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College of Health Sciences

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Tarsicio Gacheru

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Walden University
2017

Abstract

A Developmental Project Focusing on Young Adult Hispanic-Americans

by

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MS, Franciscan University of Steubenville, 2012

BS, University of Cincinnati, 2007

Project Submitted in Partial Fulfillment
of the Requirements for the Degree of
Doctor of Nursing Practice

Walden University

May 2017

Abstract

Reducing diabetes risk among Hispanic-American adults in the United States is a critical public health need and programs targeting young Hispanic-American adults with prediabetes can reduce the risk for developing diabetes. The purpose of this project was twofold: (a) to examine the literature related to diabetes prevention best practices among young adult Hispanic-Americans with prediabetes and (b) create an intervention program to promote these best practices to delay or reverse the trajectory toward diabetes. The inclusion criteria for the literature review were studies with at least a 12-month follow-up and reported outcomes related to changes in diet, increased exercise, and the effects of psychotherapy as modeled in the Diabetes Prevention Program (DPP). Studies that met these inclusion criteria for the period 2002 through January 2016 were evaluated and 11 studies supported the development of recommendations for future implementation. Based on the literature review, proposed interventions included dietary interventions, behavior modifications, and both aerobic and resistance exercise training adapted for the young adult Hispanic-American population. The planned interventions will fill an evidence-to-practice gap in application of the DPP. The program when implemented will promote social change through lifestyle modifications among young adult Hispanic-Americans with prediabetes and is expected to improve dietary intake, weekly exercise, fasting glucose, and glucose tolerance and support weight loss, all of which can delay or stop progression to diabetes.

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Dedication

I dedicate this dissertation to the memory of my father, the late Mr. Tiras Gacheru Kiragu, who would have been happy to see me finishing this Doctor of Nursing Practice (DNP) degree. I am sorry that Daddy did not get to see my completed dissertation. I owe every bit of my existence to him. I have been lucky to receive tremendous affection from several members in my extended family. Their support and encouragement have been instrumental in my overcoming several hurdles in life. I am indeed blessed to have them in my life. I am indebted to my advisor, Prof. Sue Ellen Bell (PhD, RN, PHN, APRN, CNS). Dr. Bell has influenced not only my graduate studies, but my whole life. She has instilled in me by example, a strong sense of discipline and integrity, for which I am eternally grateful. She is a deeply committed researcher, teacher, and advisor.

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Besides my advisor, I would like to thank Dr. Robert Anders for his insightful comments and encouragement, but also for the hard questions, which incited me to widen my research from various perspectives. My sincere thanks also go to Dr. Anwar who provided me an opportunity to join their team for my clinical preceptorship and who gave access to the Gastroenterology and Hepatology department and research facilities. Without the precious support, it would not have been possible to finish my DNP.

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Section 1: Introduction

Introduction

Diabetes is now an epidemic and, if the disease is left unimpeded, the condition threatens to overwhelm the health care system in the United States. In 2014, diabetes and obesity rates increased by 6% and 57%, respectively (Hu et al., 2015). The costs associated with diabetes were significant in 2014. These costs included expenditures connected to the acute and chronic complications of the disease, the costs of rehabilitation, and societal costs related to the inability of some patients to work and provided for their families. Supplementary materials such as syringes, needles, and glucose monitoring tests pushed costs higher and many patients were forced into bankruptcy due to the overwhelming costs of the disease (International Diabetes Federation, 2009). Physical sedentariness and obesity have been linked with the development of type 2 diabetes mellitus (T2DM). People who are genetically vulnerable to T2DM are more vulnerable when these risk factors were present (Hu et al., 2015). An imbalance between caloric intake and physical activity was found to increase obesity, leading to insulin resistance, which is common in people with T2DM (Hu et al., 2015).

Central obesity was a major risk factor not only for insulin resistance and T2DM but also for cardiovascular disease (CVD). This ‘belly fat’ produced hormones and other substances that could cause harmful, chronic effects in the body such as damage to blood vessels (Hu et al., 2015). Approximately 57 million people in the United States in 2010 had prediabetes (American Diabetes Association [ADA], 2011). Even without progression to overt diabetes, long-term complications of the cardiovascular system occur during prediabetes (ADA, 1999). The Centers

for Disease Control and Prevention (CDC; 2010) forecasted that 30% to 33% of prediabetic Americans will progress to diabetes by 2050.

Being overweight is a determining factor in increasing the chances of developing T2DM. More than 80% of the people with T2DM are obese or overweight with a body mass index (BMI) of 25 or greater. The commonly acknowledged BMI ranges are underweight (under 18.5), normal weight (18.5 to 25), overweight (25 to 30), Obese Class 1 (from 30 to 35), Obese Class 2 (from 35 to 40), and Obese Class 3 (over 40) (Cruz et al., 2013). Cruz et al. (2013) noted that Hispanic-Americans living in the United States are overrepresented in the obesity epidemic. Hispanic-Americans exceed the general obese population by 10%. Over 60% of all Hispanic-Americans were either overweight or obese in 2013. Of the 60% of Hispanic-Americans who were overweight, 52% were obese. Hispanic-Americans, younger than 30 years, represented the largest group in a ranking of all obese groups. Overweight and obese Hispanic-American children were more likely to grow up to be overweight and obese adults (Cruz et al., 2013).

According to Health People 2020 (2012), diabetes decreased life span by up to 15 years. Diabetes multiplied the risk of heart disease by two to four times. The disease was the cause of kidney failure, lower limb amputations, and adult-onset blindness (Hesse et al., 2014). The goal of Health People 2020 for diabetes was to decrease the disease incidence and its economic drain and enhance quality of life for all persons who either had or were at risk for developing diabetes (Hesse et al., 2014). The social change envisioned was to reduce new cases of T2DM among Hispanic-Americans because of preventive lifestyle changes among young adult Hispanic-Americans.

Background

The Hispanic-American community has more than doubled in size in the last 15 years, according to the Pew Hispanic Center and the Robert Wood Johnson Foundation (2008). This growth and the increasing diversity of Hispanic-Americans (e. g., Mexicans, Puerto Ricans, Salvadorans, Cubans, Dominicans, Guatemalans, Colombians, Hondurans, Ecuadorians, Peruvians, Nicaraguans, Venezuelans, and Argentineans) has created challenges for public health interventions to reduce healthcare disparities and improve the health of the community (Pew Hispanic, 2008). Previously well-known socioeconomic inequalities in health care were further affected by the unique, current circumstances facing both Hispanic immigrants and Hispanics born in the United States (Pew Hispanic, 2008). Approximately one in four Hispanic-American households suffered from food insecurity compared with 11% of White households in 2012. Low-income Hispanic-American families spent approximately one-third of their income on food, and much of the food purchased was calorie-dense (pizza, chips, desserts, burgers, or soda/juice); low in fiber; and high in fat, sodium, and carbohydrates (Cruz et al., 2013). Lack of access to healthy foods in neighborhoods was also problematic for this population. Supermarket inaccessibility is regularly linked to increase rates of becoming overweight and obese (Cruz et al., 2013).

Administering the Diabetes Prevention Program (DPP), a multicenter, randomized controlled study, researchers found that behavioral changes leading to weight loss significantly reduced the risk of developing diabetes in overweight individuals with glucose levels that were elevated above normal but not to the level of diabetes (National Institute of Diabetes & Digestive and Kidney Disease [NIDDK], 2008). Lifestyle interventions were found to be effective in

averting and delaying the development of T2DM under controlled research conditions. The DPP study with 2.8 years of follow-up reduced the incidence of diabetes by 58% in the intensive lifestyle intervention arm of the trial, compared with a 31% reduction in the metformin arm. Fifty percent of participants met the 7% weight loss goal, and 74% met the 150-minute per week physical activity goal at the end of the 24-week core curriculum. Participants in the lifestyle modification arm were 68% female, 53.8% white, and 18.9% African-American and were on average 50.6 ± 11.3 (SD) years old (NIDDK, 2008).

Endeavors to prevent or delay the onset of diabetes are an urgent health priority for Hispanic-Americans. To diminish the burden of T2DM in the young adult Hispanic-American population, I assumed that that early efforts were important to avert or delay the onset of the disease. The reviewed clinical trials showed that lifestyle modification programs could delay the onset of T2DM. Many Hispanic-American-targeted studies tried to reproduce the DPP trial results and, concurrently, payers agreed to cover diabetes prevention services. Although the goal of diabetes prevention was acknowledged by Keifer et al., (2014), the lack of convincing evidence for the effectiveness of programs for young adult Hispanic-Americans called into question whether using public funds or national prevention activities should be supported (Keifer et al., 2014).

Large clinical trials (Guzmán et al., 2009; Keifer et al., 2014; Koniak-Griffin et al., 2015; Lindberg et al., 2012; Ruggiero, Oros, & Choi, 2011; Shaibi et al., 2012; Vos et al., 2014) showed that comparatively modest changes in diet and physical activity reduced the incidence of T2DM by 50% among Hispanic-Americans. Although weight loss and physical activity were part of the modifications, it was difficult to translate the findings into routine clinical practice for

the population. Hispanic-Americans' lifestyle intervention programs for diabetes prevention have varied in content from program to program, and whether these programs closely adhered to the DPP guideline recommendations has remained unclear. Lifestyle interventions to prevent diabetes need to be dependably applied and connected with outcomes for the evidence to be useful and amenable to adaptation in the community.

Since the 2002 publication of the DPP study, several Hispanic-American diabetes prevention programs have translated the study materials into the Spanish language. However, no studies were found aimed at translating the evidence published by these programs into programs for young adult Hispanic-Americans. The only meta-analysis (Duggan et al., 2014) of the effect of the DPP in preventing diabetes mellitus in the young adult Hispanic-Americans population was published in 2014. This review excluded 20 studies that were piloted in non-health-care locations and incorporated studies in which up to half of the participants already had diabetes. Other reviews of diabetes prevention interventions had not included a meta-analysis or had not incorporated lifestyle studies. Generally, systematic reviews pointed out that Hispanic-American diabetes prevention programs differed extensively in their effectiveness and have resulted in lower levels of weight loss than the DPP-intensive interventions used in the clinical efficacy trial.

Problem Statement

The problem addressed in this DNP project was the fast-growing number of Hispanic-Americans who are at risk for developing T2DM in this country. In the United States, 30.1 million people, or 9.3% of the population, had diabetes in 2012. Diabetes was the seventh leading cause of death in the United States in 2010, with 69,071 death certificates listing it as the

cause of death, and a total of 234,051 death certificates listing diabetes as an underlying or contributing cause of death (ADA, 2012). The toll of diabetes on racial and ethnic minority populations was disproportionately high. One in every two Hispanic-American children born today will face diabetes in his lifetime (Narayan, 2003). Nearly 12% of Hispanic-Americans older than 20 years will develop diabetes compared to fewer than 7% of non-Hispanic Whites of the same age (ADA, 2011). The age-adjusted diabetes death rate for Hispanic-Americans was more than 64% higher than for non-Hispanic Whites in the United States and was the fifth leading cause of death for Hispanics (Heron, 2007).

Hispanic-Americans are the fastest growing ethnic minority in the country and constitute approximately 15% of the U.S. population (Heron, 2007). Projections based on existing trends suggested that by the year 2050, Hispanic-Americans will constitute at least 30% of the total U.S. population (Pew Hispanic, 2008). This growth was driven by U.S. births rather than by immigration (Pew Hispanic, 2008). In 2013, Hispanic-Americans were the largest and youngest minority group in the United States. One in five students was Hispanic-Americans and one in four infants was Hispanic-American. By force of numbers alone, the kinds of adults these young Hispanic-Americans become will help shape the kind of society the United States becomes in the 21st century. Keifer et al. (2014) reported that Hispanic-Americans were more likely than other Americans to drop out of school and to become single parents, and they were more likely than White and Asian young adults to live in poverty. They also had high levels of exposure to gangs (Haderxhanaj et al., 2014). More than half of young Hispanic-Americans lacked health care insurance. Approximate 37% of Hispanic-Americans ages 18 to 30 years lacked a regular place to obtain health care, compared with 13% of Hispanic persons 65 years of age or older. Poor

health outcomes were a common reality in the young Hispanic-Americans' community (Keifer et al., 2014).

Being American-born did not bode well for Hispanic health in general. Hispanic-Americans born in United States had higher rates of obesity and diabetes as compared with their non-U.S.-born peers (Pew Hispanic, 2008). Generally, even after adjusting for a younger population, Hispanics-Americans had a lower prevalence of many chronic conditions but a higher prevalence of diabetes (Pew Hispanic, 2008). They were also more likely than non-Hispanic Whites to be overweight, which put them at an even greater risk for developing diabetes (Pew Hispanic, 2008).

Rivera et al. (2015) acknowledged that the root of the obesity epidemic among Hispanics in the U.S. was consumption of excess calories characterized by unhealthy eating habits and insufficient physical activity. More specifically, the use of convenient, nutrient-poor foods and low nutrition literacy among Hispanic-Americans were related to obesity. The National Institute of Public Health (NIPH) reported that in 2013, Hispanic-Americans consumed 60 gallons of sugary beverages per person per year. The most popular brand among Hispanic-Americans was Coca-Cola. A 2014 case study on the Hispanic-American population sponsored by the University of California, San Francisco contended that risk for obesity and abdominal obesity were linked to factors suggestive of both lower and higher socioeconomic status including watching TV in English, increased video game playing, and perceived food insecurity. Approximately 50% of all food-related advertisements were promotions for potato and corn chips, desserts and cakes, juices, sweetened cereals, candies, cookies, sweetened beverages, and fast foods (Rivera et al., 2015).

Knowlden and Sharma (2013) noted that marketing foods to the Hispanic-American population that lacked nutritional security predisposed the population to overweight and obesity. Approximately 84% of food advertising on Spanish-language TV targeted toward young adults and children promoted food of low nutritional value. Between 2010 and 2013, fast food restaurants increased their general advertising expenditures on Spanish-language TV by 8%. Hispanic-American young adults observed at least one fast food advertisement on Spanish-language TV every day in 2013, a 16% increase from 2010 (Knowlden & Sharma, 2013). Furthermore, low-income Hispanic-American neighborhoods had up to nine times the density of outdoor advertising for fast food and sugary drinks high-income neighborhoods (Knowlden & Sharma, 2013).

