> <p>IV1+ DV2- ↑ (p<.001) IV2+DV2- ↑ (p<.001) *Btwn groups not ss (p=0.51) IV1 +DV3- ↑ (p<.001) IV2 + DV3- ↑ (p<.001) *ss btwn groups (p=0.03)</p> <p>IV1+DV4- ↑(p<.001) IV2+DV4- ↑(p<.001) *ss btwn groups (p=0.007)</p>	<p>LOE- II</p> <p>Strengths-appropriately powered, valid and reliable stat analysis, all primary outcomes had ss within group outcomes, esp IG regarding DM distress, IG & CG both improved with CHW in outcomes,</p> <p>Weaknesses-A1C not primary outcome and short f/u outcome measure of 3 mo</p> <p>Self-reported surveys for measurable outcomes, only ss btwn groups that remained after multiple stat analysis was DM distress (IG improved)</p> <p>Conclusion- CT DSME has positive outcomes on lower health literacy and minority groups. This study showed the outcomes of a CHW-led prg using technology vs printed materials and both groups improved in maj of outcomes which may be correlated with the use of a CHW</p> <p>Application- very similar demographics, current clinic uses printed materials. Feasible to use a CHW to lead a CT DSME program. Because current clinic is low resourced, this study shows that printed resources can be beneficial in connection with a CHW (or CT). Low</p>

Act- activity; **adh-** adherence; **AHCQR** – Agency for Health Care Quality and Research; **AGM-** antiglycemic med; **Apo-** apolipoproteins; **AR-** attrition rate; **BF-** breastfeeding; **Biling-** bilingual; **BMI-** body mass index; **BP-** blood pressure; **BSM-** behavioral self-management; **btwn-** between; **BWT-** total body weight; **C-** community; **Cat-** categorical; **CBPR-** Community-based participatory research; **Cent-** center; **CES-D-** Center for epidemiological studies depression scale; **CG-** control group; **chg-** change; **CHW-** Community Health Worker; **CMA-** Cobas Mira Autoanalyzer; **CoDE-** Community diabetes education; **Com-** complications; **Con-** controlled; **CT-** culturally tailored; **DIALBEST-** Diabetes among Latinos best practices trials; **dev-** development; **DSME-** diabetes self-management education; **DV-** dependent variable; **dx-** diagnose(d); **eval-** evaluation; **FBG-** fasting blood glucose; **FG-** focus group; **FQHC-** Federally qualified health center; **FT-** full time; **F/u-** follow-up; **Glu-** glucose; **Gly-** glyceic; **GSM-** glucose sel-monitoring; **His-** Hispanic; **HOMA-IR-** homeostasis model assessment; **HPLP-** Primus Diagnostics boronate affinity high performance liquid chromatography method; **I-** intervention; **IDEALTel-** Informatics for Diabetes Education and Telemedicine; **IG-** interventional group; **imp-** implementation; **inc-** increase; **ind-** independent; **IV-** independent variable; **Lat-** Latino; **LCS-** longitudinal cohort study; **LHL-** low health literacy; **LME-** linear mixed effects; **LT-** life threatening; **MA-** meta-analysis; **MATCH-** MXA Trial of CHW; **Med-** medication; **Min-** Minority; **mo-** months; **MXA-** Mexican American; **N-** number of studies; **n-** number of participants, **NDSR-** Nutrition Data System for Research Software; **NHLBI** – National Heart, Lung, and Blood Institute; **NIDDK-** National Institute for Diabetes and Digestive and Kidney Diseases; **PC-** primary care; **POC-** point of care; **Preg-** pregnant; **PRISMA-** Preferred Reporting Items for SR and MA; **Prg-** program; **pts-** patients; **r-** ration; **RA-** research assistant; **rel-** relationship; **RCT-** randomized controlled trials; **REACH-** Racial and Ethnic Approaches to Community Health; **sat-** satisfaction; **SDSCA-** summary of diabetes self-care activities; **SF-12-** Short form 12; **SFE-** self-efficacy; **SP-** Spanish; **SR-** systematic review; **SS-** statistically significant; **T2D-** Type II Diabetes Mellitus; **T1D-** type I Diabetes Mellitus; **trig-** triglycerides; **tx-** treatment; **UC-** usual care; **Unin-** uninsured; **V-** variable; **VDCHAASC-** Vanderbilt Diabetes Center Hormone Assay & Analytical Service Core; **Wt-** weight; **≠-** No improvement; ***- ss**

CULTURALLY-TAILORED DIABETES

Table 1

Evaluation Table

							<p>IV1+DV5- ↑(p<.001) IV2+DV5- ↑(p=0.002) *not ss btwn groups (0.13)</p> <p>IV1+DV6- Improved (p<0.001) IV2+DV6- No improvement (p=0.555) *ss btwn groups (p<0.001)</p> <p>IV1+DV7- ↑ (p=0.036) IV2+DV7- ↑(P<0.001) *not ss btwn groups (p=0.33)</p> <p>IV1+DV8- ↓(p=0.001) IV2+DV8- ↓(p=0.016) *not ss btwn group (p=0.46)</p>	<p>rates of med adh at current clinic and this study had a ss improvement in med adh with printed materials</p>
Ockene, I.S. (2012). Outcomes of a Latino community-based intervention for the prevention of diabetes: The	Social cognitive theory and patient-centered counseling	Design- Quantitative experimental RCT into IG or CG using random block design	N- 312 adults at risk for T2D IG n- 162 CG n- 150 Inclusion- ≥25, BMI ≥24; >	IV- Lifestyle I care (nutrition + exercise) DV1- wt loss DV2- A1C	DV1- BMI DV2- HPLP DV3&4- CMA DV5- VDCHAASC	T-tests for normal distributed measures Rank tests for skewed	At 1 yr IV+DV1 ↓ compared to CG+DV1 (p=.004) IV+DV2 ↓ compared to CG	LOE- II Strengths- high level of study, IG showed reduction in primary outcomes and insulin resistance, good collaboration amongst partners, low attrition, adequate N

