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Designing a Culturally Relevant Lifestyle Modification Guide for Primary Care Providers to Improve Diabetes Management in the Hispanic Population.

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DESIGNING A CULTURALLY RELEVANT LIFESTYLE
MODIFICATION GUIDE FOR PRIMARY CARE
PROVIDERS TO IMPROVE DIABETES
MANAGEMENT IN THE HISPANIC
POPULATION

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ABSTRACT

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Diabetes mellitus type II (DMT2) affects the Hispanic population in the United States at an alarming rate, contributing to elevated morbidity and mortality. This growing ethnic group is also disproportionately at risk for obesity and being at a lower socioeconomic status, both of which contribute to DMT2 severity and prevalence. The provision of culturally competent care in the primary care setting using evidence-based lifestyle modifications has the potential to improve DMT2 outcomes among this socioeconomically disadvantaged population. Thus, the expert opinions of eight primary care providers in the Pueblo, Colorado community were sought where half of the patient population identified as being of Hispanic descent and almost a quarter were impoverished. As underpinned by Leininger's (Leininger & McFarland, 2006) culture care theory (CCT), the purpose of this DNP scholarly project was to utilize the current literature and a panel of clinical experts to develop a culturally relevant lifestyle modification guide for management of DMT2 among Hispanic patients. The guide was developed using the Delphi method and was designed for use in the primary care setting to develop a plan of care that was culturally and socioeconomically sensitive with the goal of testing its effectiveness in future research.

Keywords: diabetes mellitus type 2, Hispanic, cultural competence, low socioeconomic status, lifestyle modifications

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CHAPTER I

INTRODUCTION

In the United States, diabetes mellitus has an overall prevalence rate of 8.5% and diabetes mellitus type 2 (DMT2) accounts for 90% of all cases (Epocrates, 2021). Diabetes mellitus type 1 is an autoimmune disease but DMT2 is in response to insulin resistance developing over time in the pancreas due to a complex set of metabolic factors (Centers for Disease Control and Prevention [CDC], 2022b). Diagnosis of DMT2 prior to the age of 40 places people at an increased risk of chronic complications related to poor metabolic control (Epocrates, 2021). Diagnosis after age 40 results in a significant loss of life expectancy of 5.8 years for males and 6.8 years for females (Epocrates, 2021). As a closely related issue, obesity increases the risk of many chronic health conditions including DMT2. For example, in Pueblo County, Colorado, where this Doctor of Nursing Practice (DNP) scholarly project took place, 30% of adults 18 years of age or older were obese and another 32% were considered overweight (Pueblo County Community Health Improvement Plan [CHIP], 2018-2022). In 2018, the prevalence rate of DMT2 in adults in Pueblo County was 11.5%, which was above the national average. Diabetes mellitus type 2 was ranked as the sixth leading cause of death in Pueblo County and was attributed to 29.4 deaths per 100,000 people (Pueblo City-County Health Department [PCCHD], 2021).

Hispanics are currently the largest minority ethnic group in the United States; they comprise 19% of the total population and are expected to increase to 23% by 2040 (U.S. Census Bureau, 2018). The terms *Hispanic* and *Latino* are often used interchangeably and encompass a

wide range of cultures and origins including but not limited to Mexicans, South Americans, Central Americans, Puerto Ricans, and Cubans. In general, Hispanic refers to a person who is from a Spanish speaking country or ancestry and Latino refers to a person from a Latin American country (Lopez et al., 2022). Throughout this project, the term Hispanic was used for consistency and referred to an ethnic group that included people from both Spanish speaking and Latin American countries with similar cultural practices and ancestry.

Nearly 50% of the Pueblo, Colorado community self-identified as Hispanic in the 2022 U.S. census. According to the CDC (2022a), Hispanics are at a 40% higher risk for developing DMT2 than their non-Hispanic White counterparts. Diabetes mellitus type 2 and obesity are two of the most common comorbidities among the Hispanic population in the United States and can have devastating health implications for individuals, families, and communities (Kaiser Permanente, 2019; Martenstyn et al., 2020). One way to prevent and to control DMT2 is through lifestyle modifications such as diet and exercise. Utilizing diet and exercise interventions has been shown to decrease body mass index (BMI) and obesity, which in turn reduces the risk of developing DMT2 (Kaiser Permanente, 2019). However, adherence to lifestyle modifications might be challenging for people who identify as Hispanic due to recommendations from healthcare providers (most often in the primary care setting) that are not easily incorporated into Hispanic cultural practices (Brunk et al., 2017). Some Hispanic patients and families might find that following a low carbohydrate diet, limiting weight gain, and regularly monitoring blood glucose are beyond their control and incompatible with certain cultural patterns. For example, some food items might be perceived as acceptable to Hispanic patients at risk for DMT2 due to their cultural importance such as *pan dulce* (Mexican sweet bread), sugary drinks, or food preparation with lard despite known negative effects on blood glucose levels and body weight

(Sanchez et al., 2021). In response, this scholarly project focused on developing a lifestyle modification guide tailored for the management of Hispanic patients diagnosed with DMT2. The guide features culturally relevant lifestyle modifications including evidence-based physical activity and diet modifications. The guide was created for use by primary care providers to improve their support of Hispanic patients and families given the increasing obesity and DMT2 rates both nationally and locally in Pueblo, Colorado.

Background

Over 25% of all healthcare spending in the United States goes toward care of patients with diabetes, amounting to a total of $327 billion USD annually (Aguayo-Mazzucato et al., 2018). Diagnostic criteria for DMT2 include one glycosylated hemoglobin (HbA1c) greater than 6.5 or two separate fasting blood glucose readings greater than 125mg/dl. The HbA1c values are typically monitored on a regular basis dependent on initial levels, patient adherence, and response to treatment. Labs are drawn every three to six months or annually with regular visits to a provider for disease management support (Epocrates, 2021; Kaiser Permanente, 2019). Typically, DMT2 is treated with oral or subcutaneous antihyperglycemics and often include diabetic education classes that focus on medication adherence and lifestyle modifications. Weight loss interventions could range from calorie restriction to bariatric surgery. Weight loss is largely dependent on individual behaviors as well as other complex factors such as socioeconomic status with the evidence suggesting poorer patients lose less weight than financially secure patients (Kaiser Permanente, 2019; Martenstyn et al., 2020). Diabetes mellitus type 2 is rarely treated solely with medication, and lifestyle modifications remain a central component of management across all populations diagnosed with this disease.

Risk Factors for Developing Diabetes
Mellitus Type 2 Among the
Hispanic Population

Lower educational and socioeconomic status and being overweight/obese increase the risk of developing DMT2. These risk factors are especially prevalent among the Hispanic population in the United States. According to Aguayo-Mazzucato et al. (2018), Hispanic adults without a high school diploma were more likely to develop DMT2 and accounted for 15% of total cases. In comparison, just 7% of Hispanic adults with a bachelor's degree or higher were diagnosed with DMT2. Lower levels of education are an issue for the Hispanic population as evidenced by high school graduation rates of 72% and only 15% having a bachelor's degree or higher (U.S. Department of Health and Human Services Office of Minority Health [OMH], 2023). These percentages are lower than their non-Hispanic White counterparts (NHWC) with high school completion rates of 93% and 36% having a bachelor's degree or higher (Aguayo-Mazzucato et al., 2018). Lower educational levels are associated with reduced income and less access to healthy food options and healthcare services (OMH, 2023).

Similarly, lower socioeconomic status is also correlated with an increase in DMT2. People with an annual income of less than $20,000 USD are up to 10% more likely to develop DMT2 than those who have an income of $75,000 or more (Aguayo-Mazzucato et al., 2018). Hispanics in the United States have a lower median income of just $55,321 USD in comparison to an average of $74,912 among NHWCs (Shrider et al., 2021). In 2020, approximately 17% of all Hispanics in the United States were living in poverty in comparison to just 8.2% of their NHWCs (OMH, 2023; Shrider et al., 2021). Impoverished people exhibit higher levels of stress and obesity related to issues such as food insecurity, poor food quality, inadequate or lack of health insurance, and less time to engage in healthy lifestyle activities such as exercise.

As mentioned above, obesity is a modifiable risk factor known to correlate with DMT2 across populations. As BMI increases, so does the risk for developing DMT2. Being obese (considered a BMI > 30) further contributes to morbidity and mortality by increasing health complications and the risk for developing poor long-term outcomes (Epocrates, 2021; Kaiser Permanente, 2019). For example, the prevalence rate of DMT2 among obese individuals with a BMI > 29 is 22% compared to just 10% of individuals with a BMI <25 (Aguayo-Mazzucato et al., 2018). Obesity is of particular concern for the Hispanic population with just 17% of adults having a normal BMI of 18.5-24.9 compared to 22% of African Americans and 28% of non-Hispanic Whites (CDC, 2022c). This elevated obesity rate places Hispanics at greater risk for developing DMT2 as well as cardiovascular disease, stroke, and cancer.

**Lifestyle Modifications Currently in
Use to Manage Diabetes Mellitus
Type 2**

Typical lifestyle modifications for DMT2 management focus on diet and exercise but were only moderately effective as evidenced by the literature. Traditional treatment of DMT2 includes medication adherence and calorie restriction aimed at achieving improved body weight and glucose control (Sebire et al., 2018). Nutrition education often includes information about making healthy choices from each food group and adhering to a low carbohydrate or Mediterranean-style diet (Epocrates, 2021; Kaiser Permanente, 2019). Physical activity recommendations typically include engaging in moderate to vigorous aerobic exercise three to four times per week and strength training for 20 minutes a day, two to three times per week (Epocrates, 2021). However, these recommendations might be ineffective when they significantly conflict with the patient's current lifestyle or cultural preferences, ultimately decreasing adherence and motivation.

The limited impact of many lifestyle modifications to control DMT2 could potentially be attributed to the way in which education is delivered by healthcare providers (Kim et al., 2020). When the provider is considered the "expert" in health and illness, it can be difficult to allow patients the autonomy to make decisions. Results from a prospective observational study completed by Kim et al. (2020) suggested that by changing the mindset of primary care providers to include patients with DMT2 in formulating a treatment plan to reduce cardiovascular risk, increased adherence was demonstrated. The study also found patient quality of life improved when the provider's behavior changed to be more inclusive by partnering with the patient on changing medications and doses, adhering to the medication regimen, following diet and exercise plans, and avoiding recreational drug and alcohol consumption. These findings suggested partnering on lifestyle changes and formulating an equitable relationship between provider and patient were likely important for improving DMT2 outcomes.

Lifestyle Modifications for Hispanic Patients with Diabetes Mellitus Type 2

Providers who care for Hispanic patients with DMT2 should be aware of special considerations impacting this disease such as the level of acculturation, food and physical activity patterns, family and cultural dynamics, language fluency and preference, and socio-economic and education status (Concha et al., 2021; Pittman, 2020). These components play an integral role in Hispanic patients' ability to adjust to recommended lifestyle modifications for long-term management of DMT2. Misinterpretation or lack of understanding among healthcare providers about the Hispanic culture could be detrimental to patient outcomes as evidenced by elevated levels of distrust, poor communication, non-adherence to medication regimens, and an

unwillingness to implement lifestyle modifications seen across the literature with this population (Baghikar et al., 2019; Brunk et al., 2017).

As an advanced practice nurse from an economically disadvantaged Hispanic background currently serving a predominantly Hispanic patient population in Pueblo, Colorado, the primary investigator of this scholarly project had a unique understanding of the sociocultural barriers many patients faced regarding management of DMT2. Providers treat patients in large part according to both their personal and professional experiences (Kim et al., 2020). A provider caring for a culture that differs from their own might not understand certain intricacies impacting health and should seek additional training to deliver culturally relevant care. It was important to design a culturally relevant plan of care to encourage adherence to the DMT2 treatment plan (Brunk et al., 2017). Culturally relevant or competent care entails interacting with a patient's culture or community in a way that is inclusive of their beliefs, traditions, and values (American Hospital Association, 2023). The provider delivers care in a mindful and deliberate manner that embraces the patient's needs, such as using the preferred language, and recognizes the social constructs influencing health (American Hospital Association, 2023).

For example, many traditional Hispanic diets include foods such as refried beans, tortillas, beef, pork, and potatoes, which are high in fat and have an elevated glycemic index (Brunk et al., 2017). Culturally tailored adjustments the primary investigator suggested in her care of Hispanic patients with DMT2 or obesity included substituting 2% or fat free milk to refried beans instead of oil or lard and changing from flour tortillas to corn. Patients with DMT2 could be encouraged to limit pork intake and instead consume leaner meats like grilled fish and chicken. Introducing Hispanic patients to alternative side dishes like roasted vegetables instead of potatoes is another way to improve glycemic control. In addition to dietary changes, it is

important to increase physical activity that aligns with the patient's current lifestyle and is economically feasible (Brunk et al., 2017; García-Molina et al., 2020). For example, encouraging the patient to intentionally use the stairs at their place of employment or to take a walk with a family member might be more realistic than encouraging a costly gym membership. These are just a few of the potential lifestyle interventions culturally tailored for the Hispanic patient diagnosed with DMT2 that are discussed in subsequent chapters of this written document.

Statement of the Problem

This DNP scholarly project was of clinical importance due to the increasing and significant impact DMT2 has on the Hispanic community in the United States and locally in Pueblo, Colorado. As evidenced by elevated rates of obesity and lower educational and socioeconomic levels, this growing minority population is facing a diabetes epidemic (CDC, 2022a). In addition to standard medication interventions, lifestyle modifications are routinely recommended by healthcare providers, yet their effectiveness and cultural relevance to Hispanic patients might be limited (Hildebrand et al., 2020). Advanced practice providers should use a culturally relevant framework to develop and implement interventions designed to improve DMT2 in partnership with Hispanic patients to increase the feasibility, autonomy, and sustainability of the treatment plan.

Purpose of the Project

The purpose of this DNP scholarly project was to utilize the current literature and a panel of clinical experts to develop a culturally relevant lifestyle modification guide for management of DMT2 among Hispanic patients. The guide was designed for use in the primary care setting and encourages partnership with the patient to develop a culturally and socioeconomically sensitive plan of care.

Need for the Project

The prevalence of DMT2 and obesity in the United States is rapidly increasing and it disproportionately impacts the Hispanic population (CDC, 2022a; OMH, 2023). It is the responsibility of healthcare providers to partner with patients and suggest new solutions to combat these deadly diseases. The implementation of lifestyle modifications in the management of DMT2 is essential but must be feasible, sustainable, and patient-driven. It is important that educational levels, socioeconomic status, and the cultural patterns of Hispanic patients are considered when designing the lifestyle modification guide to increase adherence and efficacy. In addition, including the patient in the development of culturally tailored interventions might lead to improved health outcomes (Amirehsani et al., 2018; Kim et al., 2020). By improving treatment of DMT2, obesity rates and other associated complications are also predicted to improve.

Project Question

This DNP scholarly project aimed to answer the following research question:

Q1   How can a culturally relevant lifestyle modification guide be developed for use with socioeconomically disadvantaged Hispanic patients diagnosed with DMT2 in the primary care setting?

Objectives

This project included the following objectives:

O1   Synthesize the existing literature to create an evidence-based lifestyle modification guide for primary care providers caring for Hispanic patients diagnosed with DMT2 that incorporates culturally and socioeconomically relevant lifestyle modifications.

O2   Further develop the guide using two to three cycles of input from a panel of expert clinicians with experience in caring for Hispanic patients diagnosed with DMT2.

O3 Establish majority agreement on the final draft of the guide before proposing a pilot study for testing among Hispanic patients with DMT2 in the primary care setting.

Summary

The prevalence of DMT2 continues to increase in the Hispanic population in the United States and is predominantly treated with medication management and lifestyle modifications. How and why existing lifestyle modifications have been ineffective in reducing obesity and DMT2 rates among this population remains poorly understood but emerging evidence suggested it is increasingly vital to ensure that patients are centrally involved in the plan of care and treatment plans are culturally relevant. Many primary care providers caring for the Hispanic population are unprepared for this new partnership dynamic and lack guidance on how to culturally tailor interventions to meet the needs of this diverse community. This DNP scholarly project aimed to develop an innovative lifestyle modification guide that focused on lifestyle modifications for socioeconomically disadvantaged Hispanic patients with DMT2.

Definition of Terms

Complication. The direct or indirect effect of an illness or disease that occurs over time (Merriam-Webster, 2022).

Culturally competent care. The delivery of inclusive and deliberate care that considers the beliefs, traditions, values, and social constructs influencing the health of a patient or community (American Hospital Association, 2023).

Diabetes Mellitus Type 2. Sustained hyperglycemia resulting from the body's impaired insulin utilization and production that can develop at any age but most often occurs in obese adults (Merriam-Webster, 2023a).

Disadvantaged. Lacking in the basic resources or conditions (such as standard housing, access to healthcare, quality education, and civil justices) believed to be necessary for societal equity (Merriam-Webster, 2023b).

Hispanic. A general term used to describe an ethnic group which includes people from Spanish culture and ancestry such as Mexicans, South Americans, Central Americans, Puerto Ricans, and Cubans (Lopez et al., 2022; OMH, 2023).

Lifestyle Interventions. Recommended activities for managing glucose levels, lipids, and blood pressure that include but are not limited to outdoor activities (such as yard work), exercise, healthy eating, increasing water consumption, and adhering to a medication regimen (Evert & Riddell, 2014).

Primary Care. The first line of health care that patients receive focused on promoting health and preventing illness or complications (The Free Dictionary, 2022).

Socioeconomics. The social and economic factors of a community (Merriam-Webster, 2023c).