As previously stated, the DPP was a long-term study designed to determine whether weight loss through nutritional modifications was more effective when combined with physical activity or management with the oral diabetes drug metformin (Glucophage) and whether either intervention could avert or delay T2DM. All the participants were overweight and had prediabetes. More than 3,000 participants completed the DPP study; 45% of them were from minority groups, including Hispanic-Americans who were at risk for developing diabetes. The first group, called the lifestyle intervention group, was provided intensive training in diet, physical activity, and behavior modification. The group was expected by DPP researchers to lose 7% of their body weight by eating less fat and fewer calories and exercising for a total of 150 minutes a week (NIDDK, 2008).

The second group received 850 mg of Metformin twice a day. The third group took placebo tablets as an alternative of metformin. The metformin and placebo groups also were

provided with materials about diet and exercise but did not receive intensive inspirational counseling. A fourth group received Troglitazone, but this group was discontinued early due to serious liver damage in participants. Participants who lost 5% to 7% of their body weight while increasing their exercise to 30 minutes a day, 5 days a week, reduced their risk of developing diabetes by 58% (NIDDK, 2008). The group who took metformin decreased their risk of developing diabetes by 31%. Metformin was effective in people 25 to 44 years old and in those with a BMI of 35 or higher, meaning they were overweight by at least 60 pounds. Approximately 7.8% of the metformin group developed diabetes each year during the study, compared with 11% of the group receiving the placebo. This finding was true across all ethnic and gender groups. Each year, only 5% of the participants in the intervention group developed diabetes compared with 11% in the placebo group (NIDDK, 2008).

A number of sizable prospective cohort studies, clinical trials, and cross-sectional studies (Duggan et al., 2014; Guzman et al., 2009; Keifer et al., 2014; Koniak-Griffin et al., 2015; Kramer et al., 2013; Lindberg et al., 2012; Merriam et al., 2009; O'Connor, 2015; Ruggiero et al., 2011; Shaibi et al., 2012; Vos et al., 2014) performed among Hispanic-American subjects showed that lifestyle interventions could be effective in reducing the incidence of T2DM from 29% to 58% with largely decent preservation of the decreased risk factors for up to 20 years. Clinical trial results showed what was conceivable, but they did not demonstrate how interventions could easily or cost-effectively be translated into practice.

These trials primarily focused on the successfulness and value of DPP outcomes, but they did not consider how to diffuse and transfer lifestyle diabetes prevention programs into the real-world of Hispanic-Americans. Major gaps have persisted in translating diabetes prevention from

research into practice. Generally, diabetes prevention programs in practice differed extensively in their effectiveness; most programs generated lower levels of weight loss than the DPP-intensive interventions used in the clinical efficacy trials (Albarran et al., 2004).

To tackle this gap, I have embarked on an effort to create a program that will focus on recognizing the factors necessary for executing diabetes prevention programs in practice. The program development project was aimed at Hispanic-Americans and attempted to generate interventions that were applicable and relevant to young adult Hispanic-Americans including the effect size, scope of services, measurability potential, long-term support, and duration of benefits.

Purpose Statement and Project Objectives

My purposes in this program development project were to assess the effects of the DPP's lifestyle modifications among Hispanic-Americans as reported in the literature and apply the structure, processes, and findings from the research to a program plan for young adults regarding the following questions:

1. What types of lifestyle interventions were used to prevent or delay the onset of T2DM in the Hispanic-American population?
2. Which types of lifestyle changes were associated with the best results?
3. How likely were participants to persist in their adherence to lifestyle changes?
4. What gaps within the programs that enrolled Hispanic-Americans could be addressed to permit the future project to produce better results among young adult Hispanic-Americans?

The Meaningful Gap Addressed by the Project

During the 14 years since the DPP study was published, numerous diabetes prevention programs have focused on lifestyle among the children/adults in the Hispanic-American community. The DPP model was applied in many settings in response to the significant need to reach this high-risk population but these programs have not yet concentrated on young adults. Even though lifestyle modifications were the goal of DPP-translation efforts, effects of studies and long-term follow up were underreported and conflictingly reported.

The DPP demonstrated that systematic lifestyle interventions embracing exercise, dietary changes, and at least one other element were effective in reducing the incidence of T2DM. Nevertheless, there were obstacles in interpreting this evidence for young adults and in applying guideline-based interventions verbatim. Participants' education influenced responsibility for behavior and well-being. The DPP noted that individualized approaches based on education level were effective in enabling Hispanic-Americans to engage in performance and increase critical thinking skills (NIDDK, 2008).

Nature of the Project

The purpose of this project was to develop a program focused on the advances in prevention of diabetes and apply these changes to a program plan specifically designed for young Hispanic-Americans at risk for diabetes. The evidence for the project came from a review of the 14 years of studies using the DPP approach to diabetes prevention. The review of the literature focused on applications, modifications, and outcomes of the DPP among Hispanic-Americans. I report the evidence in a literature table (see Section 3) and I present an in-depth synthesis of the information in Section 4.

Summary

Diabetes is epidemic among the Hispanic-American population in the United States; one in every two Hispanic-American children born today faces diabetes in his or her lifetime. Nearly 12% of Hispanic-Americans older than 20 years have developed diabetes compared to less than 7% of non-Hispanic Whites of the same age (Pew Hispanic, 2008).

Three objectives guided the development of the future project efforts to prevent T2DM among young Hispanic-Americans: (a) increase community awareness of diabetes and diabetes prevention, (b) strengthen the health of the community by assisting with the creation of a community coalition to promote healthy lifestyles, and (c) mobilize the community to improve their overall health using community-based events and group education to diffuse the DPP information.

Although lifestyle interventions had a great payoff in the beginning, sustaining the desirable lifestyle changes seemed to be challenging for many Hispanic-Americans. The literature review noted that lack of lifestyle modification in young Hispanic-American adults and difficulty in making and maintaining healthful choices were reasons why this population failed to follow the DPP guidelines in the long run. The review also noted that it was more stress-free for participants to take medications than to make interactive lifestyle changes for long-term attainment of health goals. In Section 2, I will describe further the literature used to support developing of a community intervention plan for young adult Hispanic-Americans at risk for T2DM the concepts, models and theories applied in the project, the local background and context of the project, and the role of the DNP student and the team in developing the new program plan.

Section 2: Evidence-Based Support for the Project

Introduction

The purpose of this program development project was to assess the effects of the DPP's lifestyle modifications among Hispanic-Americans as reported in the literature and apply the structure, processes, and findings from the research to a program plan for young adults. In developing the DNP project, it was important to find information based on sound research and evidence applicable to a community setting was required for implementation. In Section 2, I present the literature supporting the program development, the theories guiding the development, the relevance to nursing practice, the local background and context for the project, and the role of the DNP student and the team.

Concepts, Models, and Theories

Two major theories supported the program development project: Roger's diffusion of innovation theory (Rogers 1962; Rogers, 2003) and Pender's theory of health promotion (Pender, 1997; Pender 2002). Rogers' diffusion of innovation theory was proposed to guide the steps of the change process once a decision is made to move forward with implementing the program developed in the DNP project. Innovation, communication channels, time, and social systems are the necessary ingredients Rogers identified for diffusion of innovation (Rogers, 1962; Rogers, 2003). Time was a necessary component of diffusion of innovations to the participants (Rogers, 2003). Rogers (2003) final necessary element for diffusion was the social systems or the interrelated groups engaged in joint problem solving to accomplish a common goal. Individuals do not accept an innovation based on the facts, but are influenced by the acceptance of the

innovation by others like themselves (Rogers, 1962; Rogers, 2003). The need for community engagement and group participation in change are evident in Rogers' theory.

Rogers (2003) described diffusion as a special type of communication concerned with sharing new information. Many organizations struggled with how to shorten the time required for diffusion of an innovation. To successfully diffuse an idea, four main elements are essential: innovation, communication channels, time, and social systems (Rogers, 1962; Rogers, 2003). Innovation involved the newness of an idea or a known idea that has not been accepted or rejected by a group (Rogers, 1962; Rogers, 2003). Communication was the process by which individuals shared new information, but the communication channel was how information got from one individual to another (Rogers, 1962; Rogers, 2003). Mass media and personal interaction were the most common channels of communication used. Investigations by Rogers (2003) showed that individuals did not evaluate an innovation on scientific knowledge alone but on the subjective observations of others like themselves who had adopted the innovation. Rogers's work also showed that effective diffusion occurred most readily when the individuals were homogeneous (share the same attributes), thereby increasing the likelihood that the communication will be rewarding and accepted (Rogers, 2003).

The dimension of time involves the individual time from first knowledge to adoption or mirrors the rate of adoption of the system (Rogers, 1962; Rogers, 2003). In this DNP project and resulting program, I considered time as the rate of adoption into the system or participating group. Most innovations had an S-shaped rate of adoption with variations in the slope or the speed at which they were adopted (Rogers, 2003).

Rogers's (2003) final element necessary for diffusion was the social system or the interrelated groups engaged in joint problem solving to accomplish a common goal. The social system constituted boundaries and facilitated or impeded the diffusion of innovations (Rogers, 2003). It was within the social structure that the norms of the system, opinion leaders, change agents, innovation decisions, and consequences effected diffusion (Rogers, 1962; Rogers, 2003).

Pender's theory of health promotion (HPM) provided the nursing theoretical underpinning for the project. Pender's health promotion theory offered constructs that are useful as predictors of health-promoting behavior in teens (Srof & Velsor-Friedrich, 2006). The HPM categorizes determinants of health behavior into three groups: (a) individual characteristics and experiences, (b) behavior-specific cognitions and affect, and (c) situational/interpersonal influences (Srof & Velsor-Friedrich, 2006). With a decision to act, these factors yield commitment to a plan of action, resulting in health promoting behavior. Individual characteristics such as age and gender as well as past experiences that inform future behaviors are important predictors of health behavior but are largely unmodifiable (Srof & Velsor-Friedrich, 2006). The researchers reported that the literature based on the HPM focused largely on factors contributing to physical activity behavior (Srof & Velsor-Friedrich, 2006). The most significant factor was self-efficacy, which belonged to the behavior-specific cognitions and affect category (Srof & Velsor-Friedrich, 2006). This category also included benefits-barriers to behavior and affect cues to behavior (Srof & Velsor-Friedrich, 2006). The situational/interpersonal influences were the environmental factors that influence behavior and included social persuasion, praise, and encouragement (Srof & Velsor-Friedrich, 2006). Interpersonal roles were shown to play an indirect role in predicting healthy behaviors in young adults (Srof & Velsor-Friedrich, 2006).

In 2002, Pender reported that success in weight loss programs depends on whether the programs are structured to incorporate the individual's locus of control, either internal or external. Boosting perceived efficacy by, for example, using persuasion to increase efficacy, has a greater influence on the extent of weight loss than perceived locus of control (Pender, 1987; Pender, 2002). Imagined or actual barriers to health promotion behaviors directly influence the predisposition to engage in healthy behavior (Pender, 1987; Pender, 2002). Creating social and physical environments that promoted health was one of the primary goals of Healthy People 2020 (Department of Health and Human Services [DHHS], 2010). Modifying factors, such as the demographic aspects of age, gender, race, ethnicity, education, and income indirectly affect health promotion behaviors through their influence on cognitive-perceptual mechanisms (Pender, 1987; Pender, 2002). Weight, a biological characteristic, is a significant predictor of intention to engage in exercise (Pender, 1987; Pender, 2002). Pender (2002) determined that the higher the body weight, the lower the intent to exercise, with overweight people finding it difficult to maintain adherence to an exercise program compared to individuals with less body fat or a lower weight. Interpersonal influences, including the expectations of significant others and interactions with health professionals, exert a modifying effect on patterns of health promotion behaviors (Pender, 1987; Pender, 2002). The competency of health professionals in directing an exercise program rank second in the reasons for participation (Pender, 1987; Pender, 2002). Pender (2002) wrote that the competency of health professionals in directing exercise programs includes situational and behavioral factors, which are additional modifying factors that exert influence through cognitive-perceptual mechanisms.

Pender (2002) found that cues were indirectly linked to the likelihood of participating in health promotion behaviors and were classified as originating either internally or externally. An example of an internal cue was shortness of breath when climbing a flight of stairs or the “runner’s high” felt when endorphins were released after jogging. External cues were dire health statistics, appointment cards, or conversations with others regarding their lifestyle habits. The intensity of cues needed to influence indirectly the likelihood of engaging in health promotion behaviors was directly proportional to the level of readiness to act (Pender, 1987; Pender, 2002). Pender’s work illustrated the need for practitioners to identify locus of control and readiness to change behavior (act) and match interventions to these attributes.

Literature Review for the Project

For identification of evidence to support this project, the focus was on studies written in the English language, available in full text, and published between 2002 (when the DPP study was first published) and 2016. Abstracts were isolated from a search of CINAHL, MEDLINE, Embase, and the Cochrane databases. The search terms included: Hispanic-Americans, life style changes/modification/intervention, diabetes prevention program, health behavior, obesity, dietary fats, and program evaluation. The terms were inserted as index or free-text terms. In addition to examining electronic databases, there was a review of bibliographies and references from papers, as well as a search of national guidelines. The goal was to obtain evidence from lifestyle-focused programs conducted using the DPP and the effectiveness in preventing T2DM in Hispanic-Americans. The literature review excluded studies that included subjects with diabetes prior to initiation of the research. Studies that explored a pharmacotherapy intervention also were excluded except for the work carried out by the DPP. Studies published before 2001,

those that were not completed by January 2016, and those that did not include at least 12 months of follow-up were excluded. Application of the exclusion criteria resulted in deletion of 46 articles (see Table 1). An assessment of abstracts and full texts left a total of 11 studies from eight different journals for inclusion in the literature review.