Act- activity; **adh-** adherence; **AHCQR** – Agency for Health Care Quality and Research; **AGM-** antiglycemic med; **Apo-** apolipoproteins; **AR-** attrition rate; **BF-** breastfeeding; **Biling-** bilingual; **BMI-** body mass index; **BP-** blood pressure; **BSM-** behavioral self-management; **btwn-** between; **BWT-** total body weight; **C-** community; **Cat-** categorical; **CBPR-** Community-based participatory research; **Cent-** center; **CES-D-** Center for epidemiological studies depression scale; **CG-** control group; **chg-** change; **CHW-** Community Health Worker; **CMA-** Cobas Mira Autoanalyzer; **CoDE-** Community diabetes education; **Com-** complications; **Con-** controlled; **CT-** culturally tailored; **DIALBEST-** Diabetes among Latinos best practices trials; **dev-** development; **DSME-** diabetes self-management education; **DV-** dependent variable; **dx-** diagnose(d); **eval-** evaluation; **FBG-** fasting blood glucose; **FG-** focus group; **FQHC-** Federally qualified health center; **FT-** full time; **F/u-** follow-up; **Glu-** glucose; **Gly-** glyceic; **GSM-** glucose sel-monitoring; **His-** Hispanic; **HOMA-IR-** homeostasis model assessment; **HPLP-** Primus Diagnostics boronate affinity high performance liquid chromatography method; **I-** intervention; **IDEALTel-** Informatics for Diabetes Education and Telemedicine; **IG-** interventional group; **imp-** implementation; **inc-** increase; **ind-** independent; **IV-** independent variable; **Lat-** Latino; **LCS-** longitudinal cohort study; **LHL-** low health literacy; **LME-** linear mixed effects; **LT-** life threatening; **MA-** meta-analysis; **MATCH-** MXA Trial of CHW; **Med-** medication; **Min-** Minority; **mo-** months; **MXA-** Mexican American; **N-** number of studies; **n-** number of participants, **NDSR-** Nutrition Data System for Research Software; **NHLBI** – National Heart, Lung, and Blood Institute; **NIDDK-** National Institute for Diabetes and Digestive and Kidney Diseases; **PC-** primary care; **POC-** point of care; **Preg-** pregnant; **PRISMA-** Preferred Reporting Items for SR and MA; **Prg-** program; **pts-** patients; **r-** ration; **RA-** research assistant; **rel-** relationship; **RCT-** randomized controlled trials; **REACH-** Racial and Ethnic Approaches to Community Health; **sat-** satisfaction; **SDSCA-** summary of diabetes self-care activities; **SF-12-** Short form 12; **SFE-** self-efficacy; **SP-** Spanish; **SR-** systematic review; **SS-** statistically significant; **T2D-** Type II Diabetes Mellitus, **T1D-** type I Diabetes Mellitus; **trig-** triglycerides; **tx-** treatment; **UC-** usual care; **Unin-** uninsured; **V-** variable; **VDCHAASC-** Vanderbilt Diabetes Center Hormone Assay & Analytical Service Core; **Wt-** weight; **≠-** No improvement; ***-** ss

CULTURALLY-TAILORED DIABETES

Table 1

Evaluation Table

Lawrence Latino diabetes prevention project Research supported by NIDDK. One author was also supported by the NHLBI Conflicts of interest not mentioned in article No bias reported or perceived USA		Purpose- effectiveness of comm based, literacy sensitive, CT lifestyle I on wt loss and T2D risk reduction amongst Lat AR- 6.8% from IG; 4.7% from CG; 5 additional were excluded after completion 94% completion rate	30% likelihood of being dx with T2D in next 7.5 yrs (predictive formula) Exclusion- inability to walk 5 blocks, life-limiting med condition or taking meds that may interfere with the assessment of T2D risk Setting- Lawrence, MA; 60% Latino community; 11.8% T2D prevalence amongst Latinos	(primary outcomes; measured at baseline and at 1 yr) Secondary outcomes DV3- lipids DV4- glucose DV5- insulin DV6- BP DV7- dietary assessment DV8- exercise DV9- quality of life/depression scores * CG received UC	DV6-Mean of 2 reads DV7- NDSR 24 hr recall DV8- expenditure calc DV9- CES-D and SF-12 Insulin resistance- HOMA-IR calc (not powered for clinical T2D outcome)	Fisher's for cat Regression analysis for time	(p=.009) resulting in ss correlation of DV1 & ↓DV2 (r=0.41)- mod effect IV +DV5 & DV1 ss correlation (r= 0.32, p<.001) mod effect IV+DV7- improvement in ↓kcal from fat than CG (p=.04), ↓kcal from sat fat (p=.08) and ↑in fiber (p=.07) IG & CG ↓depressive symptoms Wt changes ss with group attendance (r=-0.37, p<.001) indirect mod effect	Weaknesses- no assigned p-value, not as effective as a previous T2D prevention prg, mainly focused on Carribbean Lat, no DV8 improvement, no ss changes in DV4 (FBG), short f/u, unable to measure understanding of T2D due to lack of validated tool, low attendance to group sessions, Conclusions- although not designed for DM risk, those in IG had lesser risk of developing DM (p=.32)- mod effect. Study showed ss, with mod effect on I and wt loss and A1C levels indicating that CT DSME can reduce risk of DM. Application- low cost, few personnel needed, study done in uninsured community clinic- applicable to PICOT, very similar clinic. Although used for prevention, can also apply towards prediabetics in clinic or those who are moderately controlled
Perez-Escamilla, P. (2015). Impact of a Community Health Workers-Led Structured Program on Blood Glucose Control Among Latinos with Type 2 Diabetes: The DIALBEST Trial	Theoretical theory-behavioral change theory	Design- Quantitative experimental Parallel community based RCT, block randomization computer	N= 211 adult Lat with poorly con T2D CG n= 106 IG n= 105 Inclusion- >21, Dx of T2D, 12 mo, lived in Hartford, CT,	IV- 17 CHW home visits based culturally tailored T2D education IV1- T2D comp IV2- healthy life IV3- nutrition IV4- healthy food/diet IV5- GSM IV6- med adh	DV1- A1CNow POC DV2-6- venipuncture for biomarkers DV7- kg DV8- sphygmomano meter	Cont V- linear regression Cat V- logistic regression Baseline comp btwn arms- X ² and ANOVA	IV +DV1- SS ↓in 18 mo (3 mo, 6 mo, 12 mo, 18 mo respectively)(p = 0.043, 0.050, 0.021, 0.009) compared to CG.	LOE- II Strengths- well designed RCT, f/u of 1 yr with 6 mo post-I maintenance-evaluate sustainability, strong internal validity, reduction in DV1 achieved, integrated CHW as part of med team, CHWs highly educated about T2D Weaknesses- focused mainly on PR/DR ethnicity, medical plan data