CHAPTER II

REVIEW OF THE LITERATURE

The purpose of this DNP scholarly project was to utilize the current literature and a panel of clinical experts to develop a culturally relevant lifestyle modification guide for management of DMT2 among Hispanic patients. The guide was designed for use in the primary care setting and encourages partnership with the patient to develop a culturally and socioeconomically sensitive plan of care. This chapter addresses the historical background of DMT2, results from a current synthesis of the literature, and the theoretical framework underpinning the project.

Historical Background

The history of diabetes is extensive with significant advancements over the past several centuries. According to an ancient Egyptian text, diabetes was first mentioned around 1500 B.C. (Lakhtakia, 2013; McCoy, 2009). Around 80-150 AD, the Greek physician Arateus described excessive and sweet-smelling urine, later found to be a hallmark symptom of diabetes (McCoy, 2009; Falck, 2018). The rationale behind this observation was not discovered until much later when a high concentration of glucose in urine was confirmed in 1776 by physician Matthew Dobson. More than a century later, in 1889, German physicians Oskar Minkowski and Joseph Von Merring removed canine pancreases, causing the dogs to develop diabetes and ultimately die, thus establishing the connection between diabetes and the pancreas. Three decades later, Fedrick Banting and Charles Best extracted insulin from cattle, which led to this naturally occurring substance first being considered as a potential treatment (Falck, 2018; McCoy, 2009). Prior to insulin being discovered, treatments included calorie restriction and consumption of

sweet almonds, dates, and oil of roses (Lakhtakia, 2013). In the late 1800s, Paul Langerhans identified the 'islets of Langerhans' (cells responsible for secreting insulin and glucagon) while working on his medical doctorate (Lakhtakia, 2013). The prevalence rate of DMT2 began increasing across the developed world in the early 1900s with industrialization (Falck, 2018). As technology advanced, sedentary lifestyles, portion sizes, and consumption of processed foods (including trans fats and sugars) increased. The first oral antidiabetic medications were developed in the 1950s but were only moderately effective and had significant side effects such as gastrointestinal upset (Lakhtakia, 2013).

According to Stern and Mitchell (2002), the first study to evaluate glucose intolerance in the Hispanic community took place in Laredo, Texas in 1979. The study obtained fasting serum samples from 389 Mexican Americans ranging in age from 40-74 years and found 16% of the participants met the DMT2 criteria, which signified an elevated severity and prevalence rate. Numerous studies were completed in the next several decades, showing that Hispanics were three time more likely than non-Hispanic Whites to develop this disease (Stern & Mitchell, 2002). In 1994, the head of the CDC diabetes program declared an epidemic that had increased disproportionately among certain minoritized racial and ethnic groups such as Hispanics (CDC, 2022a).

Literature Review

Methodology

A literature review was conducted using the Google Scholar, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Medline, and Nursing and Allied Health databases. Articles identified in Google Scholar that were not full text were located using one of the other databases. The search was limited to articles published between 2017-2022. The search

terms included (a) Hispanic or Latino, (b) diabetes mellitus type 2, (c) lifestyle modifications or lifestyle changes or lifestyle interventions, and (d) low socioeconomic status or disadvantaged populations. All search terms were connected by the BOOLEAN phrase 'AND.' Although the focus was on the Hispanic population, several articles addressing socioeconomically or disadvantaged populations in general were included. Studies including minor (less than 19 years of age) participants were excluded along with those addressing topics such as gestational diabetes, cancer, or homeopathic/alternative treatments. A total of 23 articles met the inclusion criteria: five articles were retrieved from Google Scholar, 11 from CINAHL, two from Medline; and five from Nursing and Allied Health**. Findings from each article are described below and in the Table of Evidence (see Appendix A).

Synthesis

The literature review focused on Hispanic adult patients with DMT2 and supporting evidence for the inclusion of culturally relevant lifestyle modifications to improve disease outcomes. The literature review identified four major themes pertinent to care of Hispanic patients: family involvement; culturally relevant interventions for diabetes education including physical activity, self-care, and dietary recommendations; socioeconomic considerations; and strategies to promote adherence.

Family Involvement

Hispanic patients diagnosed with DMT2 might find it difficult to adapt to the recommended lifestyle adjustments required for disease management. However, Hispanic family members often play an integral role in assisting the patient with diabetes in improving their health (Amirehsani et al., 2018; Sanchez et al., 2021). Healthcare providers should consider the central role family plays in Hispanic culture when designing a treatment plan. Multiple studies

found that when the patient's family was involved in diabetes education and the treatment plan, both the patient and the family members were able to make positive lifestyle changes that benefitted the entire family (Amirehsani et al., 2018; Baghikar et al., 2019; Barrios Quinta et al., 2021; Sanchez et al., 2021). Participation in diabetic education by both the patient and their family members was shown to increase knowledge and slow disease trajectory (Baghikar et al., 2019). In a qualitative study, patients made sustained and positive lifestyle modifications with the support of their family as measured by focus group data (Amirehsani et al., 2018). Findings from an exploratory, pilot, retrospective, cross-sectional study suggested that when implementing a diabetic education program within the primary care setting, recognizing the social determinants of health, family participation, and including the patient in the treatment plan reduced overarching health disparities (Barrios Quinta et al., 2021).

Family might also play an important role in the purchasing and preparation of healthy foods essential for DMT2 management. A study testing an educational intervention about healthy food alternatives implemented with 49 Hispanic women who did most of the shopping and cooking for their family showed increased wellness levels among the whole family in the post-test data (Sanchez et al., 2021). The authors found the participants in the Eat Healthy Be Active program improved their healthy lifestyle practices significantly along with those of their other family members. The participants improved their ability to read and understand food labels, decreased their consumption of sugary drinks, increased their consumption of fruits and vegetables, and increased their physical activity. More than half of the women experienced weight loss by the end of the six-week testing period. Thus, targeting Hispanic women with lifestyle modification information might be an effective strategy for improving DMT2 outcomes across the whole family (Sanchez et al., 2021).

Culturally Relevant Interventions

A synthesis of the literature revealed that culturally relevant interventions shown to be effective for the management of DMT2 among the Hispanic population included specially designed education programs, and combined physical activity and dietary recommendations with self-care considerations.

Diabetes Education Programs. Multiple modalities exist to deliver education to Hispanic patients with DMT2 with varying effects (Concha et al., 2021; Hildebrand et al., 2020; Philis-Tsimikas et al., 2022; Smith et al., 2021). Traditional diabetes education programs might be taught by a nutritionist, pharmacist, nurse, advanced practice provider, or physician. Typically, after a patient is diagnosed with diabetes, they are prescribed medications and a referral is placed for diabetes education. Electronic education interventions such as cellular text messages might be used as a communication tool with low-income Hispanic patients to improve DMT2 health outcomes. As reported by Philis-Tsimikas et al. (2022), the Dulce Digital program used a digital text messaging system to help improve glycemic control among Hispanic adults with poorly controlled DMT2 at a federally-qualified health center. The results indicated the ability to personalize electronic communications and the low-cost nature of text messaging might be optimal for delivering DMT2 support to this population in primary care.

Incorporating diabetic educators from the Hispanic community to deliver culturally competent DMT2 education might improve health outcomes for Hispanic families (Concha et al., 2021; Morales et al., 2020). Culturally tailoring diabetes education improves patient adherence to the treatment plan by incorporating longstanding traditions and using the patient's preferred language (typically English or Spanish). Incorporating the patient's culture into the treatment plan encourages lifestyle adjustments that might decrease morbidity and mortality. Several

published studies located in this review suggested the following health outcomes were positively impacted when education was delivered by trained Hispanic diabetes educators: patients' knowledge about healthy food choices; the benefits of physical activity such as Zumba, basketball, and walking with a group; and recognizing the importance of medication adherence and emotional health on long-term disease outcomes (Amirehsani et al., 2018; Brunk et al., 2017; Schepens Niemiec et al., 2018).

Developing culturally sensitive DMT2 education material that could be implemented in the primary care setting and was focused on medication education, adherence, and family inclusion was shown to improve health outcomes among low-income, Latino patients residing in urban areas (Baghikar et al., 2019). In addition, two studies located in this review found improvements were seen related to self-reported stress reduction, vital signs such as blood pressure, and HgA1c values when culturally tailored primary care education was provided (Hildebrand et al., 2020; Schepens Niemiec et al., 2018).

According to a systematic review and metanalysis from García-Molina et al. (2020), a combination of group and self-management activities appeared to be the most effective for controlling HgA_{1c} levels across all populations. A more focused systematic review of Hispanic patients diagnosed with DMT2 who participated in culturally tailored diabetes self-management education (DSME) showed significant decreases in HgA1c (Hildebrand et al., 2020). However, the authors found that knowledge decreased six months post-DSME, and most patients returned to their previous habits within one year. This suggested that DSME programs tailored for Hispanic patients must be sustained long-term for continued effect, a similar conclusion as that from Brunk et al. (2017). Similarly, Smith et al. (2021) reported that a diabetes education program implemented with Hispanic patients between 45-64 years old in south Texas was more

effective at increasing patient compliance with sustained follow-up. The program implemented in this cohort study reduced healthcare dollar use among the participants and HgA1c was reduced at each follow up visit with the greatest reduction of 0.90% ($p < .001$) at the first visit three months post-education (Smith et al., 2021). In addition, multiple authors suggested that patient education level and preferences should be taken into consideration when determining education practices about prediabetes and DMT2 (Hildebrand et al., 2020; Shaak et al., 2018; Smith et al., 2021).

Sathish et al. (2020) measured the cost effectiveness of a community-based peer support lifestyle modification intervention for low-income patients at risk for developing DMT2 over a two-year period. Costs to the health system were increased but resulted in an absolute risk reduction of 2.1% for developing DMT2. The probability for the intervention to be cost-effective for DMT2 prevention was 84% (health system) and 83.1% (societal). Developing a program that incorporated peer teaching with education might prevent DMT2 from progressing among low-income populations. Increased costs to health and societal systems associated with this type of intervention were countered by risk reduction and increased longevity (Sathish et al., 2020).

Physical Activity, Dietary Modifications, and Self-Care. Within diabetes education, lifestyle modifications such as physical activity and promotion of a healthy diet are essential for controlling DMT2. Lifestyle modifications have been shown to improve glycemic control and reduce HgA1c when compared to medication treatment alone (García-Molina et al., 2020; Hildebrand et al., 2020; Wake, 2020). A combination of dietary changes and increased physical activity was evident in the literature as being the most effective in reducing the onset of DMT2 and disease complications (Cha et al., 2017; Yamaoka et al., 2019). Although these lifestyle modifications were proven to help control DMT2 and prevent worsening of symptoms, many

patients felt overwhelmed by the demands of changing lifelong habits (Cha et al., 2017; Dagnew et al., 2021; García-Molina et al., 2020; Rockette-Wagner et al., 2020; Shaak et al., 2018; Wake, 2020; Yamaoka et al., 2019). Shaak et al. (2018) surveyed pre-diabetic Hispanic adults in a cross-sectional study. When respondents were questioned about lifestyle modifications of interest, exercise (77%) and dietary modifications (50%) were the top two choices. However, very few showed interest in using technology to prevent or manage DMT2, which contrasted with findings about text messaging reported above from Philis-Tsimikas et al. (2022). Similarly, findings from Cha et al. (2017) suggested the use of internet-based technology might be effective in coaching patients with prediabetes. Recognizing variations in receptivity to the use of technology might help providers develop and implement tailored care plans that increase participation from Hispanic patients.

Rockette-Wagner et al. (2020) developed and evaluated a program designed to improve physical activity among inactive adults based on evidence about the benefits related to DMT2, hypertension, cholesterol, and obesity outcomes. The authors found that improving patient-primary care provider communication to support an increase in physical activity enhanced overall patient health (Rockette-Wagner et al., 2020). Multiple studies suggested it was the responsibility of primary care providers to partner with patients on implementing realistic dietary and physical activity interventions to prevent and manage DMT2 (Baghikar et al., 2019; Brunk et al., 2017; Katangwe et al., 2019; Schepens Niemiec et al., 2018). In addition, policies to support lifestyle modifications for DMT2 prevention should be developed at the population-level to support the work of primary care providers (Yamaoka et al., 2019).

In a systematic review and metanalysis, increased physical activity was shown to significantly improve physical abilities, quality of life, body habitus, insulin sensitivity, glycemic

control, and cardiopulmonary markers among low-income patients with DMT2 (Wake, 2020). Primary care providers could help low-income patients implement lifestyle modifications using a coaching approach during regular visits. Increased use of physical activity as an intervention in primary care was encouraged to prevent comorbidities and improve glycemic control (Wake, 2020).

Dagnew et al. (2021) found good self-care practices were important to control blood glucose but overall self-care activity was lower than expected among a sample of 4,030 low-income adults in Ethiopia. Good dietary practices were evident 50% (95% CI, 32.75-67.60) of the time, good footcare practices were 64% (95% CI: 45.56-81.66), self-monitoring of blood glucose was 32% (95% CI: -4.62-68.41), and appropriate physical exercise was 48% (95% CI: 34.14-62.43). Only a small percentage of the sample regularly monitored their blood glucose levels, suggesting a need to increase patient knowledge about how to prevent DMT2 complications (Dagnew et al., 2021). Although this study was located outside of the United States, it was included in this review due to the focus on low-income and low-literacy populations and its relevance to the project, suggesting self-care practices should be part of lifestyle modification education delivered by primary care providers.

For many Hispanic patients, food is an integral part of their culture and making changes to diabetes-friendly alternatives might prove difficult. However, a qualitative descriptive study from Brunk et al. (2017) suggested that modifying the traditional Mexican-style diet was possible and participants were open to changes presented to them such as adding fiber, cinnamon, healthy fats, and vinegar to control glucose levels. The authors suggested that Hispanic patients with DMT2 might benefit from programs that incorporated health literacy and

culturally competent education to improve self-management of DMT2, but that this approach required sustained support from providers and programs to remain successful.

Socioeconomic Considerations

As introduced in Chapter I of this written project, patients who were socioeconomically disadvantaged experienced worse health outcomes due to barriers in accessing quality care and a reduced ability to engage in preventative measures (Philis-Tsimikas et al., 2022; Whittemore et al., 2020). A relationship among education level, ethnic identity, and prevalence of DMT2 in Hispanics was identified by Concha et al. (2021) in a retrospective analysis of the National Latino and Asian American Study. The authors found education level impacted the development of DMT2 among Hispanics as those with equal to or greater than 16 years of education were less likely to develop the disease. The study highlighted the importance of designing programs that considered the ethnic/racial backgrounds and education levels of intended recipients. In addition, the authors suggested that as acculturation was experienced by Hispanics in the United States, the approach taken by providers to provide DMT2 education should be flexible enough to adjust to the individual but stringent enough to reduce poor health outcomes (Concha et al., 2021). Similarly, Wake (2020) suggested that primary care providers could encourage low-income patients to implement lifestyle modifications through regular visits and a willingness to adapt lifestyle modifications throughout the lifespan.

Strategies to Promote Adherence

One of the most challenging aspects of DMT2 is patient adherence to the treatment plan. As with all treatment plans, the key to implementing changes is patient buy-in. In the Baghikar et al. (2019) study, findings suggested that most Hispanic patients would prefer to use lifestyle modifications over medications due to fear of adverse side effects. Medication adherence was

largely dependent on education given to the patient by their primary care provider and the cost of medications was yet another component that inhibited adherence.

Multiple studies showed that adherence to DMT2 treatment plans was improved when culturally relevant interventions were sustained long-term (Brunk et al., 2017; Hildebrand et al., 2020; Schepens Niemiec et al., 2018; Sebire et al., 2018). A systematic review suggested multifaceted, individualized interventions that included diet, exercise, and structured education occurring face-to-face for six months or more improved adherence to diabetes plans the most (Katangwe et al., 2019). The authors also suggested that DMT2 education should be multidisciplinary and could include pharmacists who interacted with patients frequently. Schepens Niemiec et al. (2018) conducted a pilot study of a DMT2 prevention program among middle-aged Hispanic adults ($N = 37$) and found the implementation of culturally tailored lifestyle modifications using an interdisciplinary team approach improved overall health by decreasing weight, increasing patient satisfaction, and improving health outcomes. In addition, the authors recommended that providers increase patient knowledge, autonomy, and adherence by giving patients the tools to better care for themselves.

Sustaining motivation could be difficult and a lack of motivation might lead to poor adherence to the DMT2 treatment plan. Six common motivation themes were identified by Sebire et al. (2018) during qualitative analysis of semi-structured interviews of adults ($N = 593$) newly diagnosed with DMT2: amotivation (lack), external motivation (outside source), introjected motivation (self-pressure), identified motivation (avoidance of adverse effects), integrated motivation (positive results), and intrinsic motivation (self-enjoyment). The study suggested that encouraging patients with positive feedback to celebrate victories outside of weight loss might help them stay motivated. As motivation increased, patients were more

inclined to continue to follow recommendations and take in new knowledge, leading to improved DMT2 outcomes (Sebire et al., 2018).

In addition to identifying emotional/psychological sources of motivation, Hulbert et al. (2022) completed a systematic review and found monetary incentives might motivate patients to adhere to recommended lifestyle modifications to manage DMT2. A review of 19 randomized control trials found that when patients were offered cash incentives of up to $270 for improvements in various health indicators such as BMI, HgA1c, weight, blood pressure, and cholesterol levels, adherence increased. The systematic review indicated that patients offered cash incentives showed statistically significant weight loss, a decrease in blood pressure, and lower BMI. Cash incentives might be a promising way to motivate patients with DMT2 to engage in lifestyle modifications to decrease morbidity and morbidity (Hulbert et al., 2022).