In the SEARCH for Diabetes in Young Adults analysis conducted over an 8-year period completed in 2009, researchers affiliated with the ADA established that the number of Hispanic-Americans with T2DM has grown at an annual rate of about 3%, which is a 23% jump over 8 years. Hamman et al. (2014) reported the prevalence of young adults under 30 years of age with T2DM was 5.5% in non-Hispanic Whites, 37.6% in non-Hispanic Blacks, 35.2% in Hispanics, and 34.2% in Asian/Pacific Islanders. Issues such as poor glycemic control, elevated lipids, and a high prevalence of overweight and obesity may put Hispanic American young adults with diabetes at higher risk for future diabetes-related complications.

The Goldsmith et al. (2013) article “Healthy People 2020: Roadmap for the Nation's Health, Part 2” revealed that between 1988 and 1994 and between 1999 and 2002, the disparity in overweight or obese Hispanic-American and Black non-Hispanic children aged 6 to 11 years increased. Among persons aged 6 to 19 years of age, the incidence was at least 50% higher in the Hispanic-Americans and Black non-Hispanic populations than in the White non-Hispanic populations. At the same time, the prevalence of obesity among males 20 years of age and older grew from 20% to 27%; for females, it increased from 30% to 33%.

The DPP, as evaluated in a multicenter, randomized controlled study, found that behavioral changes leading to weight loss significantly reduced the risk of developing diabetes across ethnic groups. Successful strategies to adapt the DPP for Hispanic Americans are essential

to reducing health disparities in that population (NIDDK, 2008). Researchers found the DPP to be effective in reducing the diabetes risk across multiple populations (NIDDK, 2008). However, studies that focus on primary prevention in the young adult population (ages 18 to 30) are lacking (NIDDK, 2008). A continued rise in the incidence of diabetes suggested that information alone cannot change the course of the diabetes epidemic. Altering the escalating patterns of diabetes and incorporating the DPP's innovative design requires reversing complacent attitudes regarding the consequences of this disease and a process for transformational change (Basu et al., 2014).

A relatively small (5% to 10%) weight loss decreased hemoglobin HgbA1c by half a point on average (Sandoval, 2011). This reduction came close to the effect that some antidiabetic medications had on blood sugars without the medications' side effects. Modest weight-loss significantly decreased insulin levels and helped reverse the risk for diabetes. Weight-loss ultimately led to very significant benefits including a lower chance of having a heart attack or stroke. Healthful habits helped prevent diabetes, heart disease, stroke, and high blood pressure by boosting high-density lipoprotein (HDL), or "good" cholesterol and decreasing unhealthy triglycerides (Sandoval, 2011). Regular physical activity and proper diet prevented or managed a wide range of other health problems, including metabolic syndrome, depression, certain types of cancer, and arthritis. Healthy eaters also subconsciously influenced their friends and families to lose weight (Sandoval, 2011).

Literature Specific to the Project and Population

The major means of reducing risk for T2DM in Hispanic-Americans included launching and preserving healthy lifestyle behaviors (e.g., diet and physical activity) and accomplishing

and retaining a healthy body weight. The data to support this conclusion was found from a variety of studies. Among the research, the DPP was debatably the most persuasive and instructive. While data from the DPP established that T2DM could be averted or delayed in Hispanic-Americans by lifestyle modifications, to date there are limited data from Hispanic-American studies to validate the benefit.

Chaufan et al. (2011) conducted a quantitative study to assess socioeconomic and physiological relationships between poverty and T2DM in Hispanic-Americans, poverty and health disparities more generally, and implications for public policy and social justice. The researchers interviewed 15 Hispanic-Americans who received services at a local nonprofit organization in Northern California. They asked about income, housing, employment, workplace environment, neighborhood safety, immigration experience, and overall quality of life. Generally, the participants' household income was very low. Their income before taxes was either at or below \$25,000 per year (33.3%), and after taxes was at or below \$19,450 per year (33.3%). Twenty percent of participants lived in three-person households, 13.3% in four-person households, and 66.7% in households of five to seven individuals. Sixty percent of participants (nine out of 15) lived at or below the poverty line, and the rest at or below 170% of the poverty line. Chaufan et al. (2011) found that health and lifestyle education may be beneficial for Hispanic-Americans for a limited amount of time, yet they would not decrease health and diabetes inequalities at the population level in a maintainable way. This finding was due to population subgroups who bore disparities disproportionately and found themselves restricted by poverty, although many of them were aware of and willing to lead healthy lifestyles.

Jobs were not regularly available and the work environment was often nerve-wracking. Forty percent of participants reported that they were always handled with dignity at their work, while the remaining participants were sometimes treated with dignity (50%) or often were not treated with dignity (10%). Their educational attainment was overall low; less than 7% had finished a bachelor's degree and less than 14% held an associate degree or its equivalent. Twenty-six percent had completed high school, 13.3% elementary school, and over 33% only had some elementary school, whereas 6.7% had pursued educational paths that did not fit any of the categories. Over 80% of participants stated they had access to food, yet not the quality of food they desired (73.3%) and they frequently did not have enough food (13.3%). The study found that poverty barred participants and their families from accessing proper housing, reasonable educational possibilities, and healthful and culturally appropriate nutrition (Chaufan et al., 2011).

Coleman et al. (2010) examined the effectiveness of a personalized diabetes prevention program for Hispanic-American families that could be delivered in elementary school settings. The study included families with at least one child aged 8 to 12 years old who was attending elementary school and was at high risk of acquiring T2DM. The families participated in ten 90-minute sessions with exercise, cooking demonstrations, and healthy lifestyle lessons. Height, weight, and self-reported behavior were evaluated in parents and height and weight in children before and after classes. A total of 82 parents (2% men, 98% women) and 62 children (47% boys and 53% girls) were registered in the program. Researchers noted a large increase in the number of parents who self-reported engaging in leisure-time physical activity because of participating in the program (14% vs 64%; $p < .01$). According to the study authors, the average weight lost by

parents was 1.5 pounds from baseline to the end of the program. There were no variations in children's body mass index percentile or Z score because of the program (Coleman et al., 2010). Although the results were unremarkable, the authors recognized that schools could be a preferred setting for modeling lifelong healthful eating and physical activity behaviors that could lead to the prevention of obesity and T2DM in children and their families.

Coleman et al. (2010) wrote that when promoting diabetes prevention practices in low-income Spanish-speaking families, agencies and researchers should discuss the barriers to behavior change this population often faces. These barriers included family members not agreeing with changes in nutrition and physical activity practices, spousal strains, and accommodating parenting practices such as using videos as incentives for their overweight and obese children to behave (Coleman et al., 2010). Health professionals and researchers must recognize that many of these families may have competing needs such as employment, health care access, and transportation that must be addressed before they can participate fully in programs to change lifestyle behaviors.

The DPP program found weight loss occurred after a lifestyle intervention; however, it did not report a conversion to improved health outcomes. The weight loss goal in the DPP was 7% of initial body weight; other bodies such as the American Association for the Study of Liver Diseases (AASLD) found a 5% weight loss was clinically significant. The DPP study included documented inaccuracies in self-reporting of food ingestion and physical activity. Calories and fat grams were not always recognized and serving sizes were frequently not logged in the food diary. The participants failed to track daily activity, although pedometers were presented to them

for this purpose. Nonetheless, participants reported that they had achieved the physical activity goal of 150 minutes per week, but they did not report the method used to measure their activity.

Hawkins et al. (2015) conducted a pilot feasibility program with the aim of decreasing risk factors for gestational diabetes mellitus. The authors used a prenatal lifestyle intervention to improve physical activity and diet among pregnant overweight and obese Hispanic-American women. Eighty-eight women were randomized into two groups. The first group ($n = 33$, 48.5%) was engaged in a lifestyle intervention that involved culturally and linguistically adjusted content and motivationally-directed participants. The women in that group were individually counseled in a personalized 6-month prenatal program. The second group was randomized to standard care ($n = 35$, 51.5%). Both groups were followed for 12 months after delivery. Bilingual and bicultural health instructors encouraged the women in the intervention group to achieve the DPP guiding principles for physical activity, reducing saturated fat, and adding more dietary fiber in their diets. Patient retention up to delivery was 97% in both study groups. The lifestyle intervention lessened the pregnancy-associated decline in moderate-intensity physical activity, but differences between groups were not significant ($p = 0.88$). Vigorous-intensity activity increased significantly during pregnancy in the lifestyle intervention group ($p = 0.04$). The lifestyle intervention group also had slightly lower gestational weight gain and infant birth weights compared with the standard care group; however, these differences were not statistically significant. There were no statistically significant differences in biomarkers of insulin resistance between groups (Hawkins et al., 2015).

Vincent et al. (2013) piloted a randomized clinical trial using the DPP approach in a community-based, tailored intervention. The purpose of their research was to illustrate methods

used to recruit and retain high-risk, Hispanic-American adults in the trial. Passive and active staffing approaches were analyzed for effectiveness in reaching the recruitment goal. Of 91 possible participants evaluated for eligibility, 58 started in the study, with 38 in the intervention and 20 in the control group. The study used the American Diabetes Association Risk Assessment Questionnaire, body mass index, and capillary blood glucose measures to determine eligibility. The 5-month intervention contained an intensive phase that encompassed eight weekly 2-hour sessions followed by a maintenance phase of three monthly 2-hour meetings. Attributes of people who were eligible for the study included: 25 years of age or older, self-identified as Hispanic-Americans, overweight (BMI greater than 25 kg/m²), not pregnant, described no medical restrictions connected to the intervention of physical activity or dietary goals (walking 150 minutes per week, decreasing fat intake), and capillary blood glucose levels between 100 and 199 (fasting and not fasting respectively). Vincent et al. (2013) found that the recruitment was affected by factors such as language barriers, low levels of health education, lack of contact with primary care providers, economic constraints, lack of transportation, anxiety about participating in research, and unacceptable randomization. The program achieved its goal by partnering with local community health center staff and a student worker at a clinic. These people aided as culture brokers, offering insight and guidance on working with members of the Hispanic-American community and presenting the intervention guidelines to participants (Vincent et al., 2013).

Martinez et al. (2012) reported on a qualitative study focused on group methodology to collect perspectives of Hispanic-American men about weight, diet, and physical activity as they relate to the individual and the family. The study sample was composed of foreign-born Latino

men of at least 19 years of age, who had never been detected with diabetes and were married or living together as married. No women were included in the study to lessen possible gender biases. Of the 53 persons contacted, 25 (47%) consented to participate. Of those who consented, 16 (64%) arrived to participate. The average age of the 16 participants was 41 years of age; ages ranged from 20 to 64 with an average of 8 years living in Alabama and over 10 years living in the U.S. Three focus groups were held to include all the participants. One focus group was held at a local health clinic, and the other two were conducted at a neighborhood park office. Prior to initiation of the research, the participants weighed in, recalled 24-hour diet, and took a short survey on physical activity, perceived risk from and susceptibility to obesity and obesity-related illness, and apparent barriers and enablers to healthful living. The focus groups were audio taped for data collection and analysis. The mean BMI of the participants was 28.4 kg/m². None of the participants had been diagnosed with diabetes, but 50% of them had at least one family member who was diagnosed with diabetes. The researchers found several perceived barriers that influenced lifestyle behaviors for the participants including an inflexible work environment, the influence of the socially-constructed role of women in the household, a perceived threat to traditional family structure at different levels of society, lower socioeconomic levels, and less active leisure time. The men portrayed their lack of dietary control in the home as a barrier to healthful diet and weight control at the interpersonal level. The researchers noted that the studied men were open to settings that promoted healthful lifestyles and pursuits and for public health nurses to make suggestions for changes in the home, although promoting communication between family members toward reaching common goals such as illness prevention and health maintenance would be necessary (Martinez et al., 2012).

Orchard et al. (2015) designed a project to reduce prediabetes risks using an adapted version of the DPP. The study concentrated on weight loss and decreasing T2DM risks in a low-income Hispanic population. The study engaged Hispanic men and women ($n = 320$) who were residents of the Lower Yakima Valley, Washington, aged 18 years or older, with HgbA1c levels higher than 6%. The study was conducted from 2008 through 2014. The participants in the intervention group were engaged in an immediate educational course ($n = 166$) and participants in the control group took a delayed educational course ($n = 154$). The participants received a course comprised of five sessions led by community health workers. The intervention group received the education 3 months after randomization and the control group received the educational intervention 6 months after randomization. The study revealed a reduction in HgbA1c levels in both the immediate group and the delayed intervention group; mean HgbA1c scores were 8.04% for the delayed intervention group and 8.31% for the immediate group. The five sessions of home-based education resulted in a substantial and clinically significant decrease in mean levels of HgbA1c. The participants in the immediate intervention group maintained reductions in HgbA1c levels at 6-month follow up.

Hispanic-Americans often encountered disparities in health and in accessing health care services. Their economic challenges and social and psychological burdens can be barriers to attaining and maintaining a healthful lifestyle. The lack of access to health care and medical insurance coverage was linked with higher rates of diabetes complications among Hispanic-Americans. Acculturation influenced Hispanics to assimilate unhealthful behaviors, but their ethnicity intensified the risk for developing diabetes, experiencing inadequate health care, and suffering complications of the disease. Language barriers affected Hispanic-Americans in the

healthcare system. The DPP studies exhibited an increase in diabetes knowledge among diabetic and non-diabetic participants, and the prospective to address health care disparities related to diabetes in the Hispanic-Americans population. However, engaging in behaviors that were essential to one's own health at the possible expense of relationships or others' needs or desires were difficult from the Hispanic-American cultural perspective.

The articles used to support the DNP project included three randomized controlled trials, national clinical practice guidelines, one controlled trial, two meta-analyses, and two qualitative studies. The supporting evidence was as follows. Matvienko and Hoehns (2009) conducted a systematic review and meta-analysis of 30 U.S.-based studies that applied the findings of the DPP. In their review, the authors found that the typical weight change at 12 months after the intervention was a loss of about 4% from participants' baseline weight. Change in weight was similar regardless of whether the intervention was delivered by clinically trained professionals or lay educators. Additional analyses limited to 17 studies with a 9-month or greater follow-up showed similar weight change. With every additional lifestyle session attended, weight loss increased by 0.26%. The authors concluded that costs associated with diabetes prevention can be lowered without sacrificing effectiveness by using nonmedical personnel and motivating higher attendance at program sessions.