Act- activity; **adh-** adherence; **AHCQR** – Agency for Health Care Quality and Research; **AGM-** antiglycemic med; **Apo-** apolipoproteins; **AR-** attrition rate; **BF-** breastfeeding; **Biling-** bilingual; **BMI-** body mass index; **BP-** blood pressure; **BSM-** behavioral self-management; **btwn-** between; **BWT-** total body weight; **C-** community; **Cat-** categorical; **CBPR-** Community-based participatory research; **Cent-** center; **CES-D-** Center for epidemiological studies depression scale; **CG-** control group; **chg-** change; **CHW-** Community Health Worker; **CMA-** Cobas Mira Autoanalyzer; **CoDE-** Community diabetes education; **Com-** complications; **Con-** controlled; **CT-** culturally tailored; **DIALBEST-** Diabetes among Latinos best practices trials; **dev-** development; **DSME-** diabetes self-management education; **DV-** dependent variable; **dx-** diagnose(d); **eval-** evaluation; **FBG-** fasting blood glucose; **FG-** focus group; **FQHC-** Federally qualified health center; **FT-** full time; **F/u-** follow-up; **Glu-** glucose; **Gly-** glyceimic; **GSM-** glucose sel-monitoring; **His-** Hispanic; **HOMA-IR-** homeostasis model assessment; **HPLP-** Primus Diagnostics boronate affinity high performance liquid chromatography method; **I-** intervention; **IDEALTel-** Informatics for Diabetes Education and Telemedicine; **IG-** interventional group; **imp-** implementation; **inc-** increase; **ind-** independent; **IV-** independent variable; **Lat-** Latino; **LCS-** longitudinal cohort study; **LHL-** low health literacy; **LME-** linear mixed effects; **LT-** life threatening; **MA-** meta-analysis; **MATCH-** MXA Trial of CHW; **Med-** medication; **Min-** Minority; **mo-** months; **MXA-** Mexican American; **N-** number of studies; **n-** number of participants, **NDSR-** Nutrition Data System for Research Software; **NHLBI** – National Heart, Lung, and Blood Institute; **NIDDK-** National Institute for Diabetes and Digestive and Kidney Diseases; **PC-** primary care; **POC-** point of care; **Preg-** pregnant; **PRISMA-** Preferred Reporting Items for SR and MA; **Prg-** program; **pts-** patients; **r-** ration; **RA-** research assistant; **rel-** relationship; **RCT-** randomized controlled trials; **REACH-** Racial and Ethnic Approaches to Community Health; **sat-** satisfaction; **SDSCA-** summary of diabetes self-care activities; **SF-12-** Short form 12; **SFE-** self-efficacy; **SP-** Spanish; **SR-** systematic review; **SS-** statistically significant; **T2D-** Type II Diabetes Mellitus; **T1D-** type I Diabetes Mellitus; **trig-** triglycerides; **tx-** treatment; **UC-** usual care; **Unin-** uninsured; **V-** variable; **VDCHAASC-** Vanderbilt Diabetes Center Hormone Assay & Analytical Service Core; **Wt-** weight; **≠-** No improvement; ***-** ss

CULTURALLY-TAILORED DIABETES

Table 1

Evaluation Table

<p>Funded by NIH Min Health and Health Disparities Institute</p> <p>No conflicts of interest noted</p> <p>Possible bias with PCP altering tx of IG pt and CG were visited at home for A1C which may have introduce bias</p> <p>USA</p>		<p>generated binary assignment</p> <p>Purpose- Impact of the DIALBEST, a CHW-led intervention for improving gly control among Lat with T2D vs standard clinic care. Home-based visits</p> <p>AR- 29.9% (34.9% in CG, 24.8% in IG) (higher rate of completion if had a cell phone). Similar in baseline characteristics.</p>	<p>A1C \geq7%, self-identified His/Lat</p> <p>Exclusion- preg/BF, renal failure, active cancer, active hepatitis, advanced cirrhosis, ESLD, cognitive impairment, dementia, Alzheimer, active/severe mental health, CV disease in past 12 mo, physical activity limitations (ie: amputations), inability to orally eat</p> <p>Setting- community clinic in CT and CHW home-visits</p>	<p>Primary Outcome (baseline and intervals of 3 mo-18 mo)</p> <p>DV1- A1C</p> <p>Secondary Outcome</p> <p>DV2- Glucose</p> <p>DV3- Trig</p> <p>DV4- Total chol</p> <p>DV5- HDL</p> <p>DV6- LDL</p> <p>DV7- wt (kg)</p> <p>DV8- SBP</p> <p>* Examining whether a CHW culturally tailored program vs provider improves DVs</p> <p>*CG received UC</p>		<p>A1C measurements- LME and LME exc baseline)</p> <p>Secondary outcomes LME used</p> <p>Attrition bias- X² and t tests</p>	<p>Btwn 2 groups, IG had ss \downarrow in DV1 levels (95%CI -0.83, -0.19%, p=0.002) and DV1 \uparrow % change compared to CG (95%CI -8.93,-2.11%, p=0.002)</p> <p>IV+DV2- \downarrow(95% CI -1.79,-0.39, p=0.002)</p> <p>No ss with other DV</p>	<p>not collected so unknown if that impacted outcomes of IG, CG had home visits for data collection- may lead to bias, high attrition</p> <p>Conclusions- Indirect relationship btwn wt and A1C in IG. CHW home visits have positive impact on primary DV.</p> <p>Application- low cost and low personnel usage, applicable in clinic, but not home visits (many pts at clinic are undocumented and may not agree for home visits); however, few providers gone to home to educate family members regarding med adh and could potentially use this study for guidance within CT DSME prg</p>
--	--	---	--	---	--	--	---	--

