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Culturally-Based Diabetes Self-Management Education and Diabetes Knowledge in the Hispanic Population

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Walden University

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Walden University

College of Health Sciences

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Leslie Grunden

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Walden University
2016

Abstract

Culturally-Based Diabetes Self-Management Education and Diabetes Knowledge

in the Hispanic Population

by

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BSN, University of North Florida, 1997

MS, Texas A & M University, Corpus Christi, 2002

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

Walden University

January 2016

Abstract

The Hispanic population has an elevated prevalence of diabetes, resulting in large part from a lack of self-management skills required to obtain glycemic control. The purpose of this project was to determine whether diabetes self-management knowledge was improved through the use of a culturally-based diabetes self-management program for Hispanic adults with diabetes using elements of the Hispanic culture. The research question asked whether a researcher-developed diabetes self-management education program that incorporated elements of the Hispanic culture improved diabetes knowledge in the Hispanic population when compared to a non-culturally based diabetes self-management program. The project was conducted using a quasi-experimental control group pre-test/post-test design using the stages of change transtheroretical model as its theoretical framework. Twenty-three Hispanic adults who had a diagnosis of diabetes and a Hemoglobin A1c level of greater than 7%, were recruited for the project. All project participants were recruited through a referral process from a local community clinic located in Montgomery County Texas. Pre/post-test data for the project were obtained through use of the University of Michigan's Diabetes Knowledge Test. A paired-sample *t* test was conducted to compare the pre-test and post-test results of the experimental group and the control group. The project data results showed a significant difference ($p < 0.05$) between the pre/post-test scores of the experimental group but showed no difference between the 2 scores for the control group, leading to the recommendation that diabetes self-management education should be culturally based. Positive social change was gained from this project through the empowerment of Hispanics in the self-management of diabetes.

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Dedication

I want to dedicate this project to my husband Tim and my father Donald Weldon. Tim, you've stood by me and loved me in good times and bad. You pushed me when I wanted to quit, listened to me rant and allowed me to cry hysterically at times, but through it all you encouraged me to fulfill my dreams. Without you, none of this would be possible. You are, and will always be the love of my life.

Daddy, you always said that I could do anything in the world if I really wanted it, and was willing to work hard enough to achieve it. I hope I've made you proud. I miss you.

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To my husband Tim, the best proof-reader in the world, this doctorate is as much yours as it is mine. The best thing that ever happened to me was to bump into you in the hallway in junior high school. I could not have asked for a better husband.

To my children, Amanda, Brenna, Timothy, and Brandon, and of course, Mark, Lance and Alyssa, this has been hard on all of us. I want each of you to know how much I love you and how proud I am of you. You are each unique and bring a great deal of joy to my life. I promise I will never seek another degree.

To my grandchildren Jackson, Kyle, Madalyn, Tyler, and Vivienne, MiMi loves you to the moon and back.

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Section 1: Overview of the Evidence-Based Project

Introduction

Diabetes is an epidemic in the United States, with 29 million people expected to have the disease by the year 2050 (Rosal, Borg, Bodenlos, Tellez, & Ockene, 2009). Type 2 diabetes, also known as *non-insulin-dependent diabetes*, is the most common form and affects approximately 90% to 95% of all patients diagnosed with this disease (Lopez, Bailey, Rupnow, & Annunziata, 2014). When compared to other countries such as those in Europe, the United States experiences a disproportionate burden of diabetes in its population (Florez et al., 2009). This increased burden places a great financial strain on the United States in both direct and indirect costs associated with the care and treatment of diabetes. In 2012, the American Diabetes Association (ADA) reported that the cost of treating diabetes had risen 41% in the past 5 years, with recent figures reaching a staggering 245 billion dollars per year in health care costs. One in five health care dollars goes to the treatment of diabetes (ADA, 2012). In the examination of the prevalence and cost of diabetes in the United States, the Hispanic population must be addressed, as it is one of the fastest growing ethnic populations in this country and, as a whole, experiences a very high rate of diabetes (Chukwueke & Cordero-MacIntyre, 2010). It is currently estimated that 12.3% of all Hispanics have been diagnosed with diabetes, with many thousands more having the disease but not yet diagnosed (Zhao, 2014).