Other than the DPP program, another good example of a program that approached the epidemic of Hispanic-American obesity and diabetes was La Comunidad en Acción. This was a teaching program that tackled obesity and diabetes from a public health perspective in Hispanic-American communities. Its goal was to create community-based initiatives to control and prevent obesity and diabetes. La Comunidad en Acción was offered in a culturally-informed framework

to address the burden of obesity and diabetes. Between January 2010 and May 2014, more than 150 community leaders and health professionals completed the 2½-day training (Diaz-Kenney et al., 2015).

Another program in action was The U.S. & Mexico Border Diabetes Prevention and Control Project. The project aimed to reduce the effect of diabetes on the border population by directing activities to assess the burden of diabetes and developing intervention demonstration projects. The project cultivated and geared strategies in partnership with the 10 U.S.-México Border States; the Pan American Health Organization (PAHO), and various federal, state, academic, and nonprofit organizations with an interest in diabetes prevention and control in the border region (Diaz-Kenney et al., 2015).

Many cultural behaviors and practices are shared by people from Latin America and the Caribbean. The extended family plays a big role in influencing diabetes control among Hispanic-Americans. Traditional Hispanic-American families include extended family members, such as grandparents, aunts, uncles, cousins, godmothers, and godfathers. Spending time with family and friends are vital parts of life. The man is traditionally the head of the household. Many Hispanic-Americans perceived the man as healer, spiritualist, and the one to be consulted about health issues rather than seeing general medical practitioners (Keifer et al., 2014). Children are highly valued and elders are cared for and respected. Friendliness and treating others with respect are important. Maintaining eye contact and friendly physical contact, such as touching the shoulder or arm is common.

To decrease the incidence and prevalence of diabetes, Healthy People 2020 recommended that people eat an assortment of nutrient-dense foods (whole grains, fruits,

vegetables, low-fat or fat-free milk or milk products, and lean meats and other protein sources). They should limit the intake of saturated and trans fats, cholesterol, added sugars, sodium (salt), and alcohol (Basu et al., 2014). Lack of information and psychomotor skills required for health maintenance and health promotion among this population was high due to misinterpretation of information from the media. This was evidenced by Knowlden and Sharma's (2013) finding that Hispanic-American young adults watched one fast food advertisement on Spanish-language TV every day in 2013, a 16% increase from 2010. These advertisements were interpreted as nutritional endorsement.

Additionally, the diet of the Hispanic-Americans in the U.S. was profoundly influenced by the traditional nutrition of their countries of origin, as well as by the dietary habits of the society in which they now live. Family life with its traditionally central place in Hispanic-American culture influenced dietary behaviors such as home preparation of meals and the practice of families eating together. Hispanic-Americans enjoy many American dishes such as "tacos," "paella," and "empanadas" that are made with staple foods such as beans, rice, and tortillas, all of which were high in carbohydrates. While these and many other Latin American foods were considered delicious, several of these traditional dishes are high in calories, fat, and sodium. Additionally, many Hispanic-Americans have adopted the U.S. emphasis on foods that are processed and cooking techniques that add unhealthful amounts of fat and salt (Duggan et al., 2014).

A projected 11 million U.S. adults lack the literacy abilities to complete everyday tasks. A growing number of Hispanic-Americans struggle to do more than sign a form in English. About 32% of adults with less than a high school diploma lack access to a regular place for

health care, compared with 19% of people with at least some college education. The Hispanic-Americans with the worst health were the least likely to have access to health care information due to lack of education (Keifer et al., 2014).

About 43% of Hispanic-Americans age 18 and older did not have basic English skills. That was a substantial increase from 36% a decade ago. Around 54% of them could not read or speak English and analysis showed that many lacked basic mathematical skills (Keifer et al., 2014). Thus, some persons within the population do not have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions. The large number of young adult Hispanic-Americans who went to school with a delayed start on their educational path was a cause for concern. Reading and literacy skills are essential to participate in the workforce. Low literacy levels of disadvantaged families reduced the probable of upward mobility. This lack of economic mobility was pronounced among Hispanic-Americans families who had a high poverty rate compared to the U.S. national averages (Keifer et al., 2014).

Weigensberg et al. (2014) undertook a pilot study using a randomized controlled strategy in obese Hispanic-American adolescents to establish the effects of the mind-body modality of Interactive Guided Imagery on insulin resistance, eating and physical activity behaviors, stress, and stress biomarkers (serum, urinary, and salivary cortisol). The study was conducted over 12 weeks and included a 16-month follow up on the lifestyle intervention, which contained three lessons covering the principles of intuitive eating and three lessons covering general nutritional information, including modification of carbohydrate intake. A personal trainer led two lessons covering the “Active Living” movement and physical activities or exercises that participants

could easily learn and do in their own homes using inexpensive water-filled plastic containers. The researchers used a process related to focus groups, preliminary program testing, and idea-building groups to develop the 12-week Imagine H.E.A.L.T.H. (Healthy Eating Active Living Total Health) lifestyle intervention, which contained two main components: didactic lifestyle education and guided imagery. They also investigated the function of intervention-related changes in stress and stress biomarkers on changes in metabolic results (insulin resistance). The lifestyle modification was grounded on perceptive eating (unconditional permission to eat when hungry and to eat whatever food is desired) and adjustment of dietary carbohydrate intake. Perceptive eating was a developmentally ideal paradigm for adolescents considering it supported independence in eating and physical activity decision-making (Weigensberg et al., 2014).

Ockene et al. (2012) examined efficacy of a community-based, knowledge sensitive, and culturally personalized lifestyle intervention on weight loss and diabetes risk attenuation among low-income, Hispanic- Americans who were at increased diabetes risk. A total of 312 applicants were recruited into the study and were randomized to the control (UC; $n = 150$) or intervention (IC; $n = 162$) group. Inclusion criteria encompassed self-reported Latino/Hispanic ethnicity, age 25 years or older, body mass index greater than 24, and a 30% or more probability of being detected with diabetes over the following 7.5 years. The lifestyle intervention included participation in three individual and 13 group meetings over a 12-month period. The length of the first group conference was 1.5 hours and the remaining group meetings were 1 hour.

Three hundred participants were allotted to lifestyle intervention care between 2004 and 2007 and each participant was followed for 1 year. The participants' average age was 52 years; 59% had less than a high school education (Ockene et al., 2012). The goals for the dietary

changes were to increase intake of whole grains and non-starchy vegetables and reduce sodium, total and saturated fat, portion sizes, and the intake of refined carbohydrates and starches. The goal for physical activity was to walk 4000 steps per day over baseline. Participants received a pedometer and directions on to use it. The 1-year study completion rate was 94%; 11 participants (6.8%) dropped out of the IC group and 7 (4.7%) dropped out of the UC group ($p = .25$). The dropout group had a reasonable weight loss of 0.63 lb. ($p = .04$) and a clinically meaningful reduction in HgbA1c of 0.04%; ($p = .009$). There were no significant differences in physical activity or fasting blood glucose between the two randomly assigned groups. The IC participants lost more weight than the UC participants (-2.5 lb.; $p = .004$). This was associated with a significant reduction in HgbA1c (-0.10% , $p = .009$). Both groups displayed significant decreases in depressive symptomatology (CES-D score) compared with baseline (Ockene et al., 2012).

Perreault et al. (2009) examined the results from the DPP to determine the effect of baseline characteristics on regression to normal glucose levels in persons with prediabetes. The authors found that age-related changes may permanently impede the restoration of normal glucose levels and recommended establishing healthy habits early in life, before age-related changes occurred, as the best strategy to prevent diabetes (Perreault et al., 2009).

Relevance to Nursing Practice

Despite the strong evidence for lifestyle interventions in the prevention of T2DM, there was a translational gap between trial evidence and implementation into routine care as shown from the above articles. This gap was mainly due to the resource-intensive nature of lifestyle interventions tested. T2DM prevention was a multifaceted health problem among Hispanic-Americans that necessitated multilevel initiatives. The challenge for nurses and public health

researchers is to translate this evidence into effective community-based programs. An evolving body of translational studies in a range of settings proposed that such community-based programs could be effective, but the risk reduction for future diabetes and subsequent complications was not clear. Since the completion of the DPP in 2002, studies have translated the program into different settings to reach populations at-risk for T2DM who were of low socioeconomic status and diverse races and ethnicities. Public initiatives are needed to reach at-risk Hispanic-American adults. Nurses must focus on culturally-sensitive group interventions in the community that will target prediabetic young adult Hispanic-Americans to prevent progression to diabetes.

Local Background and Context

According to the 2000 U.S. Census data, Cincinnati, Ohio is the home of 331,286 residents of which 4230 or 1.3% were Hispanic-American. In the 2010 Census, the total population was 296,943, a decrease of 10.47% but the Hispanic-American population had increased to 8,308 or 2.4% of the total population, an increase of 96.13%. In all but one of the 88 Ohio counties, population growth has been due to persons who identify as Hispanic. The state gained 32,263 Hispanic residents between 2010 and 2013 (Richards, 2014). Forty-seven percent of the population was originally from Mexico and 30% were from Puerto Rico. With a median age of 25.8 years compared to 39.3 years for Ohioans, most of the population growth was due to young Hispanic-Americans beginning families. The Hispanic-American population in Ohio reflects the demographic profile of this population across the country as reported earlier in this section of the paper. As a family nurse practitioner, I noticed the increasing numbers of Hispanic-American patients and the obesity and diabetes diagnoses that were common in this population. I began

working with the Hispanic community to determine ways to intervene early in the disease to prevent the disease altogether (primary prevention), decrease progression of prediabetes to diabetes (secondary prevention), and decrease complications of the diabetes (tertiary prevention).

Role of the DNP Student and Project Team

My overarching vision for the project was the option of a future without diabetes in which all people live long, healthy lives. Working in concert with the vision, the mission of this project was three-fold. First, I sought to increase community awareness of diabetes and diabetes prevention. Second, my role was intended to strengthen the health of the community by assisting with the creation of a community coalition to promote healthful lifestyles. Finally, following the lead of the coalition, I planned to mobilize the community to improve overall health and implement a project young adult Hispanic-Americans who may be a key group for intervening in the high rates of diabetes and to diffuse the DPP information into the community. My role in this project was to develop the program approach and maintain a good relationship with the project team and the participants when the program developed during the DNP project is implemented. In addition to this concrete input, I worked on various project activities: exploring the literature, discussing implementation processes and procedures with possible coaches and stakeholders, gathering and processing data, reflecting on and organizing ideas, and taking notes.

Summary

Obesity and related conditions have posed a disproportionate economic burden on health of Hispanic-Americans and on health care system costs. Many Hispanic-American families struggled to cover their individual and family health care-related costs. Many of these families did not have enough money to pay for health insurance, making treatment and access to care

difficult for some of the most pressing obesity-related chronic diseases impacting Hispanic-Americans. The country is falling behind on methods to provide medical treatments for obesity and educational initiatives to help reduce obesity rates.

Rogers' diffusion of innovation theory identified the importance of communication, timing, and social systems in translating innovation into groups. Although the literature did not clearly show which DPP interventions were most successful with Hispanic-Americans, Pender's HPM was a reliable theory to guide the interventions (Srof & Velsor-Friedrich, 2006). Targeting interventions that encouraged self-efficacy with diet and physical activity is expected to promote healthful behaviors related to obesity reduction. Pender placed emphasis on locus of control and readiness for change as important precursors to intervention outcomes.

Section 3 describes the approach that was taken to develop the program plan for implementation in the community after completion of the DNP project. The clinical practice question, additional detail about the sources of evidence, a description of the analysis, and synthesis of the evidence will be presented.

Section 3: Project Approach

Introduction

The purpose of this program development project was to assess the effects of the DPP's lifestyle modifications among Hispanic-Americans as reported in the literature and apply the findings from the research to a program plan for young adults. Inequities in access to health care, the quality of care received, and opportunities to make healthy choices contribute to the high rate of prediabetes or diabetes among Hispanic-Americans. Language barriers, discrimination, resilience, faith, and beliefs about metabolic abnormalities play a role among Hispanic-Americans' diabetes outcomes. Economic disparities impart a high barrier related to achieving a healthful lifestyle among this group. Nearly one in four Hispanic-American households is considered food insecure. Approximately 23% of Hispanic-American families live in poverty (Keifer et al., 2014). Lack of access to healthful foods in neighborhoods and to supermarkets is consistently linked to increased rates of overweight and obesity (Keifer et al., 2014). In this section, I will provide detail related to the clinical practice question addressed by the project and the project methods.

Practice-Focused Question

The project question is: Based on the literature, how can the DPP be best adapted for use among young Hispanic-Americans to improve overall health promotion and decrease the risk for developing diabetes? The problem to be addressed by the program that I developed as the product of the DNP project was the growing number of Hispanic-Americans in the United States, specifically in the state of Ohio, who are overweight or obese and at risk for developing T2DM. The local problem is the growing number of Hispanic-Americans in the state and the need for

appropriate health care programs to intervene in the high risk this population has for developing diabetes. During the 14 years since the publication of the DPP study, the approach has been used in a variety of settings with different ethnic and racial groups. Results generally have been positive, but a concrete method for translating the DPP into practice for nurses has been missing in the literature. In addition, studies that focus on the Hispanic-American population are few and none of them have focused on young Hispanic-Americans. This project aims to close that gap by developing a DPP-based program for young adult Hispanic-Americans that can be implemented and followed over time to determine the long-term effects of diabetes prevention lifestyle interventions in this population.

Sources of Evidence

I did not conduct data collection other than the review of the literature. I did not include recruitment of participants. The planned future program is to use an interventional design to establish whether lifestyle mediation can increase knowledge about diabetes and encouraged lifestyle changes reflected in lower BMI and HgbA1c in young Hispanic-American adults. The program will recruit Hispanic-American young adults who are 18 to 30 years of age. Potential participants in the DPP who are found to have an HgbA1c higher than 7.0 will to be excluded from program enrollment and referred for medical care.