Act- activity; **adh-** adherence; **AHCQR** – Agency for Health Care Quality and Research; **AGM-** antiglycemic med; **Apo-** apolipoproteins; **AR-** attrition rate; **BF-** breastfeeding; **Biling-** bilingual; **BMI-** body mass index; **BP-** blood pressure; **BSM-** behavioral self-management; **btwn-** between; **BWT-** total body weight; **C-** community; **Cat-** categorical; **CBPR-** Community-based participatory research; **Cent-** center; **CES-D-** Center for epidemiological studies depression scale; **CG-** control group; **chg-** change; **CHW-** Community Health Worker; **CMA-** Cobas Mira Autoanalyzer; **CoDE-** Community diabetes education; **Com-** complications; **Con-** controlled; **CT-** culturally tailored; **DIALBEST-** Diabetes among Latinos best practices trials; **dev-** development; **DSME-** diabetes self-management education; **DV-** dependent variable; **dx-** diagnose(d); **eval-** evaluation; **FBG-** fasting blood glucose; **FG-** focus group; **FQHC-** Federally qualified health center; **FT-** full time; **F/u-** follow-up; **Glu-** glucose; **Gly-** glyceic; **GSM-** glucose sel-monitoring; **His-** Hispanic; **HOMA-IR-** homeostasis model assessment; **HPLP-** Primus Diagnostics boronate affinity high performance liquid chromatography method; **I-** intervention; **IDEALTel-** Informatics for Diabetes Education and Telemedicine; **IG-** interventional group; **imp-** implementation; **inc-** increase; **ind-** independent; **IV-** independent variable; **Lat-** Latino; **LCS-** longitudinal cohort study; **LHL-** low health literacy; **LME-** linear mixed effects; **LT-** life threatening; **MA-** meta-analysis; **MATCH-** MXA Trial of CHW; **Med-** medication; **Min-** Minority; **mo-** months; **MXA-** Mexican American; **N-** number of studies; **n-** number of participants; **NDSR-** Nutrition Data System for Research Software; **NHLBI** – National Heart, Lung, and Blood Institute; **NIDDK-** National Institute for Diabetes and Digestive and Kidney Diseases; **PC-** primary care; **POC-** point of care; **Preg-** pregnant; **PRISMA-** Preferred Reporting Items for SR and MA; **Prg-** program; **pts-** patients; **r-** ration; **RA-** research assistant; **rel-** relationship; **RCT-** randomized controlled trials; **REACH-** Racial and Ethnic Approaches to Community Health; **sat-** satisfaction; **SDSCA-** summary of diabetes self-care activities; **SF-12-** Short form 12; **SFE-** self-efficacy; **SP-** Spanish; **SR-** systematic review; **SS-** statistically significant; **T2D-** Type II Diabetes Mellitus; **T1D-** type I Diabetes Mellitus; **trig-** triglycerides; **tx-** treatment; **UC-** usual care; **Unin-** uninsured; **V-** variable; **VDCHAASC-** Vanderbilt Diabetes Center Hormone Assay & Analytical Service Core; **Wt-** weight; \neq - No improvement; *- ss

CULTURALLY-TAILORED DIABETES

Table 1

Evaluation Table

<p>Prezio, E.A. (2013). Community diabetes education (CoDE) for uninsured Mexican Americans: A randomized control trial of a culturally tailored diabetes education and management program led by a community health worker.</p> <p>Funding Univ of TX school of Public Health and the Institute for Faith-Health Research- Dallas</p> <p>No conflict of interest noted Potential bias listed regarding sample and reliability</p> <p>USA</p>	<p>Social cognitive theory</p>	<p>Design- Quantitative experimental Prospective RCT; computer randomized assignment; not blinded</p> <p>Purpose- determine the impact of a CT T2D education prg led by CHW on MXAwith T2D</p> <p>AR- 14.4% distributed evenly in CG and IG</p>	<p>N= 180 CG n= 90 IG n= 90 * analyzed data of original 180- intention to treat analysis</p> <p>Inclusion- active clinic pts, 18-75 years, T2D, no advanced comp, no preg</p> <p>Setting- Urban faith based community health service clinic in Dallas. Exclusively serves unin pts MXA.</p>	<p>IV- UC + CoDE prg over 12 mo IV1- GSM IV2- Diet recall + meal planning IV3- med use IV4- sick day rules IV5- smoking cessation IV6- exercise IV7- info on DM com</p> <p>Primary outcome DV1- A1C Secondary- DV2- SBP DV3- DBP DV4- BMI DV5- LDL DV6- HDL DV7- Trig DV8- T2D meds</p> <p>*CG received UC</p>	<p>DV1- Bayer DCA 2000+analyzer DV2+3- sphygmomano meter DV4- kg/m² DV5-7- lab (baseline & 12 mo) DV8- pharm records quarterly</p>	<p>Cont V and med chg- ind t-test</p> <p>Categorical V- Pearson X²</p> <p>Linear-mixed models for covariates</p>	<p>IG IV+DV1- -1.6%, <.001 (stat more sig), IV+DV2-1.0; not ss IV+DV3- -0.04, not ss IV+DV4-0.4, not ss IV+DV5- -1.7, not ss IV+DV6-0.6, not ss IV+DV7- -17.5, not ss</p> <p>CG CG+DV1- -.9%, <.001 CG +DV2-3.3, not ss CG +DV3- 0.02, not ss CG +DV4- 0.6, not ss CG +DV5- -9.8, <.01 CG +DV6- -0.7, not ss CG +DV7- -3.4, not ss</p> <p>A1C and covariates IV + time in 3rd and 4th quarters and ↓A1C (<.05)</p>	<p>LOE- II; Strengths- RCT, well designed and appropriately controlled, consideration placed on covariates, considered medication changes, appropriate length of time for study, low attrition, CHW effective in ↓A1C, intervention still in place at study clinic</p> <p>Limitations/weakness- providers not blinded, limited power to detect outcomes, intervention teachings (IV1-7) not evaluated separately and could not determine which contributed to A1C control, minimal contact hours with CHW, single clinic, only tested on MXA, Bias- mainly female, small sample size, may not represent actual care outside of trial</p> <p>Conclusion- CHWs are effective facilitators with A1C reduction</p> <p>Application- low cost, few personnel needed, study done in uninsured community clinic- applicable to PICOT, very similar clinic</p>
---	--------------------------------	--	--	--	---	---	---	--