**Summary of the Literature
Review**

This literature review examined DMT2 among predominantly Hispanic patients and found family involvement was an essential tool in promoting healthy lifestyle modifications, especially related to food preparation and medication adherence. In addition, culturally relevant interventions and diabetes education programs were associated with improved patient outcomes such as reduced blood pressure, stress, and HgA1c levels. All interventions, including physical activity and dietary adjustments, should consider the socioeconomic and educational status of patients with an awareness that both might be lower among the Hispanic population. While peer or family-based support groups might be effective, establishing regular and sustained visits with a primary care provider was especially beneficial to increase treatment plan effectiveness and adherence. There were mixed data on the benefits of using technology to provide DMT2 education and support to Hispanic patients. Overall, the potential benefits of developing a

culturally relevant, patient centered DMT2 management guide for care of Hispanic patients in primary care was supported by this literature review.

Theoretical Framework

The following section explores the theoretical framework chosen to guide this scholarly project. Madeleine M. Leininger's theory of cultures care diversity, later known as the culture care theory (CCT), promotes nursing care that integrates all aspects of the patient and their culture (Leininger & McFarland, 2006). Leininger developed the theory after noting that many nurses did not have a good understanding of culture outside of their own. This lack of knowledge made it difficult to relate to and empathize with the patient and family. Leininger theorized that although caring was a part of nursing, not all nurses knew or understood the totality of the concept of care as it related to different cultures (Leininger & McFarland, 2006; McFarland & Wehbe-Alamah, 2019). The CCT also considered the various types of care a community already had in its infrastructure. Furthermore, the CCT enlightened nurses and other types of providers about how culture influenced the behaviors of individuals, families, and communities as various traditions and customs could impede or improve wellness.

The CTT can be used in a wide variety of global settings from small clinics to hospitals and is applicable to nursing and all other disciplines providing care to patients (McFarland & Wehbe-Alamah, 2015). The focus of the theory is on the provider's ability to provide quality care by understanding the patient's culture and values while incorporating that information into a treatment plan to deliver exceptional care. Understanding culture is essential for the co-development of a plan with the patient that empowers them to take control of their health decisions. The core concepts of the CCT are culture care preservation, culture care

accommodation, and culture care repatterning as described below (Leininger & McFarland, 2006):

1. Culture care preservation and/or maintenance occurs when the provider honors the patient by implementing interventions that preserve the beneficial aspects of their culture while facing health and illness.

2. Culture care accommodation and/or negotiation occurs when the provider adjusts the treatment plan to better suit the patient's culture, making it possible to adopt changes for a more holistic treatment and to better manage health, illness, and dying.

3. Culture care repatterning and/or restructuring happens when the provider supports the patient in identifying behaviors that may contribute to poor health outcomes and offers changes or alternatives that are considered acceptable within the patient's cultural norms.

Background of the Culture
Care Theory

In the mid-1980s, nurse theorists used four main concepts to develop theory: nursing, environment, health, and person (McFarland, 2010). These concepts differed from those Leininger considered to be relevant to transcultural nursing (Necor, 2014). Leininger felt the term 'nursing' should not describe an act but rather the provision of care for humans throughout their healthcare journey including during death and dying (Necor, 2014). The term 'person' is widely used in egocentric communities and is not always inclusive of more altruistic communities (Leininger & McFarland, 2006). According to Leininger, terms that have spiritual roots are better accepted in many cultures and include clans, groups, human beings, and families. The term 'human being' remains widely accepted as it demonstrates a transcultural significance

and allows for respectability and deference across cultures (Leininger & McFarland, 2006).

Leininger was also concerned with the environment in which care was enacted. Environment is

essential to understanding culture (Leininger & McFarland, 2006). The environment impacts all

aspects of life from foods consumed and exposure to disease to thoughts and traditions held by

an individual or community. Lastly, Leininger suggested that health in relation to culturally

based care knowledge fosters good outcomes. The CCT is unique in that the theory was among

the first to propose that how members of a culture see their health was more important than how

it was viewed by medical professionals (Leininger & McFarland, 2006).

**Definition of Constructs and Application
to This Scholarly Project**

Leininger (Leininger & McFarland, 2006) pointed out that cultures tend to have their own

definitions of terms. This is important because in CCT, the defined constructs are orientational

and not operational, meaning they are fluid and could be adjusted to various ideas and cultures

instead of being restricted to the user's interpretations (Leininger & McFarland, 2006).

McFarland and Wehbe-Alamah (2015) determined there are 178 care/caring constructs in CCT.

The 12 theory constructs from Leininger and McFarland (2006) most applicable to this DNP

scholarly project are defined below along with their application:

1. Care is the action that supports, enables, and assists ideas and or experiences that
   lead to the improvement of the human condition and life. Care is fundamental in
   establishing a respectful relationship with patients and was enacted during the
   development of the lifestyle modification guide by centering the patient, family,
   and cultural context throughout the process.

2. Culture relates to thinking and acting patterns that are passed down through the
   generations and influence decision making. Culture represents a learned/shared

way of living directed by accepted values and customs. The patient's Hispanic culture should be considered central to the primary investigator and expert panel when developing the guide. A potential example of this would be to include traditional dance (such as *folklorico*) as a form of physical activity or by incorporating the culturally tailored dietary changes described previously in this document.

3.   Emic is the knowledge about health within the culture. Having an understanding and appreciation of the patient's perspective and lived experience will help the provider develop a well-received treatment plan. Using a synthesis of the literature, the emic perspective was incorporated into the proposed guide using the known lived experiences and cultural knowledge from the Hispanic population.

4.   Etic is the outsider's view of the culture. Understanding that the provider might see health differently than the patient allows for acceptance that some aspects of culture are unwavering. For example, a provider might suggest the elimination of a food item that was likely to increase glucose levels but a patient might have a deep cultural affiliation with that item. Awareness of this potential conflict and negotiation about the two perspectives were important to consider during guide development.

5.   Cultural and social structural factors include all aspects of life such as race, religion, social and family ties, politics, economics, beliefs and values, technology, education, legal issues, and gender. To be able to effectively treat Hispanic patients diagnosed with DMT2, these aspects of their life should be considered. Of particular importance to this scholarly project was awareness that

the Hispanic population is at higher risk of being socioeconomically disadvantaged and therefore might experience unique issues related to DMT2 such as food insecurity and poor access to preventative health care.

6. Ethnohistory is the history of grouped experiences and how they influence health. Ethnohistory influences the ways in which patients are willing to make changes in their health journey. Human beings are not only influenced by their own history but also by that of their family, clan, community, and culture. The ethnohistory of Hispanic patients was considered during guide development including recognition that many Hispanics had experienced past inequalities in health care that contributed to mistrust of healthcare providers and systems (Amirehsani et al., 2018). To rebuild trust, the guide encouraged the provider to maintain open and honest communication with the patient. The guide also empowered patients with options and allowed for collaboration and feedback.

7. Environmental context refers to how the environment impacts the lived experienced of the person, family, or community in relation to geographical location. Additional components of this construct include the environment surrounding spiritual ideology, social interaction, and technology accessible to the culture. Both the primary investigator and the panel of recruited experts developing the guide have a deep appreciation for the environmental context of Hispanic patients in Pueblo, Colorado. This knowledge helped to inform the individualized treatment plan and to address the environmental disadvantages the community experienced such as low socioeconomic status and prevalent Medicaid utilization (Pueblo City-County Health Department, 2021).

8. Worldview describes how the patient sees their surroundings and how this perspective influences their health. Incorporating the patient's worldview into the guide might include acknowledging how their perceptions of family, religion, acculturation, and other factors influence their ability to manage DMT2. Capturing a patient's worldview in the guide required the establishment of trust and deep listening on the part of the provider to determine how these perspectives might influence care.

9. Culture care preservation/maintenance refers to beliefs or behaviors that sustain certain cultural practices. For example, incorporating traditional Hispanic foods with healthy adjustments into the treatment plan is one way to preserve culture while also promoting improved health outcomes.

10. Culturally congruent care is provided by the transcultural nurse/provider in the CCT. The patient's culture should guide the decision-making process, which requires that providers are aware and able to incorporate various aspects into the treatment plan. The developed guide aimed to ensure the provider's intentions aligned with those of the patient.

11. Care diversity entails respect for the differences between humans and cultures while developing and providing care for the patient. For example, understanding that *Hispanic* is an umbrella term that includes many nationalities with various traditions and histories was important for the developers of the guide as well as for any future users. Ensuring the guide was adjustable to individual needs was crucial to its success.

12.   Culture care universality refers to shared constructs within and across cultures. The provider could draw from similarities between various cultures (including their own) to connect with Hispanic patients and support their adjustment to the DMT2 plan of care. For example, all people desire wellness and the avoidance of suffering, and this universal trait informed development of the guide and served as a source of motivation for patient adherence.

Summary

Leininger's CCT supports the development of a DMT2 lifestyle modification guide by keeping the patient's culture at the center of the process (Leininger & McFarland, 2006). This theory allows for flexibility to adjust the treatment plan on an individual level while also recognizing certain universal tenants found across the Hispanic population such as the central role of family and the importance of food traditions. The CCT considers the patient's beliefs, environment, ethnohistory, and ability to adjust and make positive changes both within and outside of cultural norms. Socioeconomically disadvantaged Hispanic patients could be empowered by the autonomy gained through inclusion of their past experiences and current preferences in the decision-making process. The lifestyle modification guide developed in this project using the literature and a panel of expert clinicians reflected the tenets of the CCT by incorporating common cultural practices, contextual influences, and shared life experiences among Hispanic patients to improve the provision of culturally congruent DMT2 care in the primary care setting.

CHAPTER III

METHODOLOGY

The purpose of this DNP scholarly project was to utilize the current literature and a panel of clinical experts to develop a culturally relevant lifestyle modification guide for management of DMT2 among Hispanic patients. The guide was designed for use in the primary care setting and encourages partnership with the patient to develop a plan of care that is culturally and socioeconomically sensitive. In this chapter, the DNP scholarly project design, setting, and sample are described. The project mission, vision, and objectives are also discussed. The project plan with the data collection and analysis procedures are detailed along with the expected duration of the project and ethical considerations.

Design

The project design was a mostly quantitative, evidence-based practice project that employed the Delphi method to develop and evaluate a lifestyle modification guide for Hispanic patients with DMT2. The Delphi method is increasingly used in healthcare research and major components include (a) a focus on the future, (b) evaluation of a product or process by expert participants, (c) anonymous participation, (d) feedback provided over multiple rounds with revision of the product/process in between, and (e) a broad consensus achieved by the end of project (Davidson, 2023; Gray et al., 2017). The Delphi method decreased the likelihood that any one person in a group could influence the opinion of others, thus limiting the likelihood a consensus was prematurely drawn due to peer pressure (Davidson, 2023). This resulted in a more objective and expert-informed product or decision at the end of the process.

Using electronic validation surveys created by the primary investigator, the guide was evaluated for feasibility and usability by a group of eight advanced practice healthcare providers who worked with the population of focus (see Appendix B). The surveys used mostly close ended questions eliciting yes/no responses with a requirement to provide a short explanation or suggestion when a 'no' response was selected (Davidson, 2023; Gray et al., 2017). The e-Delphi technique allowed for the Delphi method to be electronically implemented and allowed the panel of experts to participate in the project asynchronously and virtually (Msibi et al., 2018). This approach was important for this sample of practicing clinicians due to time constraints related to heavy workloads, varying clinic schedules, and the fluctuating COVID-19 pandemic.

Setting

The guide was designed for future testing in the primary care setting in Pueblo, Colorado and outlined a plan of care that incorporated lifestyle modifications for Hispanic patients with DMT2 that were culturally and socioeconomically feasible. Although this project was implemented entirely online (virtually) using an electronic survey, the context of the practice setting was important due to the large Hispanic community in Pueblo and the elevated rates of DMT2, obesity, and poverty described in Chapter I. Pueblo is located in southern Colorado and has a population of approximately 112,000 people (U.S. Census Bureau, 2022). Approximately half of the city identified as being Hispanic or Latino and almost a quarter (21%) live in poverty, making the focus of this lifestyle modification guide especially salient.

Sample

Participants who were invited to co-develop the lifestyle modification guide included nurse practitioners (NPs), physician assistants (PAs), medical doctors (MDs), or doctors of osteopathy (DOs) currently working in a primary care setting. Additional inclusion criteria

included having at least three years of experience in their current role and regularly (at least once per month) prescribing lifestyle modifications for DMT2 to socioeconomically disadvantaged Hispanic adults. Exclusion criteria included clinicians new to their role (less than three years of experience), registered nurses, and diabetes educators. Primary care providers who specialized in pediatrics were also excluded. Participants were recruited through email with the use of a recruitment letter (see Appendix C) describing the project purpose and development plan for the lifestyle modification guide. The email was sent to providers within the Pueblo community using the primary investigator's professional network.

Project Mission, Vision, and Objectives

The mission was to create a culturally relevant lifestyle modification guide for Hispanic patients that would aid in the health maintenance and prevention of complications related to DMT2. The vision was to transform DMT2 care of disadvantaged Hispanic patients using an evidence-based and expert-informed lifestyle modification guide that could be adapted to any primary care setting serving this population. The following objectives and steps of the project were:

O1   Synthesize the existing literature to create an evidence-based lifestyle modification guide for primary care providers caring for Hispanic patients diagnosed with DMT2 that incorporated culturally and socioeconomically relevant lifestyle modifications.

a.   Locate and evaluate the relevant literature from Google Scholar, CINAHL, Medline, and Nursing and Allied Health databases (see Appendix A).

b.   Synthesize the literature to discover best practices and gaps in care (see Chapter II).

c.   Created a first draft lifestyle modification guide based on the literature findings under the supervision of the project chair/advisor (see Appendix D).

O2   Further develop the guide using two or three cycles of input from a panel of
       expert clinicians with experience in caring for Hispanic patients diagnosed with
       DMT2.

       a.   Recruit a panel of five to nine expert clinicians (NP, PA, MD or DO)

              meeting the inclusion criteria (see Appendix C).

       b.   Create a validation survey using Qualtrics survey software and distribute it

              along with the initial draft of the guide to the panel of experts for feedback

              (see Appendix B).

       c.   Analyze changes suggested by the panelists and implement needed revisions

              to the guide as supervised by the project chair/advisor, consulting the

              literature as needed.

       d.   Resubmit a revised draft of the guide and validation survey to the panelists

              for evaluation, making revisions based on feedback and repeat the process

              two or three times until broad consensus is achieved (see Appendices F and

              G).

O3   Establish majority agreement on the final draft of the guide before proposing a
       pilot study for testing among Hispanic patients with DMT2 in the primary care
       setting.

       a.   Should the panelists be unable to reach a consensus, the literature would be

              reevaluated to finalize the guide.

       b.   Upon completion of data collection/analysis and the final draft of the

              lifestyle modification guide, a pilot study for testing in the clinical setting is

              proposed in Chapter V of the written project.

Project Plan

Key aspects of this DNP scholarly project included:

1. Once the proposal defense was completed and approved by the project committee, University of Northern Colorado (UNCO) Institutional Review Board (IRB) approval from the University of Northern Colorado was obtained (see Appendix E).

2. Developed the initial draft of the lifestyle modification guide and the first online survey.

3. Using their professional networks, the primary investigator reached out to potential panelists in the Pueblo, Colorado community and inquired if they would be willing to participate in the project. They enrolled those who expressed an interest.

4. Utilized the e-Delphi method to implement two to three cycles of data collection, analysis, and revisions until broad consensus on the guide was obtained from the panelists.

5. Finalized the lifestyle modification guide and proposed a pilot test that would occur after completion of this DNP scholarly project.

Instrumentation

Validation surveys were created using Qualtrics survey software and electronically administered to the panel of experts to determine if the guide was realistic, usable, and feasible. Basic demographic data about the panelists were collected with each survey to ensure they met the project inclusion criteria. The surveys had close-ended (yes/no) questions with a brief (<140 characters) required open-text response should a panelist select 'no.' It was anticipated that at

least two rounds of surveying would be required but up to three might be needed to reach a broad consensus. In between data collection rounds, the lifestyle modification guide was revised and further developed. Included in Appendix D is the initial draft of the lifestyle modification guide and Appendix B contains the template for the first electronic validation survey.

Data Collection and Analysis

The validation surveys were administered using Qualtrics and data were stored in the same software program. Due to the small sample size and design of the project, the basic descriptive statistical features of Qualtrics sufficed for data analysis. If most of the panelists responded to a question with 'no,' that item was significantly revised based on the open-text feedback or eliminated from the lifestyle modification guide. If responses to a question were predominantly 'yes,' then the item was only minorly revised (if at all) and retained. The project advisor/chair and the primary investigator evaluated all open text responses together and engaged in basic categorization in a Word table to formulate a revision plan. The decision trail was maintained and displayed in tables in Chapter IV of this written document.

Duration of the Project

The estimated timeline from successful proposal defense to completion of the project was approximately 16 weeks, which proved to be an accurate estimation. The initial draft of the lifestyle modification guide and survey development was estimated to take one to two weeks. Submission to the IRB followed by approval was estimated to take two to three weeks. Administration of the first draft lifestyle modification guide/survey to the panelists and collecting responses was estimated to take approximately one week but was extended due to a slow response rate from the panelists. Next, analyzing the responses and making changes to the guide would take another week. The second round of data collection, analysis, and revisions was

estimated to take two more weeks but was extended by an additional week due to another slow response rate from panelists. A third round was not required. Once the panelists reached a consensus, the time to finalize the lifestyle modification guide, write up the project findings, and defend the project to the committee was an additional six weeks.