Project Design/Methods

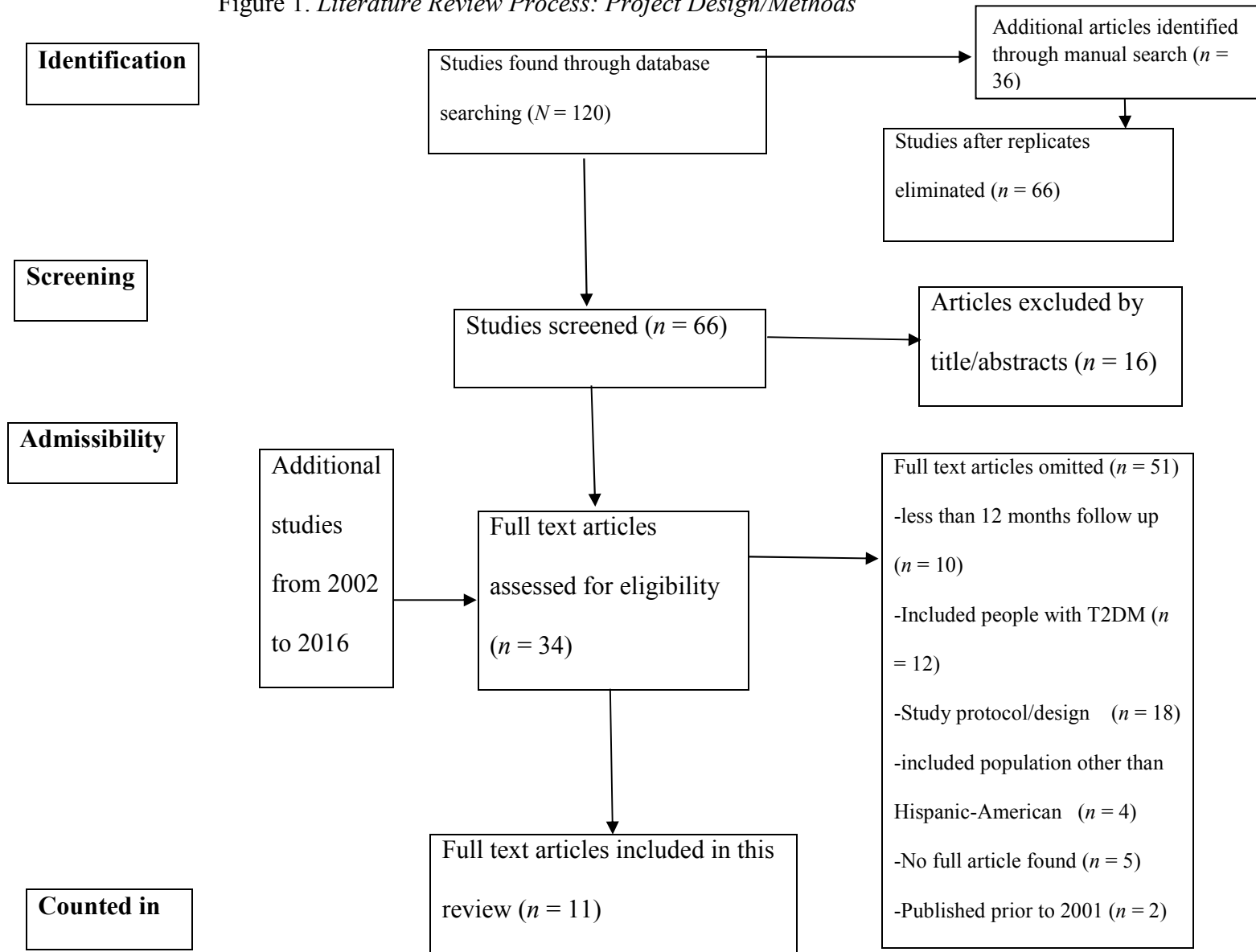
The program development project aimed to develop a project design for future implementation among young adult Hispanic-Americans who were at risk for developing diabetes. As a part of the developmental project, a thorough review of studies using the DPP with Hispanic-Americans resulted in a total of 11 trials including 1,936 participants (see Table 1) with

two trials delivering data applicable to young adult Hispanic-Americans. Although the interventions offered in these studies were not the same across studies (differences were found in participant numbers, duration of interventions, group versus individual interventions, and setting), most of the studies were based on identifiable theoretical models and reproducible interventions.

Population and Sampling

The developmental project literature review included all published studies in the last 14 years (January 2002 to January 2016) that included the assessment of a lifestyle-focused program that included Hispanic-Americans who were at high risk of diabetes. The literature review focused on studies that included measures of IGT, HgbA1c, and BMI, included participants identified as either overweight or obese. The inclusion criteria were articles that included a sample of Hispanic-Americans age 0 years and older, who were born in the U.S. or migrated here. The publications retrieved were written in the English language and were available online in full text. The review of the literature excluded studies with publication dates before 2001 and that did not follow the participants for a year or more. Also excluded were studies including Hispanic-Americans who either already had diabetes or who were not at risk of developing diabetes. Table 1 provides a visual depiction of the literature review process.

Figure 1. Literature Review Process: Project Design/Methods



Institutional Review Board (IRB) approval was sought from Walden University to develop the program (IRB Approval number 10-25-16-0492553). The educational program for

future implementation will use a quasi-experimental pretest/posttest design to implement a primary prevention program (the DPP) that will introduce lifestyle interventions, which could prevent T2DM in the at-risk population (Hispanic-American young adults age 18 to 30) by improving glycemic control through diet and exercise. This program will use a community-based approach that delivers the content in a train-the-trainer format to young Hispanic-American adults. The program, if implemented, will measure the impact of the diabetes education intervention on the knowledge, BMI, and HgbA1c of the participating young adults.

Definitions of Terms

- Young adult Hispanic-Americans: ethnolinguistic individuals between the age 18 and 30 with hereditary ancestries in the countries of Latin America. The group includes all persons who self-identify as Hispanic and share Spanish language and cultural heritage. Hispanic-Americans are principally of Mexican, Puerto Rican, Cuban, Salvadoran, Dominican, Guatemalan, and Colombian ancestry (Rhodes et al., 2015).
- Diabetes mellitus: impaired fasting glucose (IFG) concentration of ≥ 100 and < 126 mg/dl or impaired glucose tolerance (IGT) elevated 2-plasma glucose concentration (≥ 140 and < 200 mg/dl) after a 75-g glucose loaded on the oral glucose tolerance test (OGTT) in the presence of an FPG concentration < 126 mg/dl (NIDDK, 2008).
- Glycated hemoglobin test (HgbA1c): a test that reflects the average blood sugar level in the blood over 2 to 3 months. The goal is a HgbA1c below 6.5% (NIDDK, 2008).

Data Analysis (Reliability, Validity, and Analytical Techniques)

Eleven studies (see Table 1) were retained in the review of the literature after inclusion and exclusion criteria were applied to the 46 relevant retrieved articles. All but one of the studies

offered demographic information on the participants; but only two studies gave a detailed analysis of the effect of the intervention on the study population (diffusion). The analysis identified that eight of the studies (Duggan et al., 2014; Guzmán et al., 2009; Keifer et al., 2014; Lindberg et al., 2012; Merriam et al., 2009; Ruggiero et al., 2011; Shaibi et al., 2012; Vos et al., 2014) reported reliability data; nevertheless, only four of the studies (Lindberg et al., 2012; Guzmán et al., (2009); Ruggiero et al., 2011; Vos et al., 2014) applied quality assurance measures to assess the extent to which the program was delivered as planned. Eight studies (Duggan et al., 2014; Guzmán et al., 2009; Keifer et al., 2014; Koniak-Griffin et al., 2015; Lindberg et al., 2012; Ruggiero et al., 2011; Shaibi et al., 2012; Vos et al., 2014) reported ‘highly’ or ‘moderately’ positive changes (effectiveness) based on weight loss. The highest average weight loss was 7.4 kg. (16.28 pounds) at 1 year. This weight loss could be significant for persons with prediabetes and may delay or decrease progression to diabetes. Three studies reported ‘high’ diabetes risk reduction but only ‘low’ to ‘moderate’ weight loss (Kramer et al., 2013; Merriam et al., 2009; O'Connor, 2015).

Baseline measures such as age, overweight status, and dietary restraint, fewer fat-related dietary behaviors, and less sedentary activity level were independent predictors of successful end-of-study weight loss. Changes in low-fat diet self-efficacy and dietary restraint skills predicted better long-term weight loss, and the association of low-fat diet self-efficacy with weight outcomes was explained by dietary behaviors (Duggan et al., 2014).

To assess application of studies conducted with Hispanic-Americans between 2002 and 2016, the degree of contact (based on number, length, and type of contacts) during the first year of the intervention was determined. All studies reported on frequency of contacts and duration of

the programs. Seven studies (Duggan et al., 2014; Guzmán et al., 2009; Keifer et al., 2014; Lindberg et al., 2012; Merriam, et al., 2009; Shaibi et al., 2012; Vos et al., 2014) implemented ‘high’ frequency interventions, and four studies delivered intervention over the period of 12 months or more. The number of contacts varied from a single small group session to 32 group sessions. Four of the programs (Guzmán et al., 2009; Lindberg et al., 2012; Ruggiero et al., 2011; Vos et al., 2014), were based on the U.S.-DPP model and adopted a ‘low-’ to ‘moderately intense’ version (based on the degree of contact) as compared to the original DPP. The main adaptation was the decrease from 16 sessions to fewer sessions. In addition, volunteers instead of health care professionals led groups and used telephones instead of face-to-face program delivery.

The number of interactions ranged from a single small group session to 22 group sessions. About two thirds (66%) of the settings based on the DPP model implemented a ‘low to reasonably intense’ version of the DPP model. The main version of the adapted programs was the cutback from 16 to a smaller number of sessions. Application fidelity was well-defined if it was based on the DPP and measures were practical to monitor the application of the interventions. No measure was consistently described in every study and some studies evaluated the effects of nutrition on the prevention of T2DM and used only a dietary intervention, while others used both a dietary intervention and an exercise intervention. Three studies provided nutritional and behavioral counseling. About weight loss, the behavioral psychotherapy intervention provided via e-mail yielded a mean weight loss of 4.6 kg. The first year, but participants were not followed past the first year and no data were gather on whether the weight loss had any influence on diabetes incidence (Vos et al., 2014).

The literature since the initial DPP in 2002 demonstrated differing applications of the program with varying degrees of fidelity with the original DPP study. Based on the findings, weight loss can be expected from programs that include both exercise and dietary changes, in person contact with participants over several sessions, a psychosocial component, and long-term follow up of at least a year. The effect of this weight loss on changing the trajectory of prediabetes to diabetes has not been established and long-term follow-up demonstrated that most participants were not able to continue or sustain gains outside of the programs. The proposed program resulting from this DNP project uses these lessons to demonstrate outcomes over a longer period, but will need significant financial support to carry out the program in the community.

Summary

Addressing obesity among Hispanic-Americans necessitates understanding not only of the biological causes of obesity, but also of the culture, values, resources, and environments that have influenced eating and physical activity behaviors and choices among Hispanic-Americans. According to the literature review, the greatest opportunity to halt the obesity epidemic lies in working with the Hispanic-American population to promote the social and environmental conditions that favor healthful eating and physical activity to prevent obesity. Hispanic-American communities need to be involved in a collaborative and comprehensive effort to improve eating and activity behaviors and environments. Education is needed as well as stronger policies to ensure healthful nutrition and physical activity environments, safe communities with ample recreational spaces and affordable healthful foods, and an end to the marketing of unhealthy products to children (Rivera et al., 2015).

Using the DPP study as a model, a program teaching a lifestyle intervention that has the capacity to reduce the risk of developing diabetes in a Hispanic-American community was developed. The DNP project deliverables are the program implementation plan, a GANTT chart depicting a possible program implementation timeline, and an evaluation plan for determining the outcomes of the program among young adult Hispanic-Americans. This evaluation of the interventional program would establish whether the lifestyle mediation resulted in increased knowledge and decreased BMI and HgbA1c and would include the results of the pre- and postintervention data collection instruments and the changes pretest to posttest.

In summary, optimal diabetes prevention in young Hispanic-Americans requires attainment of optimal glucose, blood pressure, and weight targets through promotion of judicious diet, regular physical activity, and increased knowledge about the disease. Attaining these targets required development of primary prevention program plan that adapted the DPP for the young adult Hispanic-American community. The diffusion of innovation theory offered a conceptual framework that can facilitate the implementation of the program. The diffusion of innovation theory was used in this project to provide valuable insights into why the DPP was applicable in this population and guided effective adaptation of best current practices. The adoption of improved diet, exercise, and knowledge by young adult Hispanic-Americans will be a consequence of multiple factors. Pender's HPM was applied in this project to foresee effective factors/barriers in diabetes prevention, detect impacts of the intervention program for improving health-promotion behaviors, predict stage of change in health promotion behavior, and put in place plans to prevent the events that interfere with health-promotion behavior. Based on the HPM, this project stresses the fact that investigators needed to comprehend and address

modifiable behavior-specific variables. The project plans an intervention that used an operational empowerment approach, as well as interactive and situational experiences, as a means of aiding and enhancing young adult Hispanic-Americans' health-promoting behaviors.

Section 4 of the paper reports in more detail the findings of the analysis and synthesis of the literature evidence, provides recommendations for future research, and describes the proposed implementation and evaluation procedures for the planned program. The strengths and weaknesses of the project will be addressed as well.

Section 4: Findings and Recommendations

Introduction

In Section 4, I present the findings of the literature review and provide recommendations for the planned interventional program to be initiated with the target population, young adult Hispanic-Americans. The purpose of the project was to develop the program plan, including the recruitment of participants, interventions, and pre- and postintervention measures for program evaluation. First I will present the findings and implications of the literature review, followed by the specific recommendations for the proposed program implementation and evaluation.

Findings and Implications

The literature review for the program development project has found that lifestyle interventions ultimately lead to benefits including a reduced risk of developing diabetes. Although the goal of diabetes prevention is essential, the lack of convincing evidence for the effectiveness of programs among young adult Hispanic-Americans calls into question whether using public funds or national prevention activities should be supported now. In the following discussion, I review the literature findings and evaluate the strength of the evidence for a community-based interventional approach to diabetes prevention.