Act- activity; **adh-** adherence; **AHCQR** – Agency for Health Care Quality and Research; **AGM-** antiglycemic med; **Apo-** apolipoproteins; **AR-** attrition rate; **BF-** breastfeeding; **Biling-** bilingual; **BMI-** body mass index; **BP-** blood pressure; **BSM-** behavioral self-management; **btwn-** between; **BWT-** total body weight; **C-** community; **Cat-** categorical; **CBPR-** Community-based participatory research; **Cent-** center; **CES-D-** Center for epidemiological studies depression scale; **CG-** control group; **chg-** change; **CHW-** Community Health Worker; **CMA-** Cobas Mira Autoanalyzer; **CoDE-** Community diabetes education; **Com-** complications; **Con-** controlled; **CT-** culturally tailored; **DIALBEST-** Diabetes among Latinos best practices trials; **dev-** development; **DSME-** diabetes self-management education; **DV-** dependent variable; **dx-** diagnose(d); **eval-** evaluation; **FBG-** fasting blood glucose; **FG-** focus group; **FQHC-** Federally qualified health center; **FT-** full time; **F/u-** follow-up; **Glu-** glucose; **Gly-** glyceic; **GSM-** glucose sel-monitoring; **His-** Hispanic; **HOMA-IR-** homeostasis model assessment; **HPLP-** Primus Diagnostics boronate affinity high performance liquid chromatography method; **I-** intervention; **IDEALTel-** Informatics for Diabetes Education and Telemedicine; **IG-** interventional group; **imp-** implementation; **inc-** increase; **ind-** independent; **IV-** independent variable; **Lat-** Latino; **LCS-** longitudinal cohort study; **LHL-** low health literacy; **LME-** linear mixed effects; **LT-** life threatening; **MA-** meta-analysis; **MATCH-** MXA Trial of CHW; **Med-** medication; **Min-** Minority; **mo-** months; **MXA-** Mexican American; **N-** number of studies; **n-** number of participants, **NDSR-** Nutrition Data System for Research Software; **NHLBI** – National Heart, Lung, and Blood Institute; **NIDDK-** National Institute for Diabetes and Digestive and Kidney Diseases; **PC-** primary care; **POC-** point of care; **Preg-** pregnant; **PRISMA-** Preferred Reporting Items for SR and MA; **Prg-** program; **pts-** patients; **r-** ration; **RA-** research assistant; **rel-** relationship; **RCT-** randomized controlled trials; **REACH-** Racial and Ethnic Approaches to Community Health; **sat-** satisfaction; **SDSCA-** summary of diabetes self-care activities; **SF-12-** Short form 12; **SFE-** self-efficacy; **SP-** Spanish; **SR-** systematic review; **SS-** statistically significant; **T2D-** Type II Diabetes Mellitus; **T1D-** type I Diabetes Mellitus; **trig-** triglycerides; **tx-** treatment; **UC-** usual care; **Unin-** uninsured; **V-** variable; **VDCHAASC-** Vanderbilt Diabetes Center Hormone Assay & Analytical Service Core; **Wt-** weight; **≠-** No improvement; ***-** ss

CULTURALLY-TAILORED DIABETES

Table 1

Evaluation Table

							Baseline A1C and Duration of T2D SS detrimental with 1% baseline ↑A1C, final A1C ↑ (<.001) and length of time with T2D ↑A1C (<.05) Meds and A1C ↑meds changes ss to ↑ A1C (<.001) and ↑number of meds ↑A1C (<.05)	
Rothschild, S.K. (2014). Mexican American trial of community health workers: A randomized control trial of a community health worker intervention for Mexican Americans with type 2 Diabetes Mellitus Funded by the NIDDK (grant) Bias or conflicts of interest not mentioned in article but can infer no because of the funders and objectives of study USA	Self-management theory	Design- Quantitative experimental Single blind RCT MATCH and followed for 2 yrs. Randomized using block design Purpose- assess if CHWs could improve gly con among MXA with T2D. IG group received DSME from CHW with 36 home visits compared to CG who received biling con newsletter	N= 144 MXA IG n= 73 CG n= 71 Inclusion- MXA, T2D, ≥18, 1+oral T2D agent, health insurance or free clinic pt Exclusions- active tx for schizophrenia, inability to provide consent, previous major com, or another household member in MATCH	IV- 36 CHW home visits DSME CG- 36 bilingual newsletter Primary Outcomes DV1- A1C DV2- BP Secondary Outcomes DV3- med adh DV4- GSM DV5- SFE DV6- exercise DV7- diet	DV1- venipuncture DV2- 3 readings, averaged 2&3 DV3- MEMS 6 track cap DV4- how many days/past 10 days DV5-T2D empowerment scale, Summary of T2D self-care activities, Morisky adherence scale, personal resource questionnaire, Beck	Categorical V- X ² Cont V- 2 sample t-test Wilcoxon Mixed effects linear model P<.05	12 mo IV+DV1- 7.87, CG+DV1- 8.42, (95% CI p <.05 btwn tx arms) IV+DV2- 0.59 CG+DV2- 0.51 (95%CI; P>.05; not ss btwn tx arms) 24 mo IV+DV1- 8.42 CG+DV1- 8.33 (95% CI; p<.01 btwn tx arms) IV+DV2- 0.42 CG+DV2- 0.58 (95% CI; p>.05; not ss btwn tx arms)	LOE- II Strengths- RCT, IV proved effective in ↓primary outcome, applicable to practice, studied participants for 2 yrs, considered multiple covariates, strong internal validity, benefits outweighed risks (no hospitalizations nor episodes of ↓BG), attrition = in both arms, Weaknesses- single clinic, external validity/generalizability not tested, only tested on MXA, may not be applicable to other subgroups of HIS culture, unable to measure specific mechanism of CHW effectiveness, after 2 yrs, no further f/u about sustainability Conclusion- CHW effective over time with glyc con; other outcomes varied. Data supports longer I and f/u time