Hispanics represent the fastest growing ethnic group in the United States. In 2006, there were 44.3 million Hispanics living in the United States (Chukwueke & Cordero-MacIntyre, 2010), with this number expected to increase to 132 million by the year 2050,

which will account for 30% of the country's population (Zhao, 2014). The Hispanic ethnic group is composed of numerous subpopulations from various countries and regions. The ethnic term *Hispanic* refers to a diverse population of Latin American descent, which includes people from Cuba, Mexico, Puerto Rico, South and Central America, and other Spanish cultures and origins (Juckett, 2013). This ethnic population has a 50% higher prevalence of diabetes than other ethnic groups (Coronado, Thompson, Tejeda, Godina, & Chen, 2007). Although all populations with diabetes suffer complications and high mortality rates, the Hispanic population seems to be especially at risk for the negative outcomes of the disease. Hispanics with diabetes experience a greater number of complications and higher mortality rates from cardiovascular disease, end-stage renal disease, strokes, and lower limb amputations (Lopez et al., 2014). The cost of caring for people in this population who suffer from diabetes and its complications is estimated to be 49.8 billion dollars annually (Institutes for Alternative Futures, 2011).

Many factors play a role in the development of and care for diabetes in the Hispanic population. Culture and lifestyle habits often inhibit diabetes self-management in Hispanics, thus preventing them from achieving glycemic control (Valen, Narayan, & Wedeking, 2012). McCloskey and Flennigan (2010) found that, among the constellation of factors affecting attitude and behavior in regard to diabetes, were those rooted specifically in the Hispanic culture. Cultural factors included a traditional Hispanic diet, family and social support, religion, and the belief in Old World remedies and practices. Castro-Rivas, Boutin-Foster, Milan, and Kanner (2014) conducted a qualitative study that indicated that family and culture both play a significant role in perpetuating unhealthy

lifestyles in the Hispanic population. The key to successful mediation of these unhealthy lifestyle behaviors can be found in the use of a culturally based diabetes self-management program.

Current evidence suggests the need for diabetes self-management education (Gonzales, Berry, & Davison, 2013; Hatcher & Whittemore, 2007; McCloskey & Flenniken, 2010; Valen et al., 2012). The ADA (2012) has identified the need to develop culturally sensitive education programs to effectively reach ethnic/racial groups such as the Hispanic population (Pena-Purcell & Boggess, 2013). Diabetes self-management is a lifelong process, and acquiring diabetes knowledge through education plays an essential role in achieving this commitment (Ho, Berggren, & Dahlborg-Lyckhage, 2010). Hispanic culture and traditions, such as those related to the roles of family, folk beliefs, and religious beliefs, must provide the basis for any educational endeavor for the Hispanic diabetic population. In order to educate Hispanics with diabetes, it is necessary to have an understanding of the unique beliefs, customs, food patterns, and health care practices that are found in the Hispanic culture (Hatcher & Whittemore, 2007).

The need to explore culturally congruent, cost-reducing, and health-promoting diabetes self-management in the Hispanic population is great (Weiler & Crist, 2009). Without the proper attention, this problem will continue to grow and affect the Hispanic population in an increasingly disproportionate manner. Social implications of not addressing diabetes in the Hispanic population are continued high rates of morbidity and mortality associated with the disease. Positive social implications of effective efforts to address the problem may include improvement in diabetes knowledge and self-management, which could then be passed down to younger Hispanics. With sufficient

education and knowledge of diabetes, its causes, its possible adverse health outcomes, and ways in which to prevent the onset of the disease, younger generations of Hispanics may be able to stem this epidemic.