Table 1

Hispanic-Americans in DPP Research 2002 to 2016

Authors	Objective(s)	Sample	Study type	Major significant findings	Duration
Koniak-Griffin et al. (2015)	Evaluates the outcomes promotora-led lifestyle behavior intervention for overweight, immigration Latinas.	223 women aged 35-64 years, predominantly with low income and \leq 8th-grade education	Cross-sectional study	A treatment dosage effect was observed for weight and waist circumference. Knowledge about heart disease increased. High attendance at classes and participation in the individual teaching and counselling sessions and high retention rates support the feasibility and acceptability of the promotora-led lifestyle behavior intervention.	2 years
Lindberg et al. (2012)	The feasibility of culturally appropriate weight loss intervention	47 participants enrolling in the program	Pilot study	Mean weight loss at 6 and 12 months was 5.3 and 7.2 k respectively, with a mean reduction in BMI of 4.0 and 5.5 from baseline to 6 and 12 months, respectively.	12 months
Vos et al. (2014)	To assess the effectiveness of a tailor-made weight loss intervention in achieving a clinically significant weight	407 overweight women	Randomized controlled trial	At baseline, the mean body weight for all participants was 88.7 ± 13.2 kg, and the mean BMI was 32.4 ± 4.3 kg/m ² . The	12 months

	loss in overweight (BMI \geq 27 kg/m ²) women aged 50-60 years in primary care setting			percentage of participants lost \geq 5 kg or 5% of their baseline body weight was 14.8 versus 6.3% ($p = .012$) at 6 months for the intervention group and the control group respectively. At 12 months, this was 18.7 versus 14.9 % ($p = .027$). Mean weight gain at 6 months was -0.9 kg ($p = .001$) for the intervention group and control group, respectively. At 12 months, this was -0.6 versus 0.6 kg ($p = .01$). At 30 months of follow-up, no significant differences were found in the intervention group and control group.	
Guzmán et al. (2009)	To describe promising recruitment and retention strategies for transient Latino populations, assisting investigators who works with this population in their research design and implementation.	159 families	Pilot study	Of the 159 families who agreed to participate in the program, 123 parent-child dads were enrolled. Retention rates were 59% in the control group, 67% in the intervention group.	1 year intervention

Ruggiero et al. (2011)	Take prevention from the clinic to the community by including a high-risk group and working with the community to tailor, enhance, deliver, and evaluate a community-based version of Diabetes Prevention program's (DPP) clinic-based lifestyle intervention.	18 participants completed at least 12 sessions, and 1 participant was lost to follow-up.	Nonrandomized prospective study	Delivery of the interpreted version of the DPP's lifestyle intervention in the community by community residents grasps potential as one strategy to reach people at increased risk of developing diabetes. Use of this translation model, including collaboration with community health workers, offers diabetes educators an opportunity to extend their reach into underserved communities	12 months
Shaibi et al. (2012)	Test the feasibility and preliminary effects of culturally grounded, community-based diabetes prevention program among obese Latino adolescents.	15 obese Latino adolescents	Prospective cohort study	The intervention resulted significant decreases in BMI z score, BMI percentile, and waist circumference; increase in cardiorespiratory fitness; and decreases in physical inactivity and dietary fat consumption. In addition to this change, the intervention led to significant improvements in insulin sensitivity	12-week intervention with 1 year follow up.

				and reduction in 2-hour levels.	
Keifer et al. (2014)	Evaluated the effectiveness of community based healthy lifestyle intervention in improving dietary behaviors of pregnant Latinas from 2004 to 2006	278 pregnant Latinas	Randomized controlled, pre- and postintervention	Baseline characteristics and dietary intake. Post intervention, MOMs participants showed significant improvement in all dietary behaviors, except fruits and fiber consumption. Compared with MI participants, MOMs participants had significantly decreased	The project lasted 11 weeks, with 3-year follow-up
Duggan et al. (2014)	Evaluating the effect of an RCT of a home-based educational intervention administered by community health workers (CHW, or Promotores de Salud in Spanish) for Hispanic people with elevated HbA1c level (>6%) in Yakima Valley, a rural area where more than 60% of population is Hispanic and low income	Hispanic men and women ($N = 320$)	Randomized -controlled trial	The immediate intervention group (-0.64% (standard error (SE) 0.10)) showed a significant improvement in HbA1c scores (-37.5%, $p = 0.04$) compared with the delayed intervention group (-0.44%, $p = 0.14$). No significant changes were seen for dietary end points or changes in physical activity. A trend of greater increases in frequency of moderate and vigorous physical activity were	4 years

				observed. Also, there was a smaller increase in mild physical activity in the immediate intervention group than in the delayed intervention group.	
Merriam et al. (2009)	The intervention was intended to increase awareness of diabetes prevention strategies, foster positive diabetes prevention attitudes (i.e., self-efficacy) and promote healthy lifestyle behaviors in the target Latino population using literacy sensitive and culturally-tailored strategies and materials.	320 individuals	Randomized controlled study	The average BMI was 34 kg/m ² , with 36% having a sibling with diabetes (18% of their fathers, 30% of their mothers had diabetes). Fifty-nine percent had less than a high school education, and only 14.6 % had attended college. Forty-six percent had CES-D of 16 or greater suggesting clinical depression. Mean systolic blood pressure was 128.7 mmHg, the mean fasting glucose was 105 mg/dl, and the mean HDL-C was 48 mg/dL.	7 years
Kramer et al. (2013)	To develop a program that enabled participants to maintain a 7% weight loss and to safely and progressively increase their	27 individuals were enrolled	Nonrandomized, prospective pilot study	The overall mean weight loss for those who attended at least three sessions (<i>n</i> = 18) was 4.5 pounds (2.8%). Those who attended at least	2 years

	physical activity to 150 minutes per week of moderately intense physical activity equivalent to a brisk walk.			half of the sessions ($n = 12$) showed a mean weight loss of 6.8 pounds (3.9%); 4 participants achieved a weight loss of 5% and 3 participants achieved a weight loss of 7%. Five individuals in this group achieved the physical activity goal of 150 minutes per week.	
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Few instruments had been developed to measure health-related lifestyles of young adults. The Adolescent Lifestyle Profile had been shown to work well with young adults. Hendricks, Murdaugh, and Pender's (2006) Adolescent Lifestyle Profile (ALP) was elected to measure the health promoting lifestyles of the young adult Hispanic-American participants before and after the intervention in the planned program. The ALP is a Likert-type instrument that measures seven domains of healthful behavior strategies in young adults (Hendricks et al., 2006). In addition to measuring nutrition and physical activity, five other subscales (positive life perspective, health responsibility, stress management, interpersonal relations, and spiritual health) provide information about lifestyle behaviors (Hendricks et al., 2006). The ALP was modeled after the Health Promoting Lifestyle Profile II (HPLP II) and tested in several samples of early, middle, and late young adults (Hendricks et al., 2006). The final version of the instrument consists of 44 items with four possible responses: 1 (never), 2 (sometimes), 3 (often), and 4 (routinely) (Hendricks et al., 2006). Categories tested by the ALP include nutrition (nine

items), health responsibility (seven items), physical activity (six items), interpersonal relations (seven items), stress management (six items), positive life perspective (seven items), and spiritual health (two items) (Hendricks et al., 2006).

The Cronbach's alpha internal consistency reliability was 0.91 for the total ALP scale, and reliability of the individual subscales ranged from 0.64 to 0.75 (Hendricks et al., 2006). Item to total correlations and subscale to total scale correlations indicated that the ALP was a reliable scale to assess health behaviors in young adults (Hendricks et al., 2006). Positive correlation with the Hope, Self-Efficacy, and Self-Esteem Scale authored by Fraser and Keating (2014) validated the ALP. Factor analysis provided further evidence of construct validity (Hendricks et al., 2006). The ALP is publically available for use.

A combination of the Likert-type ALP questionnaire scores, demographic data, results from physical measurements (height, weight, BMI, HgbA1c, and the young adults' knowledge of diabetes prevention strategies pre- and postintervention will be used to determine the outcomes of the program. Measurable outcomes expected from this program include: 1) an increased awareness of the cultural disparity of T2DM and methods of prevention, 2) an increased knowledge of healthful eating techniques, 3) an increased knowledge of the benefits of and obstacles to physical activity, 4) clinical outcomes of decreased weight, decreased BMI, decreased HgbA1c values, and increased time spent in physical activity (measured using pedometers) among the participants.

Recommendations

The future project will aim to enroll participants from a local Ohio neighborhood. The interested applicants will complete a pretest, engage in the educational intervention, and

complete a posttest questionnaire for analysis. The group will be divided into 15 to 20 participants in each intervention group. Each group will participate in class one day a week and participants will be given identical content and materials. The sample population will be individuals who emigrated from Latin America or whose families emigrated from Latin America regardless of gender or membership in an ethnic group (see Appendix 3). Included will be participants who are young Hispanic-Americans at risk for diabetes based on BMI and HgbA1c. Excluded from the project will be young adults who are not at risk for diabetes, non-Hispanic-Americans, and Hispanic-Americans who are over the age of 30 years or less than 18 years of age.

The project is to take place in a selected local area and recruitment information will be featured in a selected monthly newsletter, flyers, and community announcements through newspapers, TV, and radio. The interested individuals will be directed to contact an existing service learning project involving diabetic nurse educators, a psychiatric-mental health nurse, and nutritionists. The diabetic nurse educators will be verified Board Certified-Advanced Diabetes Management (BC-ADM) nurses and the nutritionists will have verified licensure from The Board of Dietetics. The diabetic nurse educators and the nutritionists will select and coordinate participation of the young adults involved in the project. A total of four trainers will receive training in the project content delivery before commencing the project. Prior to starting the sessions, the participants will complete the survey in Appendix 2. The first step of the DPP program implementation will be to assess the intervention with the young adults. This assessment will involve determining the newness of the diabetes prevention tactics and whether the information is known but has not yet been accepted or rejected. The second step requires

communication of the information through personal interaction, hands-on-learning, and interactive teaching methods. The first session will introduce the option of a healthy future without diabetes risk factors and information on how to prevent diabetes.

The future project aims to recruit participants into a pre/post cohort design program. Four coaches will receive DPP training before of the project begins. The four coaches will be (i) a diabetic nurse specialist who has had experience with diabetes care, diabetes treatment, and educating Hispanic-American patients. He or she will be a board-certified advanced diabetes management (BC-ADM), (ii) a registered dietitian nutritionist (RDN) who holds licensure from The Board of Dietetics and who is bilingual (Spanish and English), (iii) me (a DNP-prepared family nurse practitioner, and (iv) a psychiatric-mental health nurse who has worked with individuals, families, groups, and communities, assessing their mental health needs. The program staff will consist of these four skilled diabetic educators (coaches) who will be pivotal to implementing the program in the community setting

The education sessions will include didactic presentations, extensive use of case presentations, and role-playing of practical skills, such as reflective listening, motivational interviewing, and empowerment strategies. The study principal investigator will guide and precept the coaches as they participate in the DPP education sessions and interactive activities. All project team members will participate in refining the instructional diabetes materials. The sessions will be designed to achieve and maintain at least a 7% weight loss and 700 calories/week of physical activity in all participants. To achieve these goals, the intervention will be intensive and included features such as individual case management, counseling, frequent contact over the entire trial, a structured initial core curriculum with individualized maintenance

programming, and a “toolbox” of strategies for dealing with nonadherence problems. In the DPP centers, these strategies proved to be very successful, as the lifestyle intervention resulted in a 58% reduction in the incidence rate of diabetes (NIDDK, 2008).

Session 1 will emphasize personal reasons for joining the project and both the immediate and long-term expected benefits for the participants. In this session, the program aim is to familiarize the participants with monitoring food intake, the importance of a 7% body weight loss, and the need for 150 minutes of weekly physical activity. The trainers and participants will determine the best approach to making recommended dietary and exercise changes and will work together toward the mutually-established goals.

The 16-session intensive lifestyle arm of the DPP will be modified into a four-session program. Nutrition, physical activity, and behavior change are the focus of the sessions. The coaches will utilize the seven-question Diabetes Risk Assessment instrument and Health Literacy Questionnaire (HLQ) established by the Centers for Disease Control and Prevention (see Appendix 1 and 5) to determine Hispanic-American young adults who are at risk for acquiring diabetes and those who have health literacy issues. Before the project starts, notices will appear in the local newsletter and Spanish-language publications specifying the dates of the risk assessment screening and fasting glucose testing. The coaches will review the risk assessments, score the results, and then correspond with all high-risk individuals to request them to come back to the designated area for a fasting finger-sick glucose (FSG) the following week. Potential participants who score ≥ 5 on the risk assessment and have a plasma glucose concentration of 95 to 125 mg. per deciliter will be welcomed to join in the project. Applicants with a FSG ≥ 126 mg/dl will be instructed to follow up with their primary care practitioner for possible T2DM.

The participants will be familiarized with regular monitoring of weight as they will be weighed at the project site weekly. The coaches will assist participants to locate sources of fats in their diet by emphasizing the need to read and understand food labels. The participants will rehearse monitoring skills, including weighing and measuring foods and estimating portion size of foods. They will be taught ways to eat less fat, eat high-fat foods less often, eat smaller portions, substitute lower fat foods, and to cook in ways that retain taste, but decrease fat and calories. The coaches will underline the significance of a meal pattern and eating slowly. The session will emphasize losing one to two pounds per week and use of the Healthy Eating Plate (see Appendix 4) as an example of healthful food consumption. The participants will compare their individual consumption to these guidelines.

In Session 2, the coaches will discuss physical activity with the goal of initiating 150 minutes weekly to be continued over the next 12 weeks. Physical activity can include brisk walking, climbing stairs, and walking extra blocks from the bus stop. The participants will be taught the basic principles for exercising safely and when to stop. The coach will teach the participants how to do physical activities, and the frequency, intensity, and time for each activity. The coach will also teach the groups how to check heart rate and level of exertion as a way of achieving the appropriate level of activity. The groups will consider ways to manage boredom by adding diversity to the physical activity plan. Both aerobic and anaerobic (weight-training) exercises will be demonstrated and encouraged.

In this session, the participants will name issues in their home surroundings that lead to detrimental food and activity selections and they will be challenged to develop deliberate techniques to change them. At the end of Session two, the participants will be presented with a

problem-solving exercise. They will be asked to describe and name five challenges to losing weight, and increasing physical activity, and will be asked to suggest possible solutions. Each participant will pick three solutions to attempt, and will make a realistic action plan to use these solutions in changing their lifestyle. The success of these solutions will be evaluated at the beginning of third session.