Act- activity; **adh-** adherence; **AHCQR** – Agency for Health Care Quality and Research; **AGM-** antiglycemic med; **Apo-** apolipoproteins; **AR-** attrition rate; **BF-** breastfeeding; **Biling-** bilingual; **BMI-** body mass index; **BP-** blood pressure; **BSM-** behavioral self-management; **btwn-** between; **BWT-** total body weight; **C-** community; **Cat-** categorical; **CBPR-** Community-based participatory research; **Cent-** center; **CES-D-** Center for epidemiological studies depression scale; **CG-** control group; **chg-** change; **CHW-** Community Health Worker; **CMA-** Cobas Mira Autoanalyzer; **CoDE-** Community diabetes education; **Com-** complications; **Con-** controlled; **CT-** culturally tailored; **DIALBEST-** Diabetes among Latinos best practices trials; **dev-** development; **DSME-** diabetes self-management education; **DV-** dependent variable; **dx-** diagnose(d); **eval-** evaluation; **FBG-** fasting blood glucose; **FG-** focus group; **FQHC-** Federally qualified health center; **FT-** full time; **F/u-** follow-up; **Glu-** glucose; **Gly-** glycemic; **GSM-** glucose sel-monitoring; **His-** Hispanic; **HOMA-IR-** homeostasis model assessment; **HPLP-** Primus Diagnostics boronate affinity high performance liquid chromatography method; **I-** intervention; **IDEALTel-** Informatics for Diabetes Education and Telemedicine; **IG-** interventional group; **imp-** implementation; **inc-** increase; **ind-** independent; **IV-** independent variable; **Lat-** Latino; **LCS-** longitudinal cohort study; **LHL-** low health literacy; **LME-** linear mixed effects; **LT-** life threatening; **MA-** meta-analysis; **MATCH-** MXA Trial of CHW; **Med-** medication; **Min-** Minority; **mo-** months; **MXA-** Mexican American; **N-** number of studies; **n-** number of participants, **NDSR-** Nutrition Data System for Research Software; **NHLBI** – National Heart, Lung, and Blood Institute; **NIDDK-** National Institute for Diabetes and Digestive and Kidney Diseases; **PC-** primary care; **POC-** point of care; **Preg-** pregnant; **PRISMA-** Preferred Reporting Items for SR and MA; **Prg-** program; **pts-** patients; **r-** ration; **RA-** research assistant; **rel-** relationship; **RCT-** randomized controlled trials; **REACH-** Racial and Ethnic Approaches to Community Health; **sat-** satisfaction; **SDSCA-** summary of diabetes self-care activities; **SF-12-** Short form 12; **SFE-** self-efficacy; **SP-** Spanish; **SR-** systematic review; **SS-** statistically significant; **T2D-** Type II Diabetes Mellitus; **T1D-** type I Diabetes Mellitus; **trig-** triglycerides; **tx-** treatment; **UC-** usual care; **Unin-** uninsured; **V-** variable; **VDCHAASC-** Vanderbilt Diabetes Center Hormone Assay & Analytical Service Core; **Wt-** weight; **≠-** No improvement; ***-** ss

CULTURALLY-TAILORED DIABETES

Table 1

Evaluation Table

		<p>delivering same content</p> <p>AR- 16% (84% completion at least 1 f/u in 2 yrs). Aggressive f/u</p>	<p>Setting- Metro Chicago</p>		<p>depression scale, perceived stress scale, Spielberger state anxiety scale</p> <p>*Acculturation-Marin instrument DV6&7- subscale of summary of diabetes self-care and T2D empowerment scale</p>		<p>Secondary at 24 mo</p> <p>No ss btwn tx arms for DV3, DV4; however DV4↑ for both arms</p> <p>IV+DV5- ↑ CG+DV5- ↑ IV+DV6- ↑ CG+DV6- ↑ (no ss btwn tx arms)</p> <p>IV+DV7- ↑ CG+DV7- ↓</p> <p>*Wt loss was ss different btwn tx arms, no wt loss for CG, IG lost 4.82 lbs at 1 yr (p=.041) and 5.02 at 2 yrs (p=.036)(p<.05)</p>	<p>Application- low cost, few personnel needed, study done in uninsured community clinic- applicable to PICOT, home visits n/a</p>
--	--	---	--------------------------------------	--	--	--	---	---

Act- activity; **adh-** adherence; **AHCQR** – Agency for Health Care Quality and Research; **AGM-** antiglycemic med; **Apo-** apolipoproteins; **AR-** attrition rate; **BF-** breastfeeding; **Biling-** bilingual; **BMI-** body mass index; **BP-** blood pressure; **BSM-** behavioral self-management; **btwn-** between; **BWT-** total body weight; **C-** community; **Cat-** categorical; **CBPR-** Community-based participatory research; **Cen-** center; **CES-D-**Center for epidemiological studies depression scale; **CG-** control group; **chg-** change; **CHW-** Community Health Worker; **CMA-** Cobas Mira Autoanalyzer; **CoDE-** Community diabetes education; **Com-** complications; **Con-** controlled; **CT-** culturally tailored; **DIALBEST-**Diabetes among Latinos best practices trials; **dev-** development; **DSME-** diabetes self-management education; **DV-**dependent variable; **dx-** diagnose(d); **eval-** evaluation; **FBG-** fasting blood glucose; **FG-** focus group; **FQHC-** Federally qualified health center; **FT-** full time; **F/u-** follow-up; **Glu-** glucose; **Gly-** glyceic; **GSM-** glucose sel-monitoring; **His-** Hispanic; **HOMA-IR-** homeostasis model assessment; **HPLP-** Primus Diagnostics boronate affinity high performance liquid chromatography method; **I-** intervention; **IDEALTel-** Informatics for Diabetes Education and Telemedicine; **IG-** interventional group; **imp-** implementation; **inc-** increase; **ind-** independent; **IV-** independent variable; **Lat-** Latino; **LCS-** longitudinal cohort study; **LHL-** low health literacy; **LME-** linear mixed effects; **LT-** life threatening; **MA-** meta-analysis; **MATCH-** MXA Trial of CHW; **Med-** medication; **Min-** Minority; **mo-** months; **MXA-** Mexican American; **N-** number of studies; **n-** number of participants, **NDSR-**Nutrition Data System for Research Software; **NHLBI** – National Heart, Lung, and Blood Institute; **NIDDK-** National Institute for Diabetes and Digestive and Kidney Diseases; **PC-** primary care; **POC-** point of care; **Preg-** pregnant; **PRISMA-** Preferred Reporting Items for SR and MA; **Prg-** program; **pts-** patients; **r-** ration; **RA-** research assistant; **rel-** relationship; **RCT-** randomized controlled trials; **REACH-** Racial and Ethnic Approaches to Community Health; **sat-** satisfaction; **SDSCA-**summary of diabetes self-care activities; **SF-12-** Short form 12; **SFE-** self-efficacy; **SP-** Spanish; **SR-** systematic review; **SS-** statistically significant; **T2D-** Type II Diabetes Mellitus; **T1D-** type I Diabetes Mellitus; **trig-** triglycerides; **tx-** treatment; **UC-** usual care; **Unin-** uninsured; **V-** variable; **VDCHAASC-** Vanderbilt Diabetes Center Hormone Assay & Analytical Service Core; **Wt-** weight; **≠-** No improvement; ***- ss**