Background

Diabetes is rampant in the United States, and the Hispanic population has a disproportionate burden of this chronic disease (Brown-Guion, Youngerman, Hernandez-Tejeda, Dismunke, & Egede, 2013; Gallego, Ovalle-Berumen, & Gomez-Meza, 2006). It has been estimated that, by 2031, diabetes will affect more than 20% of all adult Hispanics (Rosal et al., 2011). This elevated disease burden may be attributed to unique cultural and socioeconomic factors and lifestyle choices of diabetic Hispanics.

There are many factors that play a role in diabetes within the Hispanic population, such as genetics, dietary choices, exercise, and obesity (Hanis, Hewett-Emmett, Bertin, & Schull, 1991; McCloskey & Flennigan, 2010). The Hispanic people evolved from a diverse ancestry. Evidence suggests that most Hispanic people come from a genetic pool that consists of Spaniards, Blacks, and Native Americans (Hanis et al., 1991). It is likely that this shared ancestry with Native Americans significantly increases the risk for the development of diabetes in Hispanics when compared to many other ethnic groups. A study performed by Hanis et al. (1991) indicated that 31 of 100 genes sampled at random in the Mexican American population came from the ancestral Native American group. With 16.1% of Native Americans afflicted with diabetes, this ancestral link is thought to be a factor in the high rate of diabetes found in the Hispanic population (Centers for Disease Control and Prevention, 2013). Although genetics play a role in diabetes in the Hispanic population, there are many additional risk factors, such as an unhealthy diet,

poor physical activity, and obesity. When these factors are combined with cultural and language barriers and poor access to health care, the results can be devastating (Valen et al., 2012).

Hispanics with diabetes suffer a higher proportion of comorbidities such as end-stage renal disease, diabetic neuropathy, lower limb amputations, blindness, and cardiovascular disease (Chukwueke & Cordero-MacIntyre, 2010). Hispanics with diabetes are 1.7 times more likely to develop diabetes complications when compared to non-Hispanic White people of similar age (Weiler & Crist, 2009). Addressing and finding ways in which to combat this growing epidemic should be of paramount importance to both the medical community and federal and state governments.

In South Texas, it is currently estimated that approximately 9.5% of Hispanics have diabetes, which is higher than rates found in other regions of Texas (The Institutes for Health Promotion Research, n.d.). This number is expected to grow significantly, as the population of Hispanics in the state is expected to double by 2040 (Texas Department of State Health Services, 2013). In fiscal year 2011, the state of Texas spent 18.5 billion dollars on diabetes care, with an additional 21 million dollars spent on diabetes prevention programs (Texas Health and Human Services Commission, 2012). Despite this enormous fiscal expenditure, Texas still has one of the highest rates of diabetes in the nation (Texas Department of State Health Services, 2013).

While volunteering at a local community clinic, I had the opportunity to experience firsthand how diabetes affects the Hispanic community. Factors such as poor diet and limited physical activity were seen to play a large role in the development of diabetes; however, when working with this population, I noted that many Hispanics with

diabetes lack the knowledge necessary to self-manage the disease. On further investigation, I discovered that all patients with diabetes, who receive care at the community clinic, are mandated to attend a diabetes education class once each year; however, this class has always been provided without regard to ethnic background or culture. Further informal investigation revealed that most Hispanics with diabetes who participated in the training felt that they came away from the class with very little knowledge about the disease or how to manage their own diabetes. Based on this informal evaluation, I determined that a culturally based diabetes self-management class for Hispanics with diabetes, using generally known elements of the Hispanic culture, could be beneficial to both the clinic and to the Hispanic population that receives care from the clinic.