Ethical Considerations

Submission to the IRB for approval was completed only after the successful defense of the DNP project proposal. As expected, this DNP scholarly project was considered 'exempt' and did not require a full review. After IRB approval, the data were collected and stored on a password protected computer with security software installed. The secure UNCO server was utilized to exchange information among the primary investigator, chair/advisor, and participants. The Qualtrics account provided to all graduate students at UNCO was utilized to collect and store data; this password protected account also ensured the survey links were secure. Non-signature implied consent was obtained from each panelist electronically at the beginning of each survey. The risk to participants was minimal but included a time commitment of 10-15 minutes per data collection round. The benefits to participants were also minimal but might result in an improvement to their clinical practice in caring for the patient population of focus. No penalty was imposed if a panelist chose to discontinue their participation in the project at any time. Although a practicing NP in the Pueblo, Colorado community, the primary investigator was not in a supervisory role for any potential participants.

Conclusion

This scholarly project aimed to develop a culturally relevant lifestyle guide for Hispanic patients with DMT2 for use in the primary care setting. The guide was evaluated by a panel of experts using the Delphi method to determine its relevance and applicability to the target

population. During development, special consideration was given to cultural and socioeconomic issues prevalent among Hispanics in the United States. Once IRB approval was obtained, the project was carried out across two rounds of electronic surveys, allowing the panel of experts to provide feedback. The project would conclude once the panel reached a broad consensus and the guide was finalized. Findings were anticipated to support future pilot testing of the guide with patients and ultimately influence how providers approached culturally relevant DMT2 treatment for the underserved Hispanic populations.

CHAPTER IV

DATA ANALYSIS AND RESULTS

The purpose of this DNP scholarly project was to utilize the current literature and a panel of clinical experts to develop a culturally relevant lifestyle modification guide for management of diabetes mellitus type 2 (DMT2) among Hispanic patients. The guide was designed for use in the primary care setting and to encourage partnership with the patient to develop a culturally and socioeconomically sensitive plan of care. This chapter presents the results of the data analyses and revisions of the guide following two rounds of data collection using the Delphi method. An analysis of the project question and a summary of the findings are also provided.

Results

Objective One

O1   Synthesize the existing literature to create an evidence-based lifestyle modification guide for primary care providers caring for Hispanic patients diagnosed with DMT2 that incorporated culturally and socioeconomically relevant lifestyle modifications.

As described in Chapter II, evidence for the guide was located by searching the literature using Google Scholar, CINAHL, Medline, and Nursing and Allied Health databases. In addition, the American Diabetes Association's (ADA, 2023) *Standards of Care in Diabetes -2023* was also critically reviewed with a notable absence of any culturally or low socioeconomic-status guidance for providers. A synthesis of the selected literature can be found in both Chapter II and in the Table of Evidence (see Appendix A). The initial draft of the lifestyle modification guide

was created based on the literature synthesis and review of the ADA *Standards of Care-2023*

under the supervision of the project chair/advisor (see Appendix D).

Objective Two

> O2   Further develop the guide using two or three cycles of input from a panel of
> expert clinicians with experience in caring for Hispanic patients diagnosed with
> DMT2.

Ten medical or advanced practice expert clinicians responded to the recruitment email

sent by the primary investigator, indicating their willingness to participate in the project. Each

version of the validation survey and lifestyle modification guide was distributed via email to the

panel of experts for feedback (see Appendix B).

Round One Results

Eight of the panelists completed the review of the first draft guide and the round one

survey over a period of 23 days. The first survey period was extended several times due to a slow

rate of participation. Reminder emails were issued on days 7 and 14 of the data collection period.

Two of the surveys were excluded from the final analysis because one panelist reported no

longer working in the Pueblo, Colorado community and another panelist reported having less

than three years of experience in their current practice role. Thus, six surveys met inclusion

criteria and were eligible for analysis. Demographic data for the round one panelists are in Table

1.

As seen in Table 1, the round one sample was comprised of NPs and PAs with a notable

absence of physicians despite recruitment emails being issued to all four types of providers. All

the panelists had more than five years of experience in their current role. Nearly all the panelists

cared for low-income Hispanic patients with DMT2 more than once per week.

Table 1

Round One Sample Demographics

Sample Characteristic	*n* (%)
[1]Practice role	
MD	0 (0)
DO	0 (0)
NP	4 (67)
PA	2 (33)
Years in practice (in current role)	
5-10 years	3 (50)
10 or more years	3 (50)
[2]How often do you care for at least one socioeconomically disadvantaged Hispanic patient with diabetes mellitus type 2 in your current practice?	
Once or twice per month	1 (17)
Once per week	0 (0)
More than once per week	5 (83)

Note 1. $N = 6$.
Note 2. The term 'disadvantaged' pertains to an individual or group with two or more of the following risk factors: homelessness, foster care, free/reduced lunch program for two or more years, guardian/parents do not have an advanced degree, qualifies for Pell grants, WIC recipient, lives in a rural area, or is considered low income (<$14,580 annually for one person or <$30,000 for a family of four).

      After the sample demographics were compiled, suggested changes provided by the panelists in the round one survey were analyzed by the primary investigator under the supervision of the project advisor/chair (see Table 2). A revision plan was developed that required consulting the literature as needed (see the far-right column of Table 2).

Table 2

Results of the Round One Survey with Revision Plan

Survey Question	Yes *n* (%)	No *n* (%)	Comments	Revisions Based on Results
Do you find the guide feasible?	6 (100)	0 (0)	None	None
Do you find the guide user-friendly?	5 (83)	1 (17)	"The information is helpful, however, if it is put in a perles [sic] format it would be quick and easy for providers to utilize. It is a little busy to read."	Revised each section of the guide to include clinical pearls to support the provider in efficiently accessing small bits of information about providing culturally relevant care to the target population (Lorin et al., 2008).
Does the guide use a culturally relevant/sensitive approach for the suggested lifestyle modifications for the management of diabetes mellitus type 2 among the Hispanic population?	6 (100)	0 (0)	None	None
Is there anything missing from the guide?	1 (17)	5 (83)	"A form to show the trends of each DMII appointments (include weight, bp, microfilament, eye exam, neuro checks, A1C, lipids results, microalbumin, etc."	Revisions completed under the clinical goals section to clarify that the guide is designed to supplement the ADA (2023) guidelines, which already include the suggested information.

Summary of the Round One Survey Findings

Analysis of the round one survey found at least one panelist indicated the guide would be difficult to use quickly and with ease in the clinical setting. Feedback from the panelist suggested that usability would be improved if the guide included clinical pearls, which are small bits of information common to healthcare training and practice (Lorin et al., 2008). In response, each section of the guide was reformatted to include a clinical pearl to improve efficiency in the fast-paced clinical setting. Additional feedback from the round one survey suggested a form be used

to track patient data trends such as HgA1c, lipid panel, or microalbumin. After consultation with the project advisor/chair, the primary investigator determined the guide should stay focused on culturally- and low socioeconomic status-tailored support of Hispanic patients with DMT2 and should not replicate existing practice guidelines located in the ADA (2023) guidelines. Language about the purpose and goal of the guide was revised in the second draft to better convey this supplementary role.

Round Two Results

Upon completion of the round one revision, a second draft of the lifestyle modification guide (see Appendix F) and a revised round two validation survey (see Appendix G) were emailed to the panelists for further evaluation. Because data collection was anonymous, it was impossible to determine which of the panelists had not met the inclusion criteria in the first round, so all 10 were once again invited to respond. The round two data collection period was again extended longer than planned to a total of 21 days due to low response rates. Three reminder emails were issued on days 8, 12, and 18. Seven panelists completed the round two review and survey. However, three surveys were excluded after the panelists reported no longer working in the Pueblo area. Another survey ended after the respondent reporting caring for DMT2 patients less than once per month. A fifth survey met demographic inclusion criteria but was excluded due to incomplete data. Table 3 present the sample demographics for round two.

Table 4

Results of the Round Two Survey with Revision Plan

Survey Question	Yes *n* (%)	No *n* (%)	Comments
Is it clear that this revised guide is focused on lifestyle modifications for the management of DMT2 among the Hispanic population and is designed to supplement the ADA (2023) guidelines?	2 (100)	0 (0)	None
Does the addition of the clinical pearls and other formatting changes improve the usability of the revised guide?	2 (100%)	0 (0)	None
Does the revised guide use a culturally relevant/sensitive approach for the suggested lifestyle modifications for the management of DMT2 among the low socioeconomic status Hispanic population?	2 (100)	0 (0)	None
Is there anything missing from the revised guide that you would consider to be relevant in the care of Hispanic patients with DMT2?	2 (100)	0 (0)	None

Summary of Round Two Questionnaire Findings

Even though the revised guide and round two survey were sent to the same 10 panelists who had originally indicated an interest in participating in the project, only six surveys were completed. One survey was started but only partially completed, and was therefore excluded from round two analysis. The survey was closed after a three-week-long data collection period and multiple email reminders from the primary investigator. Of the six completed surveys, only two met project inclusion criteria. However, the two panelists agreed the guide was an effective supplement to the ADA *Standards of Care in Diabetes – 2023*, applied a culturally and socioeconomically sensitive approach, and was not missing any information.

Objective Three

> O3   Establish majority agreement on the final draft of the guide before proposing a pilot study for testing among Hispanic patients with DMT2 in the primary care setting.

As evidenced by the results reported in Tables 2 and 4, the panelists were able to achieve a broad consensus on the lifestyle modification guide with only minor revisions needed between the first and second drafts. A proposed plan for a pilot study to test the final draft guide in the clinical setting is described in Chapter V in the Recommendations for Future Research section.

Analysis and Summary of the Project Question

This scholarly project sought to answer the following project question:

> Q1   How can a culturally relevant lifestyle modification guide be developed for use with socioeconomically disadvantaged Hispanic patients diagnosed with DMT2 in the primary care setting?

A guide was created by analyzing the literature and integrating feedback from a panel of experts. The Delphi Method was utilized to consolidate information from the panel of experts and achieve a majority consensus. Through analysis of the collected validation survey data, the project question was answered.

Summary of Results

After synthesizing the literature and current clinical practice guidelines, a culturally relevant lifestyle modification guide for management of DMT2 among Hispanic patients was created. A panel of clinical experts was invited to review increasingly refined versions of the guide and completed accompanying validation surveys using the Delphi method. After two rounds of feedback, analysis, and revisions, consensus among a small panel of clinical experts was achieved. The result was an evidence-based, expert-informed clinical tool designed to enhance the current standard of care for Hispanic patients with DMT2 in a more culturally

informed and socioeconomically sensitive manner. The guide is ready for testing with Hispanic

patient populations in the primary care setting.

CHAPTER V

DISCUSSION

This final chapter of the DNP scholarly project discusses the conclusions, limitations, and recommendations for future research. Additionally, this chapter provides a reflection on how this scholarly project addressed the 2021 American Association of Colleges of Nursing's (AACN) *The Essentials: Core Competencies for Professional Nursing Education* at the advanced level. The purpose of this DNP scholarly project was to utilize the current literature and a panel of clinical experts to develop a culturally relevant lifestyle modification guide for management of diabetes mellitus type 2 (DMT2) among Hispanic patients.

Conclusions

A culturally relevant lifestyle modification guide for management of DMT2 among Hispanic patients was developed following a literature review and integration of feedback from a panel of clinical experts. Although not yet tested with patients, the guide has the potential to improve health outcomes among this vulnerable population. Development of the guide occurred in Pueblo, Colorado, which has a significant population of disadvantaged Hispanic patients with DMT2. Throughout the development of the guide, the culture care theory (CCT; Leininger & McFarland, 2006) informed and shaped how this clinical problem was addressed by keeping the individual and collective experiences of Hispanic patients at the center of the care process. By recognizing that culturally informed care is safer care, the resulting lifestyle modification guide reflected the tenets and core constructs of the CCT throughout.

The literature review revealed that lifestyle modifications were a key component in the management of DMT2 and prevention of worsening disease. However, despite strong evidence for the efficacy of lifestyle modifications in improving DMT2 care, many approaches did not take into consideration the patient's cultural or socioeconomic background. Many suggested lifestyle modifications are overly stringent and failed to incorporate cultural relevance or respect for patient autonomy. An existing body of literature on lifestyle interventions tailored to the Hispanic population was described in Chapter II of this written document, but the impetus for this scholarly project was to compile them into a single, usable tool for primary care providers. A strength of the resulting guide was it could be used in conjunction with current ADA (2023) guidelines. Together, these two guides have the potential to increase the willingness of Hispanic patients with DMT2 to participate in their journey to wellness.

Limitations

This DNP scholarly project encountered several limitations. The first limitation was the guide was not tested on patients; rather, it was developed with a panel of experts following integration of findings from a literature review. Thus, the efficacy of the guide is unknown. Next, despite the recruitment emails going out to MDs, DOs, NPs, and PAs, the panel was limited to the latter two types of providers. Given the primary investigator is a NP, there might have been more interest from the non-physician advanced practice providers. As a result, it is unknown if the physicians who were invited to participate in the review of the guides and surveys would have offered a different perspective. Although consistent with the Delphi method, another limitation was the small sample size. Originally, 10 providers responded to the recruitment email indicating their interest in taking part in the project. However, despite the data collection periods being extended, by the time exclusion criteria were applied, only eight surveys were completed

across both rounds. Full participation from a more diverse set of providers would have strengthened the creation of the guide.

Recommendations for Future Research

Upon achieving consensus on the guide from the panel of experts, objective three of this project also entailed proposing a pilot study for testing among Hispanic patients with DMT2 in the primary care setting. Future research would include implementation of the guide in a primary care clinic setting serving a predetermined percentage of Hispanic patients with DMT2 from disadvantaged backgrounds. Prior to implementation, the current DMT2 treatment practices of the clinic would need to be determined and the primary care providers oriented to the guide. The pilot study sample would consist of two groups of patients: one group who received care using the culturally tailored lifestyle modification guide along with current treatment and another who received current treatment alone. The outcomes to be evaluated might include tracking patient HgA1c levels, medication adherence, quality of life, weight maintenance or loss, and satisfaction with care and the provider. In addition, feedback from providers on implementation of the guide (including any barriers) should be assessed throughout the pilot study. Evaluation of processes and outcomes should take place at 3,6, 9, and 12-months intervals.

Reflections on Executing a Successful Doctor
of Nursing Practice Project

The following reflection frames the 10 domains and advanced-level nursing education competencies met throughout this DNP program. For this scholarly project specifically, each of the AACN (2021) *Essentials* is addressed.

**Domain 1: Knowledge for Nursing
Practice**

Within this domain, an advanced level competency describes that clinical reasoning

should include specialty knowledge as a foundation that continues into advanced stages. The

lifestyle modification guide was designed to assist advanced practice providers with their clinical

reasoning in making culturally relevant recommendations to the Hispanic patient population.

Furthermore, competencies within this domain asserted that practice should be influenced by

evidence that is current but also evolving (AACN, 2021). The literature review examined the

current evidence with a recognition that science is continually progressing, and modifications of

the guide might be needed in the future, especially after pilot testing occurred.

Domain 2: Person-Centered Care

It is important to ensure the creation of clinical material maintains a person-centered,

evidence-based design. Advanced practice nurses should incorporate the distinct experiences of

patients and cultural groups into the plan of care (AACN, 2021). The culturally relevant lifestyle

modification guide for management of DMT2 among Hispanic patients was created using current

evidence-based practice along with input from a panel of experts. The guide considered the

unique experiences of each patient and could be adjusted to their individual health care needs.

Domain 3: Population Health

Population health includes evaluating how a healthcare system serves a sub-population,

which might include implementing interventions that are both culturally and linguistically

effective (AACN, 2021). Throughout the guide, primary care providers were prompted to

consider the cultural and linguistic needs of the Hispanic sub-population. For example, the

literature suggested that primary care providers incorporate community advocates fluent in the

Hispanic patient's preferred language to decrease language barriers, increase adherence, and

promote trust in the healthcare system (Concha et al., 2021; Morales et al., 2020). This recommendation was subsequently captured in the guide.

Domain 4: Scholarship for the Nursing Discipline

Advanced-level competencies within this domain indicate that scholarship for the nursing discipline adheres to IRB guidelines and participants should be protected throughout the project (AACN, 2021). The guide was created using a panel of voluntary clinical experts. The panelists' identities were kept anonymous and personal information was not collected. Panelists received separate emails and implied consent was electronically obtained. This DNP scholarly project sought IRB approval from the UNCO and was considered exempt. The primary investigator adhered to the approved IRB protocol throughout.

Domain 5: Quality and Safety

The quality and safety domain suggests that advanced practice nurses use data driven standards to inform evidence-based practice. This domain also includes preparing the results of outcomes so quality improvement can be implemented (AACN, 2021). This DNP scholarly project evaluated the literature to examine why Hispanics in the United States have worse DMT2 health outcomes compared to non-Hispanics with the goal of improving the quality of care delivered in the primary care setting. The guide required that patients be regularly evaluated and appropriate adjustments to the plan of care be made to ensure continued safety and quality of care.

Domain 6: Interprofessional Partnerships

Directing interaction amongst peers and creating a positive environment that is supportive of interactions between interprofessional team members is a key feature of this domain (AACN, 2021). This project attempted to recruit four different types of advanced

practice providers to assemble an expert panel, although only NPs and PAs ended up participating. The Delphi method allowed the panelists to comment and effect changes to the guide. Because the two validation surveys were anonymous, an environment was created free of judgment or discourse and each panelist's opinion was considered equally.

Domain 7: Systems-Based Practice

Advanced practice nurses should shape policies that increase health equity and impact systemic racism, communities, and populations (AACN, 2021). Given that there are known inequities in DMT2 outcomes within the Hispanic population, this scholarly project directly addressed several level-two competencies within this domain. Additionally, advanced practice nurses should construct practices that would increase the value, cost-effectiveness, quality, and access of health care. Although pilot testing is still needed, the guide has the potential to decrease healthcare costs by improving adherence to treatment plans and, ultimately, patient health outcomes.