UNDERSERVED HISPANICS AND DIABETES

Appendix F

Table 2

Synthesis Table

Studies	Baig	Brown	Brunk	Chukwueke	Ferguson	Heisler	Ockene	Perez-Escamilla	Prezio	Rothschild
General Information										
Year	2014	2013	2017	2012	2015	2014	2012	2015	2013	2014
Design/LOE	RCT-II	RCT-II	Qual-VI	LCS- IV	SR/MTA-I	RCT-II	RCT-II	RCT-II	RCT-II	RCT-II
DM (yrs)	NR	8 yrs±6	1-7yrs	NR	6 mo-16 yrs	8.5 yrs	Pre (7.5 yr risk)	≥7	<5 yrs	NR
Baseline A1C	8 ±2	11.2			7.4-11.8	>7.5	5.7	9.6	8.8	8.3
Mean Age	54±	55	30-66	50	47.9-70.3	51	52	56		53.7
Gender (majority)	F	F	F/M	F	F	F	F	F	F	F
HIS/LAT (SP lang)	X	X	X	X	X	50%	X	X	X	X
Uninsured (%)	51	35				50%BPL		84%MDC		
Setting										
Comm Clinic (PCP)		X	X	X	X	X				
Home						X		X		X
Church	X									
Sample size N	100	252	9	44/34 (res)	13 SR/11MA	188	150	211	180	144
Attrition %	20/18	NA	0	23	6-52	6	6.8IG 4.7CG	30 (average)	14.4	16
Length of I (months)	2	12	1	3	6wks-5 yr	1 session	12	12	12	24
F/U (months)	3,6	3,6,12	N/A	3	6-60	3	12	3,6,12,18	3,6,9,12	12,24
Bias	Pos	No	Pos	Pos	No	Pos	No	Pos	Pos	No
Validity	Que	X	Que	X	X	X	X	X	X	Que
Reliability	X	X	X	Que	X	X	X	X	Que	Que
Study Variables										
Enhanced UC/or C I	X	X								X
CDE					X					
CHW						X		X	X	X
Lay leaders	X	X			X		X			
Facilitator			X							
Dieticians		X		X						
Providers/Nurses		X		X (& stud)	X					
Group Classes/support	X	X	X	X	X		X			
Ind Classes		X			X	X	X	X	X	X
CT	X	X	X	X	X	X	X	X	X	X
Preferred Lang		X	X	X		X	X	X	X	X
Technology		X				X	X			
Print materials		X	X			X				X
Lit appropriate	X		X			X	X	X		
Attendance	X		X		X		X			X
PCP involvement					X					
PCP contact hours					X					
Duration					X					
Nutrition	X	X	X	X	X	X	X	X	X	
Exercise	X	X		X	X	X	X	X	X	
Monitoring				X		X	X	X	X	
Behavior ch	X		X			X	X			X

Key- ≠ I had no effect; **apolipo-** Apolipoprotein; **B-** both; **BPL-** below poverty line; **C-** control; **CG-** control group; **ch-** changes; **CT-** Culturally tailored; **I-** Intervention; **IG-** Intervention group; **Imp-** Improve; **Lit-** literacy; **MDC-** Medicaid- **Med-** Medication; **NR-** not reported; **Pos-** possible; **Que-** questionable; **Res-** resulted; **SS-** statistically significant; **SM-** self management; **Stud-** students; **wt-** weight; **X-** a factor/yes (not dependent on being ss);

*- ss in IG group unless otherwise noted by B

CULTURALLY-TAILORED DIABETES

Table 2

Synthesis Table

Problem-solving	X									X
Empowerment/goals			X			X	X			X
Med						X		X	X	
Complications						X		X	X	
Outcome Variables										
A1C	↓	↓*	NR	↓*	↓*	↓ (B)	↓*	↓*	↓* (B)	↓*
FBG		≠		↓*				↓*		
Insulin resistance				↓			↓			
Wt	≠			↓			↓*			↓*
BMI		≠								
Body Fat				↓*						
BP	≠									↓
Self-care	≠		↑			↑(B)				↑(B)
Exercise	↑						≠			↑(B)
Knowledge/Empower			↑							
Behavior change			↑							
Med adh/knowledge						↑(B)				≠
GSM			↑							↑(B)
Distress						↓(B)				
Impr Diet	↑						↑			↑
Major Findings										
I ↓A1C	No	X	NA	X	X	X	X	X	X	X
CT I ↑ Outcomes	X	X	X	X	X	X	X	X	X	X
I >UC/CG	X	X	NA	X	X	X	X		X (in time)	X
Correlation btwn variables	X	X	X	X (A1C & FBG) (Apo & Chol)	X	X	X (A1C & wt) (Insulin & wt loss)	X	X	
Gender factor in variables		X								
Time since Dx affects I		X							X (c baseline A1C)	
Duration of I ↑ outcomes					X	X			X (↓A1C)	
Attending classes ↑ outcomes	X		X		X		X (wt changes)			
F/U time ↑ outcomes	X				X	X		X (pos)		X