In Session 3, the interventions will start by evaluating the three solutions named in Session 2. Then, the topic of discussion will change from food to physical activity, introducing ways to move more, combating barriers and excuses, and identifying the rewards of a healthier lifestyle. The exercises introduced in Session 3 will include interventions such as tracking steps with a pedometer, plotting maps for total miles walked individually and for the group, using handheld weights, and introducing benefits and discussing barriers to activity based on Pender's model.

The group also will learn the four basic skills for dealing with eating when they are not at home; expecting and preparing ahead, constructive declaration of not eating fatty food, resisting fatty food, and making healthy food choices. In this session, the group will participate in practicing and identifying everyday patterns of self-defeating, negative thoughts and learn to counter these thoughts with positive statements. The coaches will educate participants to recognize personal triggers for losing control, managing reactions when they falter, and what it takes to get back on track.

The coaches will display approaches for controlling problems of social cues including peer pressure to eat too much. They will aid the participants to use social cues that encourage healthful activities. At the end of the session, both coaches and participants will review specific

tactics for managing in social situations such as gatherings, vacations, and outings. Both trainers and participants will emphasize the significance of handling stress, including stress caused by the project, by applying all the coping skills previously discussed.

In Session 4, the end of the project, the coaches will enhance enthusiasm to continue the behavior modification by revisiting participants' subjective motivations for joining the project and by recognizing successes. The coaches also will take the opportunity to encourage the group to continue their success by presenting their achievements to the local community members. Participants volunteering with the coaches will plan the booth for the health fair. The participants will again complete the survey (see Appendix 2), weigh-in, and provide the blood samples for the HgbA1c levels.

This fourth and final session will be devoted to how the young adults can work with their community to spread the information they have learned. The purpose of the project participants' involvement in these fairs is to use their new knowledge to promote diabetes awareness, prevention, and culturally-specific strategies to encourage healthy lifestyle habits and physical activity within their community.

These four program sessions and weekly weigh ins constitute an approach that if successful will result in increasing young adults' awareness of the current patterns of diabetes in the Hispanic-American population and changes in lifestyle that are beneficial to prevent the disease. The training sessions will help them to reflect on how their behavior affects the environment, especially the social environment. The approach will increase societal changes or opportunities that help promote healthier behavior and better health overall. This approach will promote social awareness and encourage positive change in the local community to improve the

quality of life for Hispanic-Americans in local neighborhoods. With that in mind, the future project will focus on Hispanic-American young adults aged 18 years to 30 years who are at high risk for developing diabetes. The inclusion criteria for participation will be: Hispanic-Americans who can read and write in English, age 18 to 30 years, a body mass index (BMI) of 25 and greater, a plasma glucose concentration of 95 to 128 mg. per deciliter, and an HgbA1c of less than 7. Exclusion criteria will be non-Hispanic-Americans, current diabetes (HgbA1c above 7, a plasma glucose concentration of below 95 or above 128, or taking medications to control diabetes), a BMI below 25, pregnant or lactating, history of drug or alcohol abuse, impaired mental condition such as Alzheimer's disease or steroid therapy (that influences insulin resistance), and clinically relevant history of hepatic, neurologic, endocrine, major systemic disease, or incomplete data on such a condition. Table 2 presents the project model.

Table 2

Future Project Model

Project question	Project design	Population description	Measurements	Intervention	Evaluation
The question to be addressed by projects is: Does an adaption of the diabetes prevention program (DPP) (I) in young adult Hispanic-	Pretest/posttest design using a quasi-experimental method to translate a primary prevention model for diabetes (the DPP) into a Hispanic-	The inclusion criteria are: -Hispanic-Americans who can read and write in English -Age 18 to 30 years -A body mass index (BMI) of 25 and greater -A plasma	-Testing knowledge with questionnaire 1 st session and end of third session. -Height, weight, and waist and hip size, capillary finger-stick glucose will be conducted during the 1st	1st session -Determining the newness of the diabetes prevention tactics and whether the information is known but has not yet to be accepted or rejected. -Learning the	-Repeated measures multivariate ANOVA and the Wilks' lambda statistic will be used to evaluate the overall effect of each outcome variable. -Comparisons between baseline values and 3

<p>Americans (P) improve overall health promotion and diabetes prevention (diet, exercise, and knowledge) (O) at 3-month and 12-month follow-up?</p>	<p>American community using young adult members.</p>	<p>glucose concentration of 95 to 128 mg per deciliter -Hemoglobin HgbA1C of less than 7 Exclusion criteria are: -Non-Hispanic-Americans -Diabetic (HgbA1C of above 7, a plasma glucose concentration of below 95 or above 128) or taking medications to control diabetes. -A BMI below 25 -Pregnant, lactating -History of drug or alcohol abuse -Impaired mental condition such as Alzheimer's, disease, steroid therapy (influences insulin resistance) -Clinically relevant history of hepatic,</p>	<p>session and at end of 3rd session - Single capillary blood samples will be analyzed with a glucometer (Sure Step, Life Scan Inc., Milpitas, CA) -Standing height and weight will be measured using a calibrated clinical balance beam scale and stadiometer. -Body mass index (BMI) will be computed as body weight (kg) divided by height squared (m²). -Waist girth will be measured level with the iliac crest per published standards (Kiernan & Winkleby, 2000). -The physical activities will involve running, jumping rope, and step aerobics. Exercise for 30</p>	<p>importance of healthier eating and exercise behavior. Walking for 2½ hours each week and using healthy eating habits to lose about 7% of weight in 3 months. Dieting and exercise will start on this session. Participants will be taught to record their diet and their exercise. -Categorizing high fat foods and appropriate lower fat alternatives 2nd session -Focus on healthy food choices, learning to read food labels, finding hidden fat, determining proper portion sizes, and learning about fast food "value" meals. -Participants continue recording their diet and</p>	<p>month values will be conducted with repeated measures ANOVA.</p>
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		neurologic, endocrine, major systemic disease, incomplete data	minutes a day, 5 days a week for 3 months -Four coaches will conduct the measurements.	exercise. 3rd session -Introducing ways to move more, combating barriers and excuses, and identifying the rewards of a healthier lifestyle. -Sufficient time will be allowed for adoption of the innovation into the system. 4th and final session -Devoted to how the young adults can work with their community to spread the information they have learned. -The four coaches will conduct the interventions.	
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A combination of a Likert-type ALP questionnaire score, demographic data, results from physical measurements (height, weight, BMI, HgbA1c, and the young adults' knowledge of diabetes prevention strategies pre- and post-intervention will determine the outcomes of the program. Measurable outcomes expected from this program include: (a) an increased awareness of the cultural disparity of T2DM and methods of prevention, (b) an increased knowledge of healthful eating techniques, (c) an increased knowledge of the benefits of and obstacles to

physical activity, and (d) clinical outcomes of decreased weight, decreased BMI, decreased HgbA1c values, and increased time spent in physical activity (measured using pedometers) among the participants. Evaluation of the project will occur 3-months and 12-months after the final program session and the all stakeholders (team members, participants, funders, community members) will receive the results.

Two ways to maintain momentum after the initial delivery of the DPP program content are built into the design. First, a coalition consisting of team members, young adults, and community members will sponsor events and activities in the community. Second, the community will need to assume ownership for sustaining change in ways that are culturally appropriate. Educational material in both Spanish and English regarding healthful eating and physical activity will be distributed in the community. The young adults' participation in the monthly health fairs already being held at a local hospital will also address sustainability. Weekly weigh in will continue to be provided free of charge at the project site for community members.

This program development project reflects the significance of design elements that are essential to Hispanic-Americans including the size of the effect, scope of services, measurability potential, and long-term support. The evidence from the reviewed programs was determined to be too weak to be able to draw a definite inference about the anticipated effect of lifestyle modification on the development of T2DM. Evidence suggested that diabetes prevention lifestyle programs are effective; however, degree of effectiveness varied and initially positive outcomes were often transient. There is a need for programs that provide ongoing assessment of program outcomes and that present some program continuation past the initial intensive education and

coaching period. Outcome research is necessary to determine the sustainability of results long-term and whether dietary and exercise changes along with expert coaching can consistently change the trajectory from prediabetes to diabetes in at risk populations such as young adult Hispanic-Americans. The proposed program will be helpful in providing answers to these current gaps in nursing knowledge.

Recommendations for Future Research

Future research should emphasize long-term preservation of program outcomes, not just short-term prevention programs to decrease weight and increase exercise. The hope of this future research is identification of methods that can be used in the community to decrease incidence of T2DM permanently. Future research should also put more focus on testing lifestyle interventions in randomized clinical trials, and explore factors impacting effects using quantitative methods. No research has been conducted to translate the DPP program for use among Hispanic-American young adults. Future diabetes prevention projects need to focus more urgently on Hispanic-American young adults who are obese, have impaired glucose tolerance, insulin resistance, high blood pressure, low levels of HDL, and sedentary lifestyle, all of which significantly boost their risk for developing diabetes. The Hispanic population is growing rapidly in the U.S. and addressing the needs of this population may significantly curb the current epidemic.

Strengths and Limitations of the Project

A major strength of the project is the in-depth literature review conducted and the fact that there has been research on best practices for addressing prediabetes in the community. Weaknesses include limitations in implementing the proposed program due to the need for adequate time and significant financial support. Additionally, the existing studies in the literature

reflect inconsistencies in types of participants enrolled, application of interventions, types of measurements used, length of intervention, and length of follow up. There is still much to discover before effective programs can be replicated in communities at risk.

Summary

The DNP project was an analysis of research to determine the effectiveness of translating the DPP into a program for the young adult Hispanic-American population. If the program had been implemented during the DNP project time frame, it was assumed that the Hispanic-American young adults would answer initial demographic questioners truthfully and they would understand that their rights would be preserved, and that they were volunteers who might withdraw from the study at any time with no ramifications. It was presumed that the sample would be representative of the population targeted. The first identified risk was related to the compliance of the participants. Young adults in general could be very committed to the status quo and have the potential to be barriers to diffusion of information within the community (Rogers, 1962; Rogers, 2003). Fun, interactive learning and positive peer pressure could be developed to circumvent this danger.

If the program had been established during the DNP project, the participants would be expected to lose at least 1% to 2% of their beginning body weight by the end of the first month and continue this weight loss throughout the next 3 months of the project. The goal of a 1% to 2% decrease in original body weight every 4 weeks was based on well-documented research from the ADA. It also would be assumed that each participant would be motivated to exercise for 30 minutes a day, 5 days a week. The physical activities would involve, at a minimum, running, jumping rope, step aerobics, and weight training. The goal for physical activity would be to burn

at least 700 kg each week. Aerobic exercise provides cardiovascular conditioning in addition to caloric expenditure (ADA, 2012).

Education would be presented in a series of sessions. At the end of each session, the participants would make informed dietary selections from every food group. They would be able to find balance between food and physical activity. They would identify the most nutritious food and remain within daily calorie needs. The participants would acquire awareness of the cultural disparity of T2DM among Hispanic-Americans and methods of prevention.

A major risk of this project would be Hispanic-Americans' general lack of trust in the healthcare system. Health literacy would be a barrier as diabetes risk and prevention information was outside the basic knowledge of most lay people and solutions might be contrary to cultural and personal beliefs. Another identified barrier is the potential for unsatisfactory past healthcare encounters in which the individuals did not receive culturally appropriate care, influencing the perception of the current encounter with the planned program. Each of these barriers relies on the acceptance and influence of the volunteers, nutritionists, and nurse diabetes educators who speak the Spanish language and who will serve as program coaches. Their acceptance and support would help bridge the cultural and ethnic gaps identified.

The limitations of the studies reviewed for the development of the future project were typical of feasibility studies and comprised a relatively small sample size. Although most of these programs were capable of instituting initially positive results, many of the participants were unable to uphold these results over time. Although, these DPP-based studies used a lifestyle goal as part of the participant involvement, the studies used a variety of measures and some of the studies did not report any lifestyle modification results. Additionally, only Merriam, et al.

(2009), Kramer et al. (2013), and O'Connor (2015) reported the percent of participants meeting the lifestyle goals during intervention. This incomplete evidence in the DPP translation studies made it problematic to assess the effectiveness of these interventions for decreasing diabetes incidence. There was only limited evidence that the DPP model was effective long-term even in the best of community circumstances. Thus, it seems to be the time to initiate programs that clearly articulate the interventions, measure the outcomes of the interventions, and extend the short-term goals of weight loss and HgbA1c reduction into diabetes-free lives for a population at risk. Section 5 will discuss the dissemination plan for the project work and provide an analysis of my DNP journey.

Section 5: Dissemination Plan

Introduction

The purpose of this project was to develop a program plan based on best evidence from the literature to address the problem of increasing obesity and diabetes in the Hispanic-American population. Of interest was how the results of the DPP studies and studies using the DPP methods could be implemented in a local community setting with young adult Hispanic-Americans who have not been included in previous adaptations of the DPP. In Section 5, I will discuss my plans for dissemination of the project findings and present an analysis of myself as a practitioner, scholar, and project manager.

Dissemination Plan

Because this project produced a plan for a program to be initiated after completion of the DNP program, there are no publication-ready results for dissemination. However, this project can serve as the starting point for grant proposals to obtain funding to enable the implementation of the proposed program. The findings of the project demonstrate the importance of community involvement and can be shared with Hispanic-American organizations that may want to partner in program implementation. A local coalition that includes advocates from the Hispanic-American community, hospitals and health care services, mental health services, social services, and education has been working for several years to better the lives of Hispanic-Americans in the area. This coalition is a likely partner for implementation of the program. Bringing the planned program to fruition includes the necessity to raise money from local, state, and national grants or foundations to fund implementation. Although the coaches may provide volunteer service to the project short-term, salaries will be necessary for a program director and the coaches if the project

is to be extended to collect and report the long-term outcomes that are so necessary to move the state of the nursing knowledge forward. I see it as a part of my personal mission to be involved in finding resources to initiate the planned program.