Domain 8: Informatics and Healthcare Technologies

Advanced practice nurses should use information from technology databases to construct evidence that supports care including interpreting primary and secondary data combined with other information (AACN, 2021). Existing evidence for this project was synthesized during a search of the literature. Primary data were collected from the sample using Qualtrics survey software, which also assisted in data management and basic interpretation. Both sources of data were utilized to create multiple drafts of the guide, resulting in a final draft (see Appendix F).

Domain 9: Professionalism

Professionalism encourages productive action across healthcare settings by promoting a culture of civility. A level-two competency within this domain asserted that advanced practice

nurses should utilize nursing's core values to influence care and hold oneself and others to the same ethical standard (AACN, 2021). Throughout the scholarly project, the primary investigator facilitated communication that brought together an anonymous panel of experts. The project hinged on an understanding of respect for each expert's opinions and common ethical standards in research were adhered to.

Domain 10: Personal, Professional, and Leadership Development

Personal, professional, and leadership development promotes activities that reinforce lifelong learning. Part of this process includes evaluating how intentional change would affect health outcomes (AACN, 2021). During this scholarly project, the primary investigator developed skills regarding how to gather and interpret information, integrate primary and secondary sources of data into a usable clinical tool, and collaborate with multiple experts using technology to potentially improve patient outcomes with future implementation of the guide.

Summary

Diabetes mellitus type 2 is an epidemic that disproportionately affects Hispanic patients in the United States at an alarming rate. The Hispanic population is complex, diverse, and susceptible to various socioeconomic inequities that negatively impact diabetes outcomes. Although a robust set of clinical guidelines for management of DMT2 in primary care exists, largely missing is any cultural or low socioeconomic tailoring to meet the needs of the Hispanic population. As a result, a culturally relevant lifestyle modification guide for management of DMT2 among Hispanic patients was developed using current literature and a small panel of clinical experts currently serving the low-income Hispanic community in southern Colorado. Across two rounds of data collection and analysis, broad consensus on a lifestyle management guide for this unique population was created. The next phase of this project includes a pilot study

to be conducted in a primary care setting to assess efficacy and both patient and provider

satisfaction. The end goal of the guide is to decrease the burden DMT2 has on the Hispanic

community, not only in Pueblo, Colorado but also nationwide.

REFERENCES

Aguayo-Mazzucato, C., Diaque, P., Hernanadez, S., Rosas, S., Kostic, A., & Caballero, A. E. (2018). Understanding the growing epidemic of type 2 diabetes in the population living in the United States. *Diabetes/Metabolism Research and Reviews, 35*(2). https://doi.org/10.1002/dmrr.3097

American Association of Colleges of Nursing. (2021). *The essentials: Core competencies for professional nursing education*. https://www.aacnnursing.org/Essentials

American Diabetes Association. (2023). Standards of care in diabetes-2023. *The Journal of Clinical and Applied Research and Education, 46*(1), S1-S4. https://doi.org/10.2337/dc23-SINT

American Hospital Association. (2023). *Becoming a culturally competent health care organization*. https://www.aha.org/ahahret-guides/2013-06-18-becoming-culturally-competent-health-care-organization

Amirehsani, A. A., Hu, J., Wallace, D. C., Silva, Z. A., & Dick, S. (2018). Hispanic families' action plans for a healthier lifestyle for diabetes management. *The Diabetes Educator, 45*, 87-95. http://doi.org/10.1177/0145721718812478

Baghikar, S., Benitez, A., Fernandez Piñeros, P., Gao, Y., & Baig, A. A. (2019). Factors impacting adherence to diabetes medication among urban, low income Mexican-Americans with diabetes. *Journal of Immigrant and Minority Health, 21*, 1334-1341. http://doi.org/10.1007/s10903-019-00867-9

Barrios Quinta, A. M., Romero de la Osa, R. M., & Ferrán, M. B. (2021). Reducing health

      inequalities among most disadvantaged type 2 diabetes patients: A cross-sectional

      exploratory pilot study. *Journal of Nursing Scholarship, 54*, 668-677.

      http://doi.org/10.1111/jnu.12781

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.

      http://doi.org/101177/1043659615613418

Centers for Disease Control and Prevention. (2022a). Hispanic or Latino People and type 2

      diabetes. https://www.cdc.gov/diabetes/library/features/hispanic-diabetes.html

Centers for Disease Control and Prevention. (2022b). Type 2 Diabetes.

      https://www.cdc.gov/diabetes/basics/type2.html

Centers for Disease Control and Prevention. (2022c). *Table 26: Normal weight, overweight, and

      obesity among adults aged 20 and over, by selected characteristics: United States,

      selected years 1988–1994 through 2015–2018.*

      https://www.cdc.gov/nchs/data/hus/2019/026-508.pdf

Cha, S., Lim, S., Kim, K., Lee, E., Kang, B., Choi, Y., Yoon, K., Ahn, Y., Lee, J., & Ko, S.

      (2017). Community-based randomized controlled trial of diabetes prevention study for

      high-risk individuals of type 2 diabetes: Lifestyle intervention using web-based system.

      BMC Public Health, 17, 387. http://doi.org/10.1186/s12889-017-4283-y

Concha, J. B., Kelly, K., & Mezuk, B. (2021). Hispanic/Latino ethnic identity and diabetes: An

    examination of underlying acculturation processes and the Hispanic/Latino health

    advantage. *Health Education and Behavior, 48*(3), 285-294.

    http://doi.org/10.1177/10901981211010083

Dagnew, B., Demissie, G. D., & Angaw, D. A. (2021). Systemic review and meta-analysis of

    good self-care practice among people living with type 2 diabetes mellitus in Ethiopia: A

    national call to bolster lifestyle changes. *Hindawi, 2021*, 8896896.

    http://doi.org/10.1155/2021/8896896

Davidson, P. (2023). *Delphi method*. https://research.phoenix.edu/content/research-

    methodology-group/delphi-method

Epocrates. (2021). Type 2 diabetes mellitus in adults. In *Epocrates medical references* (Version

    21.4.2) [Mobile app]. Google play store.

    https://play.google.com/store/apps/details?id=com.epocrates

Evert, A. B., & Riddell, M. C. (2014). Lifestyle intervention: Nutrition therapy and physical

    activity. *PubMed.* https://doi.org/10.1016/j.mcna.2014.09.001

Falck, S. (2018). History of diabetes: The beginnings. *Healthline*.

    https://www.healthline.com/health/history-type-1-diabetes

Free Dictionary. (2022). *Primary care*. https://www.thefreedictionary.com/primary+care

García-Molina, L., Lewis-Mikhael, A., Riquelme-Gallego, B., Cano-Ibáñez, N., Oliveras-López,

    M., & Bueno-Cavanillas, A. (2020). Improving type 2 diabetes mellitus glycemic control

    through lifestyle modification implementing diet intervention: A systemic review and

    meta-analysis. *European Journal of Nutrition, 59*, 1313-1328.

    http://doi.org/10.1007/s00394-019-02147-6

Gray, J. R., Grove, S. K., & Sutherland, S. (2017). *Burns and Grove's the practice of nursing research: Appraisal, synthesis, and generation of evidence*. Elsevier.

Hildebrand, J. A., Billimek, J., Lee, J., Sorkin, D. H., Olshansky, E. F., Clancy, S. L., & Evangelista, L. S. (2020). Effect of diabetes self-management education on glycemic control in Latino adults with type 2 diabetes: A systemic review and meta-analysis. *Patient Education and Counseling, 103*, 266-275. http://doi.org/10.1016/j-pec.2019.09.009

Hulbert, L. R., Michael, S. L., Charter-Harris, J., Atkins, C., Skeete, R. A., & Cannon, M. J. (2022). Effectiveness of incentives for improving diabetes-related health indicators in chronic disease lifestyle modification programs: A systemic revies and meta-analysis. *Preventing Chronic Disease Public Health Research, Practice, and Policy, 19*(66). http://doi.org/10.5888/pcd19.220151

Kaiser Permanente. (2019). *Type 2 diabetes screening and treatment guideline*. Kaiser Foundation Health Plan of Washington. Type 2 Diabetes Screening and Treatment Guideline (kaiserpermanente.org).

Katangwe, T., Bhattacharya, D., & Twigg, M. J. (2019). A systemic review exploring characteristics of lifestyle modification interventions in newly diagnosed type 2 diabetes for delivery in community pharmacy. *International Journal of Pharmacy Practice, 27*, 3-16. http://doi.org/10.1111/ijpp.12512

Kim, Y. J., Jeong, I. K., Kim, S. G., Cho, D. H., Kim, C. H., Kim, C. S., Lee, W. Y., Won, K. C., Cha, J. H., Lee, J., & Kim, D. M. (2020). Changes in the quality of life in patients with type 2 diabetes mellitus according to physician and patient behaviors, *Diabetes & Metabolism Journal, 44*, 91-102. https://doi.org/10.4093/dmj.2018.0251

Lakhtakia, R. (2013). The history of diabetes mellitus. *National Library of Medicine,* 13(3), 368-370. https://doi.org/10.12816/0003257

Leininger, M. M., & McFarland, M. R. (2006)*. Culture care diversity and universality: A worldwide nursing theory* (2nd ed.). Jones and Bartlett Publishers.

Lopez, M. H., Krogstad, J. M., & Passel, J. S. (2022). *Who is Hispanic*? Pew Research Center. https://www.pewresearch.org/short-reads/2022/09/15/who-is-hispanic/

Lorin, M. I., Palazzi, D. L., Turner, T. L., & Ward, M. A. (2008). What is a clinical pearl and what is its role in medical education? *National Library of Medicine, 30*(9-10). http://doi.org/10.1080/01421590802144286

Martenstyn, J., King, M., & Rutherford, C. (2020). Impact of weight loss interventions on patient-reported outcomes in overweight and obese adults with type 2 diabetes: A systematic review. *Journal of Behavioral Medicine, 43*, 873-891. https://doi.org/101007/s10865-020-00140-7

McCoy, K. (2009). The history of diabetes. *Everyday Health*. https://www.everydayhealth.com/diabetes/understanding/diabetes-mellitus-through-time.aspx#:~:text=The%20first%20known%20mention%20of,people%20who%20had%20this%20disease

McFarland, M. R. (2010). Madeleine M. Leininger 1920-present culture care theory of diversity and universality. In M. R. Alligood, & A. M. Tomey (Eds.), *Nursing theorists and their work* (pp.454-479). Mosby Elsevier.

McFarland, M. R., & Wehbe-Alamah, H. B. (2015). *Leininger's culture care diversity and universality: A worldwide nursing theory* (3rd ed.). Jones and Bartlett Publishers.

McFarland, M. R., & Wehbe-Alamah, H. B. (2019). Leininger's theory of culture care diversity and universality: An overview with a historical retrospective and a view toward the future. *Journal of Transcultural Nursing, 30*(6), 540-557. https://doi.org/10.1177/1043659619867134

Merriam-Webster. (2022). Complication. *Merriam-Webster.com dictionary*. https://www.merriam-webster.com/dictionary/complication

Merriam-Webster. (2023a). *Diabetes mellitus*. https://www.merriam-webster.com/dictionary/diabetes%20mellitus

Merriam-Webster. (2023b). *Disadvantaged*. https://www.merriam-webster.com/dictionary/disadvantaged

Merriam-Webster. (2023c). *Socioeconomic*. https://www.merriam-webster.com/dictionary/socioeconomic

Morales, J., Glantz, N., Larez, A., Bevier, W., Conneely, M., Fan, L., Reed, B., Alatorre, C., Paczkowski, R., Ahmed, T., Mackenzie, A., Duncan, I., & Kerr, D. (2020). Understanding the impact of five major determinants of health (genetics, biology, behavior, psychology, society/environment) on type 2 diabetes in U.S. Hispanic/Latino families: Mil Familias – A cohort study. *BMC Endocrine Disorders, 20,* 4. http://doi.org/10.1186/s12902-019-0483-z

Msibi, P. N., Mogale, R., de Waal, M., & Ngcobo, N. (2018). Using e-Delphi to formulate and appraise the guidelines for women's health concerns at a coal mine: A case study. *Curationis, 41*(1), a1934. https://doi.org/10.4102/curationis.v41i1.1934

Necor, J. A. (2014). *Madeleine Lininger's transcultural nursing*.

>   https://www.slideshare.net/JosephineAnnNecor/madeleine-leiningers-transcultural-

>   nursing.

Philis-Tsimikas, A., Fortmann, A. L., Godino, J. G., Schultz, J., Roesch, S. C., Gilmer, T. P.,

>   Farcas, E., Sandoval, H., Savin, K. L., Clark, T., Chichmarenko, M., Jones, J. A., &

>   Gallo, L. C. (2022). Dulce digital-me: Protocol for a randomized controlled trial of an

>   adaptive mHealth intervention for underserved Hispanics with diabetes. *BMC Open*

>   *Access, 23*, 80. http://doi.org/10.1186/s13063-021-05899-x

Pittman, T. (2020). Socioeconomic factors play significant role in health outcomes. *Duke Health.*

>   https://physicians.dukehealth.org/articles/socioeconomic-factors-play-significant-role-

>   health-outcomes

Pueblo City-County Health Department. (2021). *Pueblo county 2021 community health status*

>   *report*. https://county.pueblo.org/sites/default/files/2022-

>   06/2021CHAReport_Condensed.pdf

Pueblo County Community Health Improvement Plan. (2018-2022). *Community health*

>   *improvement plan. Pueblo City-County Health Department*. http://live-pueblo-

>   county.pantheonsite.io/sites/default/files/2020-

>   01/CHIP_FINAL_w_signatures_Nov_2017.pdf

Rockette-Wagner, B., Fischer, G. S., Kriska, A. M., Conroy, M. B., Dunstan, D., Roumpz, C., &

>   McTigue, K. M. (2020). Efficacy of an online physical activity intervention coordinated

>   with routine clinical care: Protocol for a randomized controlled trial. *JMIR Research*

>   *Protocols, 9*(11). http://doi.org/10.2196/18891

Sanchez, J. I., Briant, K. J., Wu-Georges, S., Gonzalez, V., Galvan, A., Cole, S., & Thompson,

    B. (2021). Eat healthy, be active community workshop implemented with rural Hispanic

    women. *BMC Women's Health, 21*, 24. http://doi.org/10.1186/s12905-020-01157-5

Sathish, T., Oldenburg, B., Thankappan, K. R., Absetz, P., Shaw, J. E., Tapp, R. J., Zimmet, P.

    Z., Balachandran, S., Shetty, S. S., Aziz, Z., & Mahal, A. (2020). Cost-effectiveness of a

    lifestyle intervention in high-risk individuals for diabetes in a low- and middle-income

    setting: Trail-based analysis of the kerala diabetes prevention program. *BMC Medicine,*

    18, 251. http://doi.org/10.1186/s12916-020-01704-9

Schepens Niemiec, S. L., Blanchard, J., Vigen, C. L. P., Martínez, J., Guzmán, L., Concha, A.,

    Fluke, M., & Carlson, M. (2018). Evaluation of ¡Vivir Mi Vida! to improve health and

    wellness of rural-dwelling, late middle-aged Latino adults: Results of a feasibility and

    pilot study of a lifestyle intervention. *Primary Health Care Research & Development,19*,

    448-463. http://doi.org/10.1017/S1463423617000901

Sebire, S. J., Toumpakari, Z., Turner, K. M., Cooper, A. S., Page, A. S., Malpass, A., &

    Andrews, R. C. (2018). "I've made this my lifestyle now": A prospective qualitative

    study of motivation for lifestyle change among people with newly diagnosed type two

    diabetes mellitus. *BMC Public Health, 18*, 204. http://doi.org/10.1186/s12889-018-5114-

    5

Shaak, K., Johnson, M. B., Marsh, J. K., Hansen, S. E., Banerjee, E. S., Stello, B., & Careyva, B.

    A. (2018). Exploring health beliefs among Hispanic adults with prediabetes. *Journal of*

    Community Health, 43, 962-968. http://doi.org/10.1007/s10900-018-0512-2

Shrider, E. A., Kollar, M., Chen, F., & Semega, J. (2021). *Income and poverty in the United States: 2020 current population reports*. Income and Poverty in the United States: 2020 (census.gov)

Smith, M. L., Zhong, L., Lee, S., Towne, S. D., Jr., & Ory, M. G. (2021). Effectiveness and economic impact of a diabetes education program among adults with type 2 diabetes in South Texas. *BMC Public Health, 21*, 1646. http://doi.org/10.1186/s12889-021-11632-9

Stern, M. P., & Mitchell, B. D. (2002). *Diabetes in Hispanic Americans*. https://www.researchgate.net/publication/242486148_Diabetes_in_Hispanic_Americans#:~:text=Diabetes%20in%20Hispanic%20Americans%20January%202002%20Authors%3A%20Michael,Stern%20Braxton%20D%20Mitchell%20University%20of%20Maryland%2C%20Baltimore

U.S. Census Bureau. (2018). *Hispanic population to reach 111 million by 2060*. Hispanic Population to Reach 111 Million by 2060 (census.gov)

U.S. Census Bureau. (2022). *Quick facts Pueblo County, Colorado*. https://www.census.gov/quickfacts/pueblocitycolorado

U.S. Department of Health and Human Services Office of Minority Health. (2023). Profile: Hispanic/Latino Americans. HHS.gov. Hispanic/Latino - The Office of Minority Health (hhs.gov)Wake, A.D. (2020). Antidiabetic effects of physical activity: How it helps control type 2 diabetes. Diabetes, Metabolic Syndrome and Obesity: Targets and Therapy, 13, 2909-2923. http://doi.org/10.2147/DSMO.S262289

Wake, A. D. (2020). Antidiabetic effects of physical activity: How it helps to control type 2 diabetes. *Diabetes, Metabolic Syndrome and Obesity, 13*, 2909-2923, DOI: 10.2147/DMSO.S262289

Whittemore, R., Vilar-Compte, M., Burrola-Méndez, S., Lozano-Marrufo, A., Delvy, R., Pardo-

    Carrillo, M., De La Cerda, S., Pena-Purcell, N., & Pérez-Escamilla, R. (2020).