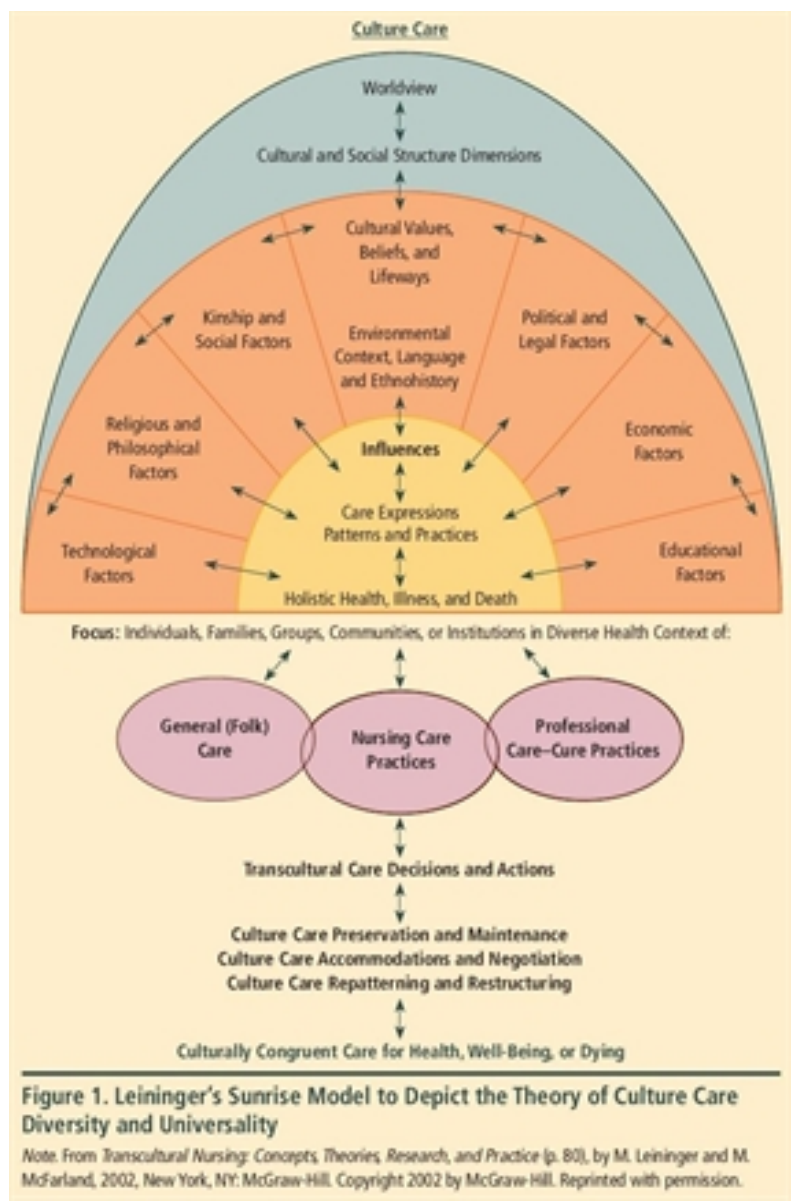
Key- ≠ I had no effect; **apolipo-** Apolipoprotein; **B-** both; **BPL-** below poverty line; **C-** control; **CG-** control group; **ch-** changes; **CT-** Culturally tailored; **I-** Intervention; **IG-** Intervention group; **Imp-** Improve; **Lit-** literacy; **MDC-** Medicaid- **Med-** Medication; **NR-** not reported; **Pos-** possible; **Que-** questionable; **Res-** resulted; **SS-** statistically significant; **SM-** self management; **Stud-** students; **wt-** weight; **X-** a factor/yes (not dependent on being ss);

*- ss in IG group unless otherwise noted by B

Appendix G

Figure G

Leininger's Theory of Cultural Care Diversity and Universality

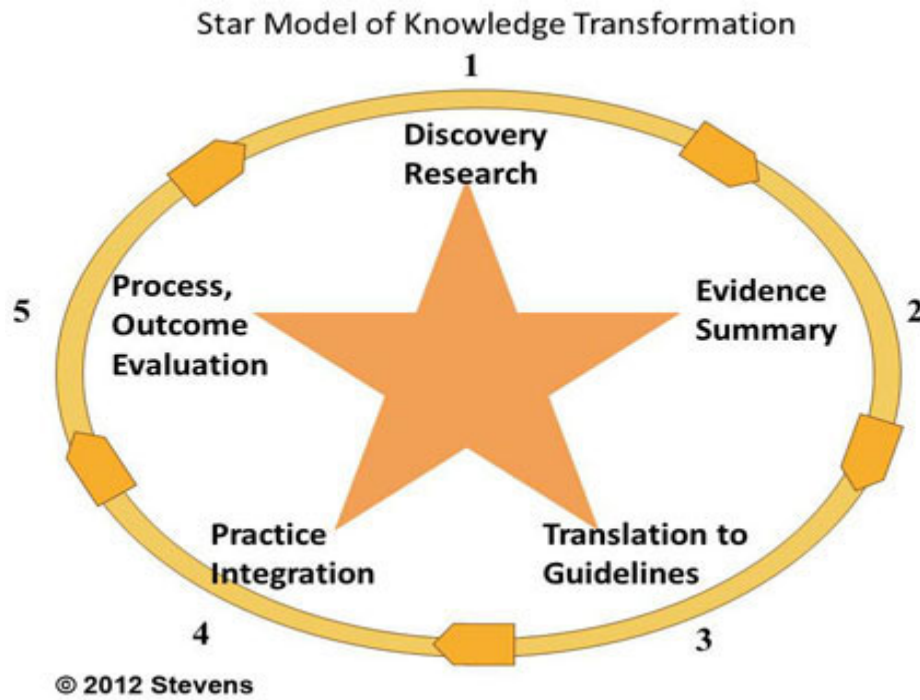


(in Saca-Hazboun & Glennon, 2011)

Appendix H

Figure H

The Ace Star Model of Knowledge Transformation



CULTURALLY-TAILORED DIABETES

Appendix I

Table 3

DEEP Outline

Objectives	Content
1	Beginning Sessions & Understanding the Human Body
2	Understanding Risk Factors for Diabetes
3	Monitoring Your Body
4	Get Up & Move! Diabetes & Physical Activity
5	Management of Diabetes through Meal Planning
6	Diabetes Complications: Identification and Prevention
7	Learning about Medications & Medical Care
8	Living with Diabetes: Mobilizing Your Family and Friends

Appendix J

Table 4

Demographics

	<i>n</i> = 15
Demographics	
Age, years (mean, SD)	54.9 (8.56)
Female (%)	87.0
Literacy	87%
Years living with DM (mean, SD)	10.36 (8.46)
Education (%)	
College	23%
High School	31%
Primary School or less	46%
Past attendance DM class	40%
Insulin	27%

Appendix K

Table 4

Outcome Results

Outcomes	Pre	Post	SD	t	df	p
A1C	8.82 mg/dl	8.07 mg/dl	1.18	2.45	14	.028**
Knowledge Test (correct)*	9.4	12.07	2.23	-4.64	14	< .001****
Empowerment	4.09	4.63	.47	-4.5	14	.001***
Weight	168.13	167.57	5.16	.42	14	.681

Note. *Max score 18; p < .05** p < .01*** p < .001****