Analysis of Self

As I reflect on the past several years and the progression of my career from nurse assistant to DNP, words cannot explain the amount of intellectual, spiritual, and interpersonal growth I have experienced. This growth was because of personal dedication, influential nursing professors, and inspiring peers. The DNP program has been a positive experience in my life. It has helped me to experience new things and change my way of thinking; it has helped me to become more direct, open, and above-board; and it has introduced me to new, interesting, and wonderful people.

All I wanted in my undergraduate and graduate programs was to be the best nurse I could be. I craved to procure knowledge and practical skills to provide optimal care for my patients. For a long time, I was satisfied. However, after working as a family nurse practitioner (FNP) for nearly 2 years with a specialty in hepatitis, I comprehended I could do more. I wanted the capacity to inspire more people. I hungered to learn more after working with the hepatitis C population. I wanted the freedom to practice to the highest level of my education and training to serve my patients and to improve access to and quality of healthcare at reduced costs.

I started my journey in the DNP program in February 2014. The curriculum involved scholarly communication, applied data analysis, evidence-based practice, and management of financial resources. The program also involved epidemiology, health informatics, policy and ethical implications for health care outcomes, and a clinical practicum, which culminated in the

presentation of my final project. Reflecting on these courses, I found each one offered a unique perspective on the subject, rendering a comprehensive appreciation of how each fit into macro systems. The courses prepared me for any leadership role I may choose to accept and gave me the confidence to speak at any table. Moreover, I had the opportunity to develop lasting relationships with my classmates and professors that I find so critical in my profession. It is these potential partnerships that bring about unlimited possibilities.

Receiving my terminal practice degree in nursing from Walden University was a journey of excitement and challenge. It inspired me to advocate for an all-encompassing clinical credential rather than continuing the hodgepodge of nonsensical initials. This insight was a very important career move for me personally as it equipped me to tackle a more complex nursing environment and left me better prepared to face the challenges that lie ahead. The content was evidence-based and dynamic. The flexibility of a blended model, with cohorts of clinically expert students and faculty oversight made it a great experience. I learned from seasoned professional educators and clinicians who strived to help me reach my goals.

Seeking the DNP was the opportunity to expand my knowledge with an aim to practice at a higher level and obtain the terminal degree in my profession. My goal was to improve the practice of nursing and equip myself with knowledge and skills needed to understand and appreciate research and facilitate the process of putting evidence into practice. The DNP program has enabled me to assume a leadership role in practice and in research. It also has opened a door for me to participate in research and formulate nursing care guided by evidence-based practice models.

The faculties were great. My experience at Walden University was the best experience of my professional career. The classes were small and the professors were renowned in their profession. I never felt like a number during my experience. The staff and faculty provided answers to my questions and they were of tremendous help with the paperwork. Bravo to Dr. Sue Ellen Bell who inspired me every step of the way and never let me lose sight with the goal of becoming an expert in my field. My experience in the program was interesting and informative. I took in so much information over the course of the semesters that I sometimes felt overwhelmed, but in a good way. Every professor's approach to each class was unique.

Walden University appealed to me for a variety of reasons including quick responses from advisors and faculty who were enthusiastic to help. The online program was a bonus as it allowed me to balance school around my life instead of my life around school, which was so important for me and many students who have life demands that cannot be put on hold for furthering education. The layout of the program progressed forward in a fluid motion instead of staggered without one class building on another. Since accepting a spot in the competitive program, I have never regretted it once.

In the clinical practicum courses, I expanded my nursing skills and widened my understanding of the healthcare field. I became empowered to not only impact patient care and outcomes, but to assist nursing staff and the organization to use evidence to drive care and make changes to move forward. My program advisor was a relentless supporter for me in making sure my personal life stayed a priority and my advisor helped me take advantage of opportunities that became available.

My hands-on experience in challenging clinical rotations taught me the importance of quality patient care and compassionate nursing. One of the changes I made while I was in program was delegating more. I recognized that I could not do everything by myself and that I needed to get better at asking for help and support. When I started delegating more, my focus shifted. I spent more time liaising with the team and key stakeholders, listening to their ideas and concerns, and looking at what we could do better. I started focusing more on picturing the end state of the project and proactively reducing the risks associated with the road to getting there. This shift enabled me to become more proactive and effective, and to leverage my strengths better. Today, I put as much emphasis on people as I do on tasks. I listen, I build strong relationships, and I trust others. I manage and lead people in a way that complements their individual needs.

Project Manager Role Development

My project was a program development project focusing on young adults from the Hispanic-Americans community. The in-depth literature search produced articles that facilitated my thinking about the principles of equity that have kept young people from Hispanic-American communities from identifying problems relevant to diabetes prevention, understanding the problems, and advocating for changes based on research evidence. The new knowledge gained from my doctoral work provided me with clinical leadership skills as well as an increased awareness of evidence-based practice, which allowed me to bring research results directly to patients at bedside or in the community.

Throughout the project, I had a closer look at myself as a project manager and the values that were driving my work. I examined my own worth, and I explored my boundaries. I had to

acknowledge that it was not the hours I put in that mattered, but the quality of my work. I realized that to produce better-quality work, I would have to change the way I spent my time. Very quickly I could achieve some great results and positive feedback. The project enabled me to assume more of a leadership role, in practice and in research. It also has opened a door for me to participate in research and formulate nursing interventions guided by evidence-based practice models of care.

The project sharpened my leadership skills also. I became a leader who follows through to achieve organizational objectives, a leader who serves people, helps them develop their own initiative and good judgment, enables them to grow, and helps them become better contributors to society. It is through the project that my leadership behavior was enhanced through guidance, support, and constructive feedback for day-to-day activities. My leadership behavior gave purpose and meaning to an organization envisioning and creating a positive future. I kept people focused on moving the organization toward its ideal future, motivating them to overcome whatever obstacles lay in their way. I captured the hearts and minds of my team and stirred up a desire to be part of something big. I clearly see the future, and the changes that need to occur to get there.

Summary

The DNP program provided me with analytic skills, as well as substantive and critical knowledge needed to provide high quality compassionate nursing care at the advanced practice level. The program offered me the opportunity to develop skills and knowledge needed to participate in and support research and knowledge development to improve the effectiveness of nursing practice, policies, and programs. The DNP program emphasized clinical practice and

required students to participate in advanced nursing practice under the guidance of experts. The program taught me more about myself and my nursing practice than I ever imagined. I knew I had the full support of the professors who were challenging me to think in new ways and encouraging me to do my best. This program changed the way I look at the world and patients and the way I envision health care. It equipped me with gears to appreciate healthcare systems, policies, politics, finances, public health, and more. It enhanced my clinical skills and knowledge. It also enriched my life by giving me the personal satisfaction and confidence to work toward my dream.

I am now certain that the DNP is not only a profession, but a lifestyle. It planted something in my heart that inspires me to serve others. It gives me a priceless opportunity to see a smile on someone's face in his or her most vulnerable moment. I chose the DNP because I want to serve others. If I can brighten the corner wherever I am and provide some motivation or hope to someone that is struggling, I am happy. Working to improve health outcomes of Hispanic-Americans in my community will provide a way to actualize my interest in service to individuals, families, and communities. In this way, I can benefit the health care system by reducing current disparities in a vulnerable population.

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Appendix

Items retained for the final Farsi version of HLO

Life appreciation

1. Attempt to correct defects
2. Make an effort to know what's important for me
3. Understanding and accepting strengths and weaknesses
4. Look forward to the future
5. Make an effort to feel challenged every day
6. Make an effort to like myself
7. Make an effort to feel happy and content

Health responsibility

1. Report unusual body changes
2. Discuss my health concerns with health personnel
3. Attend educational programs
4. Make an effort to read health information
5. Seek guidance when necessary
6. Question health professionals
7. Brush teeth and use dental floss after meals
8. Observe my body at least monthly

Nutrition

1. Eat breakfast daily
2. Limit food high in sugar
3. Eat three regular meals each day
4. Limit food high in fat
5. Eat fruit daily
6. Select foods without additives

Social support

1. Talk about my concerns with people close to me
2. Enjoy keeping in touch with relatives
3. Speak and share my feelings with others
4. Make effort to have good friendship
5. Talk about my troubles with people close to me

Physical activity

1. Participate in sports at school
2. Exercise vigorously for 30 minutes ×3 weekly
3. Take part in leisure-time activities
4. Do stretching exercise daily
5. Exercise during daily activity
6. Do light/moderate exercise for 30 minutes ×3 weekly

Stress management

1. Make an effort to identify the source of stress
 2. Take time for relaxation
 3. Use helpful strategies to deal with stress
 4. Get regular sleep
-

Pre- and Post-Seminar Knowledge about diabetes among Tabernacle Church Youth Members in Hamilton county, Cincinnati, Ohio

questions	Pre-seminar		Post-seminar		P-value for differences
	N	%	N	%	
Diabetes can lead to which of the following outcomes?					
A. Heart Disease and Eye Complications					
B. Kidney Disease and Nerve Damage					
C. Foot Problems					
D. All of the above					
About 1 in ___ Hispanics in US have diabetes, as compared with 1 in 1,000 Non- Hispanics					
A. 10					
B. 100					
C. 1,000					
D. Don't know or no response					

(CDC; 2010)

Appendix 2

Demographic Characteristics of Future Project Young Adult Participants

Demographic Characteristics	Number of Participants	
Gender		
Female		
Male		
Birth year		
Race and Ethnicity		
Education		
Less than a high school diploma		
High school diploma		
Some college or Associate's degree		
Bachelor's degree		
Postgraduate degree		

Employed fulltime		
Employed part time		
Unemployed		
Marital Status		
Separated/divorced		
Widowed		
Single		
Married		
Unmarried, living with partner		
Socio-Economical Level		
High		
Medium-high		
Medium		
Medium-low		
Low		
Parents' Educational Level		
No education		

Less than high school		
High school diploma or equivalent		
Some college, no degree		
Postsecondary non-degree award		
Bachelor's degree		
Post bachelor		
Preseminar Clinical Practice		
<p>What is your current weight, height and your BMI (kg/m²)</p> <p>25.0-30.0-overweight</p> <p>30.0-35.0=class I obesity</p> <p>35.0-40.0=class II obesity</p> <p>>40.0- class III obesity</p>		
Ever been told you are obese?		
Yes		
No		

Do you have immediate family member with T2DM?		
Yes		
No		
Have you ever received counselling about weight loses?		
Yes		
No		

Appendix 3

HEALTHY EATING PLATE

HEALTHY OILS
Use healthy oils (like olive and canola oil) for cooking, on salad, and at the table. Limit butter. Avoid trans fat.

WATER
Drink water, tea, or coffee (with little or no sugar). Limit milk/dairy (1-2 servings/day) and juice (1 small glass/day). Avoid sugary drinks.

VEGETABLES
The more veggies – and the greater the variety – the better. Potatoes and French fries don't count.

WHOLE GRAINS
Eat a variety of whole grains (like whole-wheat bread, whole-grain pasta, and brown rice). Limit refined grains (like white rice and white bread).

FRUITS
Eat plenty of fruits of all colors.

HEALTHY PROTEIN
Choose fish, poultry, beans, and nuts; limit red meat and cheese; avoid bacon, cold cuts, and other processed meats.

STAY ACTIVE!
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Harvard School of Public Health
The Nutrition Source
www.hsph.harvard.edu/nutritionsource

Harvard Medical School
Harvard Health Publications
www.health.harvard.edu

(Berman, 2014)

Appendix 4

ARE YOU AT RISK FOR TYPE 2 DIABETES?



Diabetes Risk Test

- 1** How old are you?
 Less than 40 years (0 points)
 40—49 years (1 point)
 50—59 years (2 points)
 60 years or older (3 points)
- 2** Are you a man or a woman?
 Man (1 point) Woman (0 points)
- 3** If you are a woman, have you ever been diagnosed with gestational diabetes?
 Yes (1 point) No (0 points)
- 4** Do you have a mother, father, sister, or brother with diabetes?
 Yes (1 point) No (0 points)
- 5** Have you ever been diagnosed with high blood pressure?
 Yes (1 point) No (0 points)
- 6** Are you physically active?
 Yes (0 points) No (1 point)
- 7** What is your weight status?
(see chart at right)

Write your score in the box.

Add up your score.

Height	Weight (lbs.)		
4' 10"	119-142	143-190	191+
4' 11"	124-147	148-197	198+
5' 0"	128-152	153-203	204+
5' 1"	132-157	158-210	211+
5' 2"	136-163	164-217	218+
5' 3"	141-168	169-224	225+
5' 4"	145-173	174-231	232+
5' 5"	150-179	180-239	240+
5' 6"	155-185	186-246	247+
5' 7"	159-190	191-254	255+
5' 8"	164-196	197-261	262+
5' 9"	169-202	203-269	270+
5' 10"	174-208	209-277	278+
5' 11"	179-214	215-285	286+
6' 0"	184-220	221-293	294+
6' 1"	189-226	227-301	302+
6' 2"	194-232	233-310	311+
6' 3"	200-239	240-318	319+
6' 4"	205-245	246-327	328+
	(1 Point)	(2 Points)	(3 Points)

You weigh less than the amount in the left column (0 points)

Adapted from Bang et al., Ann Intern Med 151:775-783, 2009. Original algorithm was validated without gestational diabetes as part of the model.

If you scored 5 or higher:
 You are at increased risk for having type 2 diabetes. However, only your doctor can tell for sure if you do have type 2 diabetes or prediabetes (a condition that precedes type 2 diabetes in which blood glucose levels are higher than normal). Talk to your doctor to see if additional testing is needed.

Type 2 diabetes is more common in African Americans, Hispanics/Latinos, American Indians, and Asian Americans and Pacific Islanders.

For more information, visit us at www.diabetes.org or call 1-800-DIABETES

Visit us on Facebook
[Facebook.com/AmericanDiabetesAssociation](https://www.facebook.com/AmericanDiabetesAssociation)

Lower Your Risk

The good news is that you can manage your risk for type 2 diabetes. Small steps make a big difference and can help you live a longer, healthier life.

If you are at high risk, your first step is to see your doctor to see if additional testing is needed.

Visit diabetes.org or call 1-800-DIABETES for information, tips on getting started, and ideas for simple, small steps you can take to help lower your risk.



(CDC; 2010)

Appendix 5