    Development of a diabetes self-management + mHealth program: Tailoring the

    intervention for a pilot study in a low-income setting in Mexico. *BMC Open Access,*

    6(25). http://doi.org/10.1186/s40814-020-0558-7

Yamaoka, K., Nemoto, A., & Tango, T. (2019). Comparison of the effectiveness of lifestyle

    modifications with other treatments on the incidence of type 2 diabetes in people at high

    risk: A network meta-analysis. *Nutrients, 11,* 1373. http://doi.org/10.3390/nu11061373

APPENDIX A

TABLE OF EVIDENCE

Table A1

Summary of Evidence

Author (year)	Purpose	Theory/ Framework /Model	Design	Setting & Sample	Survey/Instruments	Findings	Implications for Practice	Grade/Level of Evidence
Amirehsani et al. (2018)	To evaluate a culturally tailored healthy lifestyle action plan for Hispanic patients with DMT2 and their families.	None stated	A focus group and qualitative methodology were used to gather information about how the participants felt about the lifestyle modifications.	N=84 patients and their family members in Greensboro, North Carolina	Group discussions (25-30 minutes) between participants led by a bilingual Latina moderator were autotyped and transcribed verbatim in Spanish and translated into English. Reviewers extracted patterns and trends from the transcripts. Team members then met and agreed upon common trends.	Hispanic patients with DMT2 and their families that participated in culturally tailored diabetic education increased their knowledge about the disease and lifestyle modifications to improve their wellness. The patients made positive lifestyle modifications as measured by the focus group data.	Including the patient and the family in DM education may increase healthy lifestyle practices for both. Culturally tailored programs may be more effective for this population.	Level 3

Table A1 Continued

Author (year)	Purpose	Theory/ Framework /Model	Design	Setting & Sample	Survey/Instruments	Findings	Implications for Practice	Grade/Level of Evidence
Baghikar et al. (2019)	To explore how medication compliance is achieved in diabetic, low-income, Latino patients residing in urban areas.	Self-determination theory	Randomized control trial	N=27 participants in a church-based "Picture good health/ Imaginate una Buena Salud" program South Lawndale, Chicago	30 Participants were interviewed at the end of the 6-month study (3 excluded due to clerical error). Interviews lasted 45-60 minutes and focused on medication use and side effects, communication, importance of medication, adherence, support systems, and cost of medication. Data was extracted and put into a templet used to input information into a codebook. Code reports were generated using HyperRESEARCH software.	Findings suggest that Latinos would prefer to use lifestyle modifications over medications due to fear of adverse effects. Medication adherence is largely dependent on education given to the patient by the provider. Participants recognized the importance of DMT2 medication to maintain wellness. Cost can prevent patients from taking prescribed medication and 7% of participants expressed that they did not receive any education about the medication, how it works, side effect, and when/why the medication may need to be adjusted. Having a support system is critical for adherence due to the support person being able to help the patient set a medication regimen.	Developing culturally sensitive education material that can be given in the clinic focused on medication education, adherence, and family inclusion may improve health outcomes. Providers must also consider cost when prescribing interventions.	Level 2

Table A1 Continued

Author (year)	Purpose	Theory/ Framework /Model	Design	Setting & Sample	Survey/Instruments	Findings	Implications for Practice	Grade/Level of Evidence
Barrios Quinta et al. (2021)	To evaluate how primary care programs can reduce health disparities in patients with DMT2.	None stated	Exploratory pilot retrospective cross-sectional study	N=404 Older adults from both socially depressed areas and conventional areas in Seville, Spain. Patients all had DMT2 and were undergoing a retinopathy screening between March-June 2019.	SPSS v 2.0- univatiate descriptive analysis and statistical association of health outcomes Pearson's chi-square ANOVA Kruskal-Wallis	Socially tailored programs that focus on diabetic patients and their families that address risk strategies can nullify the negative effects of the social determinants of health. Use of primary care within the healthcare system can reduce healthcare inequalities and increase wellbeing among patients with DMT2.	Implementing a diabetic education program that recognizes the social determinants, family participation, and includes the patient will improve health disparities. Primary care is the ideal setting for reducing DMT2 disparities.	Level 3

Table A1 Continued								
Author (year)	Purpose	Theory/ Framework /Model	Design	Setting & Sample	Survey/Instruments	Findings	Implications for Practice	Grade/Level of Evidence
Brunk et al. (2017)	To determine how likely a Hispanic patient with low health literacy and DMT2 can adapt to a patient centered educational program.	Theories of behavioral change	Qualitative descriptive study design and phenomenological analysis	N=9 Hispanic adults with DMT2 in a rural community health center	Feedback was collected at 4 group sessions lasting for 2 hours each. The interviews were recorded and transcribed. Using the NVivo 10 software program, the transcribed information was organized and analyzed. Themes were extracted and categorized from the data.	Patients that are primarily Spanish speaking with a low health literacy can adjust to self-management when given adequate support. Participants knowledge, motivation/ barriers, self-management, and accountability were all low prior to the sessions. Modifying the traditional Mexican-style diet is possible and the participants were open to changes presented to them such as using fiber, cinnamon, fats, and vinegar to control glucose levels.	Diabetic patients will benefit from programs incorporating health literacy and culturally competent diabetic education to improve self-management of DMT2. Self-management of DMT2 requires sustained support from providers/programs.	Level 5

Table A1 Continued								
Author (year)	Purpose	Theory/ Framework /Model	Design	Setting & Sample	Survey/Instruments	Findings	Implications for Practice	Grade/Level of Evidence
Cha et al. (2017)	To describe the web-based lifestyle modifications program (WBLIP) used in the community in the Korean Diabetes Prevention Study (KDPS)	None stated	Randomized control trial	N=410 The setting of the study was at 2 community-based healthcare centers in South Korea with the goal of preventing the progression of prediabetes into DMT2. Inclusion criteria included: Prediabetic, FPG 100-125, A1c 5.7-6.4, >30yo; Evaluated over a 22-month period	Internet based DMT2 education that incorporated scheduled visits, videos, and communication tools. Surveying measured: 1) minimum of 5–7% weight loss at 6 months and maintenance of that weight loss; 2) moderate intensity activity ≥ 150 min/week; 3) balanced diet; 4) smoking cessation and avoiding alcohol as stress management.	Lifestyle modifications and intensive lifestyle interventions are effective in reducing new diagnosis of DM type 2 in prediabetic patients. Lifestyle modifications are essential to preventing prediabetes from transitioning to DMT2.	Findings should inform the creation and usability of multifaceted programs for DMT2 education and prevention. The use of internet-based technology may be effective in coaching patients with prediabetes. Metformin was not included in the study and should be looked at in future studies.	Level 2

Table A1 Continued								
Author (year)	Purpose	Theory/ Framework /Model	Design	Setting & Sample	Survey/Instruments	Findings	Implications for Practice	Grade/Level of Evidence
Concha et al. (2021)	To examine how ethnic identity and psychological health play roles in the physical health of Hispanics/Latinos and their level of acculturation in the U.S.	None stated	Retrospective study National Latino and Asian American Study (NLAAS)	N=1747 Diabetic patients of Hispanic origin over the age of 30 years who live in Texas and have a diagnosis of DMT2	Participants were interviewed by bilingual interviewers and surveys were completed in the participants preferred language. Data collected included ethnic identity, education, and covariates of age, gender, and ancestry. Scott-Rao X^2 test and two-tailed *t*-test were used to compare sample characteristics. SAS survey procedures were used to analyze data.	Ethnic identity and the likelihood that the person will have DMT2 were not statistically significant. The study did find that there is a relationship between education level, ethnic identity, and prevalence of DMT2: Hispanics/Latinos with high levels of ethnic identity who have 16+ years of education are less likely to have DMT2 whereas those with 13-15 years of education are more likely to have DMT2.	The study highlights the importance of designing programs that consider the ethnic and racial backgrounds and levels of education. As Hispanics/Latinos in the U.S. become more acculturated the approach for diabetic education must be flexible enough to adjust to the individual but stringent enough to reduce poor health outcomes.	Level 3

Table A1 Continued

Author (year)	Purpose	Theory/ Framework /Model	Design	Setting & Sample	Survey/Instruments	Findings	Implications for Practice	Grade/Level of Evidence
Dagnew et al. (2021)	To evaluate the effects of good self-care practices among people with DMT2 in improving their health.	DerSimonian and Laird's random-effects model	Meta-analysis	N=4030 Ethiopian localities Adults living with DMT2 Systematic search of articles. 12 studies were chosen that met the inclusion criteria. Two of the authors extracted and categorized the information using Excel and discrepancies were resolved.	Summary of DMT2 Self-Care Activities (SDSCA), Egger's test, Funnel plot, I-Squared statistics. Outcome variables included good self-care practices, dietary practices, footcare practices, self-monitoring of blood glucose, and adequate physical exercise.	Good self-care practices are important to control blood glucose, but overall self-care was lower than expected. Among the sample, good dietary practices were evident 50.18% (95% CI, 32.75-67.60) of the time, good footcare practices were 63.61% (95% CI: 45.56-81.66), self-monitoring of blood glucose was 31.89% (95% CI: -4.62-68.41), and appropriate physical exercise was 48.29% (95% CI: 34.14-62.43).	DMT2 education/reducing knowledge deficits can positively impact health outcomes and self-care practices (including lifestyle modifications). Only a small percentage of the sample regularly monitored their blood glucose levels. It is essential to increase patient knowledge about how to best manage DMT2 to prevent complications.	Level 2

Table A1 Continued

Author (year)	Purpose	Theory/ Framework /Model	Design	Setting & Sample	Survey/Instruments	Findings	Implications for Practice	Grade/Level of Evidence
Garcia-Molina et al. (2020)	To analyze the scientific evidence for glycemic control of DMT2 through dietary interventions.	None stated	Systematic review and meta-analysis	N=5,165 (4,658) 28 RCT's with samples ranging from 45-1,004 participants. Adults with DMT2 who were between 50-67 years of age.	Cochrane systematic review database was accessed through May 2019 for randomized controlled trials that focused on adult participants with DMT2 and dietary modification interventions with or without physical activity. Two reviewers evaluated articles for inclusion criteria. A third reviewer evaluated any article requiring consensus. Methodological quality assessment was completed using the Cochrane risk of bias tool.	Lifestyle modifications have been shown to reduce glycosylated hemoglobin (HbA_{1c}) when compared to conventional treatment of DMT2 alone. Glycemic control was measured by HgA_{1c} levels. The most promising results were achieved when both group based and individual activities were completed that included self-management of DMT2 (blood glucose monitoring, medication compliance, and problem solving) with physical activity.	Lifestyle modifications improve DMT2 control which can also have a positive impact on other health risks such as cardiovascular disease. A combination of group and self-management activities appears to be the most effective for controlling HgA_{1c} levels.	Level 1

Table A1 Continued

Author (year)	Purpose	Theory/ Framework /Model	Design	Setting & Sample	Survey/Instruments	Findings	Implications for Practice	Grade/Level of Evidence
Hildebrand et al. (2020)	Evaluation of DMT2 self-management education (DSME) in reducing HgA$_{1c}$ among the Latino population.	None stated	Systemic review and meta-analysis	N=1979 23 articles were selected with samples ranging from 10-219 for a total of 1,979 participants. All studies addressed Latino patients with DMT2 and the impact of lifestyle modifications.	Cochrane risk of bias tool was used to determine the quality of each study; labeling was completed for low, unclear, or high risk across multiple categories. Abstracts were screened by two authors and selected to fit the inclusion criteria (DMT2, Latino, pre and post HGA1c). Chosen studies were read by all authors. Consensus was reached among the researchers.	In Latinos with DMT2, culturally tailored DSME showed significant decreases in HgA1c with improvement of skill and knowledge. Information retention decreased after 6 months with a return to previous habits after 1 year. Continued education increased the likelihood that the patient maintained self-management of DMT2.	DSME programs tailored for Latino patients can improve HgA1c levels and knowledge but must be sustained long-term for continued effects.	Level 1

Table A1 Continued								
Author (year)	Purpose	Theory/ Framework /Model	Design	Setting & Sample	Survey/Instruments	Findings	Implications for Practice	Grade/Level of Evidence
Hulbert et al. (2022)	To explore if cash incentives impact lifestyle modifications for DMT2 based on related health indicators.	None stated	PRISMA Systematic review and meta-analysis.	N=5291 in 19 randomized control trials Adults with DM >18years old. Studies were located in Embase, Midline, Cochrane library database, and psycINFO with search dates from January 2008-Auguset 2021. Inclusion of articles that used lifestyle modifications and those that looked at providing incentives to promote lifestyle modifications.	Distillers' extraction forms, DMT2 health indicators, study characteristics/ population, and incentive domains were analyzed.	When incentives (cash up to $270) were offered, improvements in health indicators (Body Mass Index, Hg A1c, weight, blood pressure, and cholesterol) were noted. Patients with incentives showed significant weight loss (*P<0.001*), a decrease in blood pressure (SBP *P=0.03, DBP P=0.-01*), and lower BMI (*P<0.001*).	Cash incentives are a promising way to motivate patients to engage in lifestyle modification and decrease their morbidity.	Level 1

Table A1 Continued								
Author (year)	Purpose	Theory/ Framework /Model	Design	Setting & Sample	Survey/Instruments	Findings	Implications for Practice	Grade/Level of Evidence
Katangwe et al. (2019)	To explore ways in which DMT2 education can be delivered by pharmacists to increase patient knowledge and involvement.	None stated	Systematic review	N=1692 7 randomized controlled trials Each study had 21-1139 participants. Patients >18 years newly diagnosed with DM within previous 12 months.	Cohen's kappa coefficient was used to narrow articles. A tailored extraction form based on the Effective Practice and Organization of Care (EPOC) was used to extract data from the studies and appraise methodological quality.	The supported interventions included diet, exercise, and structured education. Education and diet changes combined were enough to improve HgA1c without medication. Best results occurred with face-to-face, individualized, multifaceted interventions for no less than 6 months.	DM education should be multidisciplinary and can include pharmacists. Pharmacists interact with patients frequently and can be utilized as community DM educators. All providers should engage in regular, long-term follow-up with newly diagnosed patients to improve outcomes.	Level 1

Table A1 Continued								
Author (year)	Purpose	Theory/ Framework /Model	Design	Setting & Sample	Survey/Instruments	Findings	Implications for Practice	Grade/Level of Evidence
Morales, J. (2020)	How the 5 determinates of health (genetics, biology, behavior, psychology, society/ environment) influence Latino patients with DMT2 and their families.	None stated	Observational cohort trial, cross-sectional and longitudinal based on the operational pilot study Mi Familias.	N=1,000 Santa Barbara County, California (U.S.) Latino families with at least one member diagnosed with DMT2.	Face-to-face encounters between study staff (termed *Especialistas*) who speak the preferred language of the patient, patients, and their families were evaluated. Upon initial encounter, patients were screened, enrolled, labs were gathered, a questionnaire was completed, and reflections submitted. Patients were evaluated throughout the study. The study data (genetic information collected via cheek swabs and saliva; biological behavioral, psychological, environmental, and cardiometabolic factors; blood pressure; waist circumference; insulin sensitivity; HgA1c; urine; food security; activity levels) were collected in REDCap and analyzed using Chi square and t-tests. Especialistas collected data, reported progress, and provided continuing education to the study team.	The authors anticipate that findings will follow the pilot study outcomes and show statistically significant conclusions; findings are still in progress.	This study could help in the development of new ways to reach patients who experience barriers due to ethnicity, social status, or language by utilizing patient advocates in the community. Especialistas can deliver culturally competent DMT2 care and education, which may improve outcomes for Latino families.	Level 4

Table A1 Continued								
Author (year)	Purpose	Theory/ Framework /Model	Design	Setting & Sample	Survey/Instruments	Findings	Implications for Practice	Grade/Level of Evidence
Philis-Tsimikas et al. (2022)	Comparison of the 3 Dulce Digital groups and their effectiveness for improving patient-provider communication, patient adherence, HgA1c, systolic blood pressure, and LDL-cholesterol over 12 months.	RE-AIM model	Three-arm, parallel group, randomized control trial	N=414 Federally qualified health center in San Diego, California (U.S.) Low-income Hispanic adults >18 years old with poorly controlled DMT2	REDCap, CYCORE, and password protected Excel spreadsheets were used for data collection and analysis. Patients received 1 of 3 Dulce Digital devices as part of a digital text messaging system to help improve glycemic control. Patients were randomized into 3 groups using a block randomization scheme. Data was collected from various sources which included the patient, health coaches, and clinicians. Data included baseline lab values and vital signs with outcomes collected again at 6 and 12 months.	Interventions that include electronic education and communication with low-income Hispanic patients may improve health outcomes. Personalized message delivery may be a low-cost approach for delivering DMT2 support within the primary care model.	The Dulce Digital program can be implemented in health care centers that care for patient with health disparities and DMT2.	Level 1

Table A1 Continued

Author (year)	Purpose	Theory/ Framework /Model	Design	Setting & Sample	Survey/Instruments	Findings	Implications for Practice	Grade/Level of Evidence
Rockette-Wagner et al. (2020)	To evaluate the implementation and evaluation of an evidence in medicine (EIM) based approach for lifestyle modifications in patients who have low activity levels.	None stated	Pilot randomized controlled trial	N=79 Primary care adult patients participating in an online program designed to increase physical activity	Linear mixed effects regression model	The study intends to develop a program to improve physical activity. The study was completed in 2020 and data analysis is ongoing.	Findings may support the evidence that implementing physical activity improves DMT2, HTN, HLD, and obesity. Improving patient-primary care provider communication and increasing patient physical activity improve overall patient health.	Level 4

Table A1 Continued								
Author (year)	Purpose	Theory/ Framework /Model	Design	Setting & Sample	Survey/Instruments	Findings	Implications for Practice	Grade/Level of Evidence
Sanchez, J.I. (2021)	To evaluate lifestyle modifications that promote health in Hispanic patients with a specific focus on women who do the majority of food shopping/prep aration for the family.	None stated	N=49 Quantitative pilot study entitled 'Eat Healthy, Be Active (EHBA)' Pre/post-test study design	Hispanic women >18 years who are the responsible party for food purchase/ preparation for their family.	Demographics were collected and statistical analyses were completed to evaluate nutritional habits, food label knowledge, health behaviors, consumed calories, serving size, and the number of sugary drinks consumed. Data was collected in REDCap and data analysis was completed using STATA. McNemar's exact test and t-tests were used to assess differences.	6 weeks after EHBA completion, healthy lifestyle practices and health benefits were noted including an improved ability to read and understand food labels, a decrease in the number of sugary drinks consumed, increases in the number of fruits and vegetables consumed, increases in physical activity, and weight loss for more than half of the women.	Promoting healthy lifestyle modifications to Hispanic women who do the primary shopping/cooking for the family may increase wellness among the whole family. Targeting Hispanic women with lifestyle modification information may be an effective strategy for improving DMT2 outcomes.	Level 4

Table A1 Continued								
Author (year)	Purpose	Theory/ Framework /Model	Design	Setting & Sample	Survey/Instruments	Findings	Implications for Practice	Grade/Level of Evidence
Sathish, T. (2020)	To evaluate the cost-effectiveness of lifestyle modifications to prevent DMT2 in low-income patients.	None stated	Randomized control trial	N=1007 Patients at risk for developing DMT2 in Kerala, India.	15 group sessions over 12 months were conducted. Sessions lasted 1 - 1.5 hours and covered DMT2 education, monitoring progress, physical activity, and nutrition. Data collected included direct medical cost (health care utilization, interventions, and screening costs). Trial based economic evaluation, quality adjusted life years (QALYs), generalized estimating equations (GEE), and generalized linear models (GLM) were completed.	Over a 2-year period, the cost effectiveness of a community-based peer support lifestyle modification intervention was proven. Costs to the health system were increased but resulted in an absolute risk reduction of 2.1% for developing DMT2. The probability for the intervention to be cost-effective for DMT2 prevention was 84.0% (health system) and 83.1% (societal).	Developing a program that incorporates peer teaching with education may prevent DMT2 from progressing among low-income populations. Increased costs to health and societal systems associated with this type of intervention are countered by risk reduction and increased longevity.	Level 2

Table A1 Continued

Author (year)	Purpose	Theory/ Framework /Model	Design	Setting & Sample	Survey/Instruments	Findings	Implications for Practice	Grade/Level of Evidence
Schepens Niemiec et al. (2018)	To find out if a culturally tailored lifestyle intervention program (Vivir Mi Vida!) is feasible and efficacious in improving the health of late middle aged Latino adults.	None stated	Pilot study, pre- and post-test	N=37 Antelope Valley Community Clinic (California, U.S.) Middle-aged Latino adult patients who have an increased risk of developing health disparities including DMT2 and HTN.	Measure Yourself Medical Outcomes Profile 2 (MYMOP2) and REDCap were used to collect data. Holistic wellness, habits and routines, participation in culturally defined activities, self-efficacy, self-regulation, social support, and outcome expectations were measured over 4 months.	Participants showed improvement in health outcomes such as a decrease in systolic blood pressure with participation in the program. Self-perception improved with positive lifestyle changes, decreased symptom severity, psychosocial patient centered outcomes, and an increase in wellbeing. DMT2 and coronary heart risk was largely unchanged although this may be due to the short duration of the study which made it difficult to measure effects.	Increase outreach for patients that are hard to reach. The implementation of culturally tailored lifestyle modifications with the help of an interdisciplinary team approach may improve overall health by decreasing weight, increasing patient satisfaction, and improving health outcomes. Providers can increase patient knowledge and autonomy by giving them the tools to better care for themselves.	Level 4

Table A1 Continued								
Author (year)	Purpose	Theory/ Framework /Model	Design	Setting & Sample	Survey/Instruments	Findings	Implications for Practice	Grade/Level of Evidence
Sebire et al. (2018)	To evaluate how the motivation level of patients with DM type 2 is maintained when they are attempting to implement lifestyle modifications.	Self-determination theory	Randomized control trial	N=593 Adults aged 40-72 with newly diagnosed DMT2 within the past 6 months. The participants were randomized to 3 groups: usual care (UC), intensive dietary advice and physical activity intervention (DPAI), and intensive dietary advice (ID) alone.	Semi-structured interviews were conducted at 6-months evaluating the diagnosis response, changes in behavior, the clinical team/patient relationship, and how information was used. At 9-months, the interviews focused on barriers, maintenance, diet/exercise, how patients dealt with less frequent office visits, and the end of the trial. The interviews were recorded and transcribed. The transcripts were uploaded into NVivo software for analysis.	6 common themes were identified. Amotivation: participants were resistant to changes when they lacked faith that the recommendation would have the desired health benefits. External motivation: lack of autonomy was followed by poor satisfaction and difficulty adhering to lifestyle modifications. Introjected motivation: pressure from oneself is the main motivation, resulting in the patient projecting inward negative thoughts to punish oneself when something was done that is perceived at wrong. Identified motivation: the patient placed high importance on lifestyle modification to avoid the adverse effect of DMT2. The	Encouraging patients with positive feedback to celebrate non scale victories may help them stay motivated. As motivation increases, patients will be more inclined to continue to follow recommendations and take in new knowledge, leading to improved outcomes.	Level 2

| | | | | | | patient's motivation remained intact. Patients expressed the need to continue support to maintain their health. Integrated motivation: the patient was motivated by the positive results of the lifestyle changes they had made which reinforced the positive outcomes. Patients were able to accept and retain knowledge that was given to them, take responsibility for their actions, and making gradual changes. Intrinsic motivation: patients were motivated by the enjoyment gained through diet and exercise rather than by pressure. | | |

Table A1 Continued								
Author (year)	Purpose	Theory/ Framework /Model	Design	Setting & Sample	Survey/Instruments	Findings	Implications for Practice	Grade/Level of Evidence
Shaak et al. (2018)	To evaluate the knowledge of the risk of poor health outcomes and the patients' health beliefs among Hispanic adults with pre-DMT2.	None stated	Cross sectional mailed survey	N=414 Hispanic Patients 18-65 years who have a DMT2 diagnosis in 1 of 4 Eastern Pennsylvania clinics and were seen in the clinic at least once in the last year. Surveys were sent to patients via mail. The survey was separated into mild and intermediate hyperglycemia groups.	Upon receiving the returned surveys, the data was managed by REDCap to reduce data entry errors. The data was then exported to SPSS for descriptive analyses.	77% of respondents reported a diagnosis of prediabetes and 73% had a family member who had prediabetes or DMT2. Respondents had a moderate to high level of concern over becoming diabetic. Respondents showed a significant difference in risk knowledge between those with equal to or less than a high school education and those with more than a high school diploma. When respondents were questioned about lifestyle modifications of interest, 'exercise' (77%) and 'dietary modifications' (50%) were the top choices. Very few showed interest in using technology to prevent or manage DMT2.	Findings may help providers develop and implement care plans that increase patient participation. Patient education level and preferences should be taken into consideration when determining how the patient best learns about prediabetes/DMT2.	Level 5

Table A1 Continued

Author (year)	Purpose	Theory/ Framework /Model	Design	Setting & Sample	Survey/Instruments	Findings	Implications for Practice	Grade/Level of Evidence
Smith et al. (2021)	To evaluate the cost saving effect of DMT2 education programs (DEP) in 27 counties in south Texas (U.S.) with high Hispanic populations.	None stated	Cohort study	N=3859 South Texas community-based program. Hispanic patients, between 45-64 years old, with DMT2, and with a high school education or less.	T-tests, linear mixed-model regression analysis performed. HgA1c levels along with participant characteristics (age, sex, race, education, smoking/alcohol use, DMT2 characteristics) were evaluated at baseline and in 3-month intervals for 12 months.	DEP is effective in increasing patient compliance, particularly with continued follow up. Not only did this improve patient health but also reduced healthcare dollar use. HgA1c was reduced at each follow up with the greatest reduction of 0.90% ($p<0.001$) seen at 3 months followed by 6 months (0.77%, $p<0.001$), 9 months (0.84%, $p<0.001$) and 12 months (0.62%, $p<0.001$)	Cost savings were associated with a reduction in HgA1c and improved quality of life. The positive health effects of DMT2 education can still be detected at the 12- month mark.	Level 2

Table A1 Continued								
Author (year)	Purpose	Theory/ Framework /Model	Design	Setting & Sample	Survey/Instruments	Findings	Implications for Practice	Grade/Level of Evidence
Wake (2020)	To evaluate the effectiveness of physical activity in lowering blood glucose for low-income patients with DMT2.	None stated	Systemic review and meta-analysis	13 studies were reviewed: total number of participants unreported. Inclusion criteria: Adult patients with DMT2 who were socioeconomically disadvantaged.	The author reviewed and extracted information from the 13 articles. Physical activity improved glycemic control and decreased blood glucose levels and BMI, resulting in an overall better quality of life, increased physical ability, and improvement of cardiopulmonary function and insulin resistance.	Physical activity significantly improved physical abilities, quality of life, body habitus, insulin sensitivity, glycemic control, and cardiopulmonary markers. Unfortunately, physical activity was not widely used among this patient population.	Primary care providers can help low-income patients implement lifestyle modifications through regular visits. Regular visits help the patient adopt and continue lifestyle modifications. Increased use of physical activity as an intervention in primary care is encouraged to prevent illness and improve glycemic control and blood glucose levels.	Level 1

Table A1 Continued

Author (year)	Purpose	Theory/ Framework /Model	Design	Setting & Sample	Survey/Instruments	Findings	Implications for Practice	Grade/Level of Evidence
Whittemore et al. (2020)	1) To address the gap in survival through DMT2 education and care provided to low-income uninsured patients. 2) To evaluate DMT2 self-management education (DSME) and empower the patient to take control over their DMT2.	HAPA model	Randomized controlled pilot study.	N=40 Adults with DMT2 Seguro Popular Clinics in Mexico City, Mexico	Evaluation of an evidence based DSME program through interviews and focus groups including the DSME program objectives and manual, development/evaluation of evidence-based text messages, and health care provider training programs. Participants knowledge, ability to monitor glucose, and ability to maintain glucose levels within defined limits were measured at 3 and 6 months. Program components included: 1) In home visits with patients to teach them how to read labels, cook, and how to take and read glucose levels; 2) text messaging; and 3) a program manual developed by the authors. Pre and post analysis were conducted to determine if glycemic control as measured by HgA1c was achieved.	The evidence based DSME programs are both feasible and effective. Texting education was well received although there were concerns over access, interpretation, and continued interaction with texting. The program showed an improvement in HgA1c by increasing patient interaction and compliance through education.	Evidence based DSME programs can help patients be more accountable for their actions and may improve health outcomes. Findings may help providers develop individualized patient programs using technology to deliver education.	Level 2

Table A1 Continued

Author (year)	Purpose	Theory/ Framework /Model	Design	Setting & Sample	Survey/Instruments	Findings	Implications for Practice	Grade/Level of Evidence
Yamaoka et al. (2019)	To compare lifestyle modifications and other treatment intervention effectiveness in patients at high risk for developing DMT2.	None stated	Meta-analysis	N=20,113 participants in 40 studies located in PubMed. Studies with adults at risk for developing DMT2 according to their impaired glucose tolerance results were included. Studies included in the analysis had control groups and a total of 12 treatments.	Inclusion criteria included interventions based on diet, exercise, medications, supplements, education, or placebo. Univariate (pairwise) meta-analysis (UMA), Network Meta-analysis (NMA), and I^2 statistics were completed	Lifestyle modifications focused on diet and physical activity are the most effective in reducing the onset of DMT2. Lifestyle modifications are more effective in reducing the onset of DMT2 compared to placebo or standard (e.g., medication) treatment.	Primary care providers should teach patients how to implement lifestyle modifications to prevent DMT2. Policies to support lifestyle modifications for DMT2 prevention should be developed at the population-level.	Level 1

APPENDIX B

FIRST ROUND VALIDATION SURVEY

FIRST ROUND VALIDATION SURVEY

Thank you for your interest in anonymously participating in the development of a diabetes mellitus type 2 lifestyle modification guide designed for Hispanic patients with low socioeconomic status as part of my Doctor of Nursing Practice (DNP) project. The following survey aims to gather information on the usability and feasibility of the proposed lifestyle modification guide. Additionally, the survey seeks to determine if the lifestyle modification guide is missing any information. Your participation in this DNP project is completely voluntary and completion of this survey serves as implied consent. You may discontinue participation at any time without recourse. I can be contacted at tafo1075@bears.unco.edu should you have any questions. My DNP project advisor is Dr. Natalie Pooland she may be reached at natalie.pool@unco.edu.

Disclosure: Questionnaires for this scholarly project will be conducted using Qualtrics Survey Software. Before you begin, please note that the data you provide may be collected and used by Amazon as per its privacy agreement. Additionally, this research is for residents of the United States over the age of 18; if you are not a resident of the United States and/or under the age of 18, please do not complete this survey. Qualtrics may have specific privacy policies. You should be aware that these web services may be able to link your responses to your ID in ways that are not bound by this consent form and that data confidentiality procedures used in this study. If you have concerns, you should consult these services directly.

Demographic Questions:

1. Please select your current practice role:

    a. MD

    b. DO

    c. PA

    d. NP

2. Do you currently practice in a primary care setting in Pueblo, Colorado?

    a. Yes (survey continues)

    b. No (survey closes)

3. How long have you been practicing in primary care?

    a. <3 years (survey closes)

    b. 3-5 years

    c. 5-10 years

    d. 10 or more years

4. How often do you care for at least one socioeconomically disadvantaged Hispanic patient with diabetes mellitus type 2 in your current practice? Note: the term *disadvantaged* pertains to an individual or group with two or more of the following risk factors: homelessness, foster care, free/reduced lunch program for two or more years, guardian/parents do not have an advanced degree, qualifies for Pell grants, WIC recipient, lives in a rural area, or is considered low income (<$14,580 annually for one person or <$30,000 for a family of four)?

    a. Less than once per month (survey closes)

    b. Once or twice per month

    c. Once per week

    d. More than once per week

Please review the attached lifestyle modification guide and respond to the following questions:

5. Do you find the guide feasible?

    a. Yes

    b. No

        i. If no, please provide feedback (short answer <140 words):

6. Do you find the guide user-friendly?

    a. Yes

    b. No

        i. If no, please provide feedback (short answer <140 words):

7. Does the guide use a culturally relevant/sensitive approach for the suggested lifestyle modifications for the management of diabetes mellitus type 2 among the Hispanic population?

    a. Yes

    b. No

        i. If no, please provide feedback (short answer <140 words):

8. Is there anything missing from the guide?

    a. No

    b. Yes

        i. If yes, please provide suggestions or feedback (short answer <140 words)

APPENDIX C

EXPERT PANEL RECRUITMENT E-MAIL

Hello,

My name is Jesusita Tafoya, and I am a Nurse Practitioner in the Pueblo community. I am enrolled in the University of Northern Colorado Doctor of Nursing Practice (DNP) program. I am currently working on creating a lifestyle modification guide that can be used by primary care providers to improve the health of socioeconomically disadvantaged Hispanic patients with diabetes mellitus type 2. I am requesting your assistance in creating the lifestyle modification guide by asking you to review the guide and complete a brief survey to provide your expert clinical feedback.

     If you agree to participate, you will be asked to view at least two drafts of the guide and to anonymously complete a brief survey for each (estimated to take 10 minutes each round). Should a consensus by the group not be reached, a third draft and survey may be distributed. Please respond to this email by [date] should you be interested in participating in this project. I am more than happy to answer any questions you may have, using this email address.

Sincerely,

Jesusita Tafoya, MS, AGACNP-BC, FNP-BC

tafo1075@bears.unco.edu

APPENDIX D

FIRST DRAFT: CULTURALLY RELEVANT LIFESTYLE
MODIFICATION GUIDE FOR HISPANIC PATIENTS
WITH DIABETES MELLITUS TYPE 2

Culturally Relevant Lifestyle Modification Guide

Patient Diagnosis: Diabetes Mellitus Type II (DMT2)
Setting: Primary Care
Target Audience/Users: Nurse Practitioners (NP), Physician Assistants (PA), Medical Doctors (MD), and Doctors of Osteopathy (DO).
Target Population: Hispanic patients diagnosed with DMT2 with a special emphasis on those with lower socioeconomic status.
Recommended Lifestyle Interventions: family involvement in plan of care, culturally relevant diabetes education (physical activity, dietary recommendations), and strategies for supporting lower socioeconomic status patients and promoting adherence.
Target Outcomes: decreased HgA1c, decreased BMI, increased adherence to the plan of care, improved patient satisfaction with care/provider.
Clinical goal: The patient and provider will co-develop a culturally relevant plan of care to make incremental and sustainable lifestyle changes for improved DMT2 outcomes.

LIFESTLYE INTERVENTION	RECOMMENDATIONS TO PRIMARY CARE PROVIDER
Family Involvement	▪ Identify which family member performs most of the shopping and/or food preparation and include them in all education about how to select and prepare healthy food including interpreting food labels to select low-glycemic index/calorie/fat options. ▪ Encourage both the patient and family to decrease their consumption of sugary drinks and increase their consumption of fruits and vegetables (e.g., carefully selecting the foods that are purchased and stored in the home, limiting processed and fast foods, etc.) ▪ Include the family in developing an exercise routine by encouraging family members to walk with the patient daily (30 minutes or more) and to set a family step goal (gradually increasing by 1,000 steps a week until 10,000 steps/day for each member are reached). Support family participation in other physical activities such as yard work. ▪ Have at least one family member present for all discussions about DMT2 medications, including any changes to the regimen, potential side effects, concerns about cost, etc. ▪ Have at least one family member present for all education about DMT2 self-management such as glucose monitoring, responding to signs/symptoms of hypo/hyperglycemia, self-care, etc.
Culturally Relevant Diabetes Education	▪ Initiate and facilitate in the primary care setting using the patient's preferred language and learning style; incorporate a Hispanic diabetes educator when possible and a certified medical translator as required. ▪ Schedule frequent follow up clinic visits to evaluate patient knowledge, deliver incremental education, and monitor lifestyle modification

	implementation (example clinic visit schedule: initial diagnosis followed by day 30, day 60, then every 90 days; see Lower Socioeconomic Status Considerations below).
▪ Include at least one family member in all clinic visits and education sessions (see Family Involvement above)
▪ Partner with advocates familiar with the local Hispanic community to further support the patient/family with issues such as food insecurity (e.g., food banks), community-based physical activities (e.g., folklorico events), and accessing healthcare (e.g., Medicaid enrollment)
Culturally Relevant Physical Activity	▪ Collaborate to develop a physical activity routine that interests the patient, aligns with their life patterns (e.g., work schedule) and physical abilities, and meets their DMT2 needs.
▪ Include the patient's family in the decision-making process and development of an exercise program to support adherence and motivation (see Family Involvement above)
▪ Identify physical activities that the patient enjoys and can access given their location and financial limitations (e.g., low-cost salsa dancing at a community center, family hiking, bike riding, etc.) and encourage participation for a minimum of 30 minutes a day, seven days per week.
▪ Encourage the patient to make changes gradually, track their progress, and initiate small changes such as using the stairs at their place of employment instead of the elevator.
Culturally Relevant Dietary Modifications	▪ Encourage the patient and family to make healthier food choices by increasing consumption of produce and lean protein and decreasing high carbohydrate and sugar products (see shopping and food label information in Family Involvement above).
▪ Reduce the consumption of processed foods by advising the patient/family to focus on items located on the perimeter of the food store where fresh food tends to be located.
▪ Provide education about increasing the consumption of fiber, cinnamon, and vinegar to control glucose levels. Provide examples of food items/dishes in which these ingredients can be added or substituted (e.g., adding cinnamon to tea or coffee instead of sugar).
▪ Provide education about how to decrease simple carbohydrates within the patient's typical diet (e.g., avoiding fruit juice) and increase healthy fats, lean meats, and complex carbohydrates. Examples specific to common

	Hispanic dietary practices: replace flour tortillas with corn; prepared refried beans with low-fat milk instead of lard; grilled fish tacos instead of pork.
Lower Socioeconomic Status Considerations	▪ Assess the patient's financial status, education level, acculturation (e.g., familiarity with U.S. systems), and access to healthcare. Address barriers and adjust the DMT2 plan of care accordingly. ▪ Hispanic patients are at an increased risk for lower educational levels that may limit access to information and resources. Remain flexible, deliver education incrementally, and partner with family members and other professionals as needed (see Culturally Tailored Diabetes Education above). ▪ Evaluate the patients' ability to attend regular clinic visits due to transportation (e.g., lack of personal vehicle/gas money), time (e.g., work, childcare), and financial (e.g., copays) barriers. Explore using technology in the form of text messaging or telehealth options to maintain low-cost but high-frequency support. ▪ Hispanic patients are disproportionately located in low-resource communities and at risk for living in a food desert or lacking access to high quality/affordable food such as fresh produce. Discuss the environmental context with the patient and connect them to resources (e.g., WIC).
Culturally Relevant Strategies to Promote Adherence	▪ Initiate education about DMT2 lifestyle modifications in the primary care setting in the pre-diabetes phase or immediately following diagnosis. ▪ Maintain frequent and sustained contact via clinic visits or other forms of communication (see Culturally Relevant Diabetes Education above). Well controlled patients (e.g., sustained HgA1c level of 6.5-7) may reduce clinic visits to every 6 months while uncontrolled patents (HgA1c increasing or >7) require more frequent office visits to adjust support. ▪ Adherence among the Hispanic population generally improves with face-to-face, individualized education with flexible lifestyle recommendations. ▪ Consider a multidisciplinary team approach that includes the patient/family, provider, diabetes educator, and pharmacist to improve DMT2 health outcomes as measured by decreased HgA1c and BMI and increased patient satisfaction and adherence.

APPENDIX E

INSTITUTIONAL REVIEW BOARD APPROVAL

UNIVERSITY OF NORTHERN COLORADO

Institutional Review Board

Date:	07/18/2023
Principal Investigator:	Jesusita Tafoya
Committee Action:	**IRB EXEMPT DETERMINATION – New Protocol**
Action Date:	07/18/2023
Protocol Number:	2306050031
Protocol Title:	Designing a Culturally Relevant Modification Guide for Primary Care Providers to Improve Diabetes Management in The Hispanic Population
Expiration Date:	

The University of Northern Colorado Institutional Review Board has reviewed your protocol and determined your project to be exempt under 45 CFR 46.104(d)(702) for research involving

Category 2 (2018): EDUCATIONAL TESTS, SURVEYS, INTERVIEWS, OR OBSERVATIONS OF PUBLIC BEHAVIOR. Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) if at least one of the following criteria is met: (i) The information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subjects; (ii) Any disclosure of the human subjects' responses outside the research would not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, educational advancement, or reputation; or (iii) The information obtained is recorded by the investigator in such a manner that the identity of the human subjects can readily be ascertained, directly or through identifiers linked to the subjects, and an IRB conducts a limited IRB review to make the determination required by 45 CFR 46.111(a)(7).

You may begin conducting your research as outlined in your protocol. Your study does not require further review from the IRB, unless changes need to be made to your approved protocol.

As the Principal Investigator (PI), you are still responsible for contacting the UNC IRB office if and when:

UNIVERSITY OF NORTHERN COLORADO

Institutional Review Board

- You wish to deviate from the described protocol and would like to formally submit a modification request. Prior IRB approval must be obtained before any changes can be implemented (except to eliminate an immediate hazard to research participants).

- You make changes to the research personnel working on this study (add or drop research staff on this protocol).

- At the end of the study or before you leave The University of Northern Colorado and are no longer a student or employee, to request your protocol be closed. *You cannot continue to reference UNC on any documents (including the informed consent form) or conduct the study under the auspices of UNC if you are no longer a student/employee of this university.

- You have received or have been made aware of any complaints, problems, or adverse events that are related or possibly related to participation in the research.

If you have any questions, please contact the Interim IRB Administrator, Chris Saxton, at 970-702-5427 or via e-mail at chris.saxton@unco.edu. Additional information concerning the requirements for the protection of human subjects may be found at the Office of Human Research Protection website - http://hhs.gov/ohrp/ and https://www.unco.edu/research/research-integrity-and-compliance/institutional-review-board/.

Sincerely,
Michael Aldridge
Interim IRB Administrator

University of Northern Colorado: FWA00000784

APPENDIX F

SECOND DRAFT: CULTURALLY RELEVANT LIFESTYLE
MODIFICATION GUIDE FOR HISPANIC PATIENTS
WITH DIABETES MELLITUS TYPE 2

REVISED CULTURALLY RELEVANT LIFESTYLE MODIFICATION GUIDE
FOR HISPANIC PATIENTS WITH DIABETES MELLITUS TYPE 2

Culturally Relevant Lifestyle Modification Guide	
Patient Diagnosis: Diabetes mellitus type II (DMT2) **Setting: Primary Care** **Target Audience/Users: Nurse Practitioners (NP), Physician Assistants (PA), Medical Doctors (MD), and Doctors of Osteopathy (DO).** **Target Population: Hispanic patients diagnosed with DMT2 with a specific emphasis on those with lower socioeconomic status.** **Recommended Lifestyle Interventions: Family involvement in plan of care, culturally relevant diabetes education (physical activity and dietary recommendations), and strategies for supporting lower socioeconomic status patients and promoting adherence.** **Target Outcomes: Improved clinical outcomes, increased adherence to the plan of care, improved patient satisfaction with care/provider.** **Clinical goal: The patient and provider will co-develop a culturally relevant plan of care to make incremental and sustainable lifestyle changes for improved DMT2 outcomes among the low socioeconomic status Hispanic population. This guide is designed to supplement the American Diabetes Association (ADA)** *Standards of Care in Diabetes -2023* **guidelines.**	
CLINICAL PEARLS	**RECOMMENDATIONS FOR PRIMARY CARE PROVIDER**
<u>**Family Involvement**</u> **Integrate the patient's family into the DMT2 plan of care whenever feasible and appropriate.**	Identify which family member performs most of the shopping and/or food preparation and educate on: selection and preparation of healthy food. interpreting food labels. selecting low-glycemic index/calorie/fat options. Decrease consumption of sugary drinks Increase consumption of fruits and vegetables Limiting processed and fast foods Include the family in developing an exercise routine by encouraging family members to walk with the patient daily (30 minutes or more) Set a family step goal (1,000 steps/week; goal 10,000 steps/day) Participation in other physical activities such as yard work. Have at least one family member present discussions about medications, regimen changes, and cost etc. Have at least one family member present DMT2 education self-management, glucose monitoring, respond to signs/symptoms of hypo/hyperglycemia, self-care, etc.
<u>**Culturally Relevant Diabetes Education**</u> **Incorporate the patient's culture, values, and preferred language into education and the treatment plan.**	Use the patient's preferred language and learning style: Incorporate a Hispanic diabetes educator when possible and a certified medical translator as required. Schedule frequent follow up clinic visits Evaluate patient knowledge, Deliver incremental education/monitor lifestyle modification implementation. Clinic visit schedule: initial diagnosis followed by day 30, day 60, then every 90 days; see Lower Socioeconomic Status Considerations below). Include at least one family member in all clinic visits and education sessions (see Family Involvement above) Partner with advocates familiar with the local Hispanic community food insecurity (e.g., food banks) community-based physical activities (e.g., folklorico events) accessing healthcare (e.g., Medicaid enrollment)
<u>**Culturally Relevant Physical Activity**</u> **Collaborate with the patient to identify physical activities that are accessible (physically, logistically,**	Collaborate to develop a physical activity routine. aligns with patient interest and life patterns (e.g., work schedule) and physical abilities, and meets their DMT2 needs. Including the patient's family. decision-making process and development of an exercise program to support adherence and motivation (see Family Involvement) Identify physical activities that the patient enjoys and can access given their location and financial limitations. low-cost salsa dancing at a community center, family hiking, bike riding, etc. encourage minimum participation of 30 minutes a day, seven days per week. Encourage gradual changes, track progress, and initiate small changes such as using the stairs instead of an elevator.

financially) and align with personal and family lifeways.	
Culturally Relevant Dietary Modifications Incorporate the patient's food preferences and traditions into the dietary plan by modifying existing recipes with low-glycemic index ingredients and/or modeling healthy substitutions.	Encourage healthier food choices by providing specific examples of meals, snack, etc. Increase consumption of produce and lean protein. Reduce the consumption of processed food, simple carbohydrates, and sugar products (see shopping and food label information in Family Involvement above). Educate on how to decrease simple carbohydrates (e.g., avoiding fruit juice) and increase healthy fats, lean meats, and complex carbohydrates. Replace flour tortillas with corn; prepare refried beans with low-fat milk instead of lard; grilled fish tacos instead of pork. Shop on the perimeter of the food store where fresh food is located. Increasing the consumption of fiber, cinnamon, and vinegar to control glucose levels. Provide examples how these ingredients can be added or substituted (adding cinnamon to tea or coffee instead of sugar).
Lower Socioeconomic Status Considerations: Identify barriers to care associated with low socioeconomic status and utilize external and clinic resources to address.	Assess financial status, education level, acculturation (e.g., familiarity with U.S. systems), and access to healthcare. Address barriers and adjust DMT2 plan of care. Remain flexible, deliver education incrementally, and partner with family members and other professionals (see Culturally Tailored Diabetes Education above). Evaluate ability to attend regular clinic visits (e.g., lack of personal vehicle/gas money), time (e.g., work, childcare), and financial (e.g., copays) barriers. Explore using technology. text messaging or telehealth options to reduce transportation costs Hispanic patients are disproportionately located in low-resource communities and at risk for living in a food desert or lacking access to high quality/affordable food such as fresh produce. Discuss the environmental context with the patient and connect them to resources (e.g., WIC, SNAP, etc).
Culturally Relevant Strategies to Promote Adherence Utilize multiple team communication modes with early and frequent interactions to keep patient and family engaged in the treatment plan.	Initiate education about DMT2 lifestyle modifications in the primary care setting in the pre-diabetes phase or immediately following diagnosis. Maintain frequent and sustained contact: Regular clinic visits or other forms of communication (see Culturally Relevant Diabetes Education above). Frequency: Well controlled patients (e.g., HgA1c 6.5-7) clinic visits to every 6 months; Uncontrolled patents (HgA1c increasing or >7) frequent office visits to adjust support. Adherence among the Hispanic population generally improves with face-to-face, individualized education with flexible lifestyle recommendations. Multidisciplinary team approach that includes the patient/family, provider, diabetes educator, and pharmacist. Improves DMT2 health outcomes, decreased HgA1c/BMI, and increased patient satisfaction and adherence.

APPENDIX G

SECOND ROUND VALIDATION SURVEY

Thank you for your interest in anonymously participating in the development of a diabetes mellitus type 2 (DMT2) lifestyle modification guide designed for Hispanic patients with low socioeconomic status as part of my Doctor of Nursing Practice (DNP) project. The following survey aims to gather information on the usability, feasibility, and completeness of the *revised* (second) draft of the proposed lifestyle modification guide. Revisions have been completed based on feedback gathered in the first round of data collection. Once broad consensus about the lifestyle modification guide is achieved, a pilot study for testing in the clinical setting will be proposed.

Review of the revised guide and completion of the survey will take approximately 10 minutes. Your participation in this DNP project is completely voluntary and completion of this survey serves as implied consent. You may discontinue participation at any time without recourse. I can be contacted at tafo1075@bears.unco.edu should you have any questions. My DNP project advisor is Dr. Natalie Pool and she may be reached at natalie.pool@unco.edu. If you have any concerns about your selection or treatment as a research participant, please contact the Office of Research and Sponsored Programs, University of Northern Colorado at irb@unco.edu or 970-351-1910.

> **Disclosure:** Questionnaires for this scholarly project will be conducted using Qualtrics Survey Software. Before you begin, please note that the data you provide may be collected and used by Amazon as per its privacy agreement. Additionally, this research is for residents of the United States over the age of 18; if you are not a resident of the United States and/or under the age of 18, please do not complete this survey. Qualtrics may have specific privacy policies. You should be aware that these web services may be able to link your responses to your ID in ways that are not bound by this consent form and that data confidentiality procedures used in this study. If you have concerns, you should consult these services directly.

Even if you have participated in this project previously, please answer the following anonymous demographic questions:
1. Please select your current practice role:
    a. MD
    b. DO
    c. PA
    d. NP
2. Do you currently practice in a primary care setting in Pueblo, Colorado?
    a. Yes (survey continues)
    b. No (survey closes)
3. How long have you been practicing in primary care?
    a. <3 years (survey closes)
    b. 3-5 years
    c. 5-10 years
    d. 10 or more years
4. How often do you care for at least one socioeconomically disadvantaged Hispanic patient with diabetes mellitus type 2 in your current practice? Note: the term disadvantaged pertains to an individual or group with two or more of the following risk factors: Homeless, foster care, free/reduced lunch program for two or more years, guardian/parents do not have an advanced degree, qualifies for Pell grants, WIC recipient, lives in a rural area, or is considered low income (<$14,580 annually for one person or <$30,000 for a family of four)?
    a. Less than once per month (survey closes)
    b. Once or twice per month
    c. Once per week
    d. More than once per week

5. Is it clear that this revised guide is focused on lifestyle modifications for the management of DMT2 among the Hispanic population and is designed to supplement the ADA *Standards of Care in Diabetes -2023* guidelines?
   a. Yes
   b. No
      i. If no, please provide feedback (short answer <140 words):
6. Does the addition of the clinical pearls and other formatting changes improve the usability of the revised guide?
   a. Yes
   b. No
      i. If no, please provide feedback (short answer <140 words):
7. Does the revised guide use a culturally relevant/sensitive approach for the suggested lifestyle modifications for the management of DMT2 among the low socioeconomic status Hispanic population?
   a. Yes
   b. No
      i. If no, please provide feedback (short answer <140 words):
8. Is there anything missing from the revised guide that you would consider to be relevant in the care of Hispanic patients with DMT2?
   a. No
   b. Yes
      i. If yes, please provide suggestions or feedback (short answer <140 words):