Problem Statement

The problem identified for this project was a lack of culturally based diabetes self-management classes for the Hispanic diabetic population who receive care at a free clinic in Montgomery County, Texas. Hispanic diabetic patients often lack the knowledge and resources needed to adequately self-manage their diabetes (Hu, Amirehsani, Wallace, & Letvak, 2013). Due to poor diabetes self-management, Hispanic diabetic patients experience high rates of lower extremity amputation, retinopathy, cardiovascular disease, and renal disease (Hu, Wallace, McCoy, & Amirehsani, 2014). There is a critical need to provide effective, culturally appropriate interventions to reduce the risk of diabetes and its complications in the Hispanic population (Cabellos, Coronado, & Thompson, 2010). Diabetes education classes can be found; however, few are specific to the Hispanic population and culture (Gonzalez, Berry, & Davison). The use of diabetes self-

management education that incorporates cultural components such as religion, family, traditional foods, and folk beliefs has been found to be successful (Gonzalez, Berry, & Davison, 2013). Many diabetes education providers continue to use the traditional one-size-fits-all diabetic educational approach, which does not take the need for cultural sensitivity into account (Weiler & Crist, 2009). Group-based diabetes self-management education programs have been shown to improve hemoglobin A1c and fasting blood glucose levels; however, the efficacy of diabetes self-management education among the Hispanic population is yet to be established (Deakin, McShane, Cade, & Williams, 2003). This lack of culturally based diabetes education can play a role in the prevalence of poor diabetes self-management within the Hispanic population.

Knowledge is the key to managing diabetes. Barriers such as language, literacy level, and religion may prohibit Hispanics from receiving the education needed in order to successfully self-manage their diabetes (Coffman, Norton, & Beene, 2012; White Osborn, Gebretsadik, Kripalani, & Rothman, 2013; Eskes, Salisbury, Johannsson, & Chene, 2013; Pena-Purcell & Boggess, 2013; Guitierrez et al., 2014; Welty, Yeager, Ouimet, & Menachemi, 2012). One of the most significant barriers to diabetes self-management in this population is language. Many Hispanic patients have little to no proficiency in the English language (Eskes et al., 2013). This lack of proficiency in the common language of the United States makes diabetes education challenging in this population. Interpreters are often used to overcome the language barrier; however, this is not always an optimal solution for either patients or health care providers. Mayo, Sherrill, Sundareswaran, and Crew (2007) reported that practitioners felt that working with an interpreter affected their control over the communication process; they were not certain

whether or not their exact message was being communicated. This language discordance between patient and provider causes patients to glean less than a full or accurate understanding of their condition, leading to poor communications with their health care providers (Eskes et al., 2013). The inability to communicate clearly is not conducive to positive patient outcomes in any population.

The literacy level of the Hispanic population also offers a challenge to diabetes self-management. According to the National Assessment of Adult Literacy, approximately 60% of Hispanics have basic or below-basic health literacy skills (White et al., 2013). This low level of health care literacy, coupled with the language barrier, often plays a significant role in the less-than-ideal health outcomes of this population (White et al., 2013). Hispanics with diabetes experience suboptimal processes of care and diabetes-related outcomes due to poor health literacy (White et al., 2013). When examining diabetes self-management in this population, the knowledge of literacy levels is crucial in developing diabetes self-management education programs (Pena-Purcell & Boggess, 2013; White et al., 2013).

Religiosity and religious beliefs are integral aspects of the Hispanic culture and can be barriers to diabetes education (Gutierrez et al., 2014). *Religiosity* is the degree of participation in and adherence to a particular religion (How, Ming, & Chin, 2011). Religion in the Hispanic culture often defines how individuals perceive or address their diabetes (Gutierrez et al., 2014). Gutierrez et al. (2014) found that religion played a significant role in the health-related quality of life (HRQL) of the Hispanic population. Some Hispanics believe that a diagnosis of diabetes represents the will of God or a punishment from God for a bad act or deed, and that only God can take care of their

diabetes (Zhao, 2013). Because most Hispanics have a strong religious affiliation, many seek educational advice from local churches and religious groups. This in itself can prove detrimental to diabetes education in this population, as churches, and religious organizations constitute a strong negative source of diabetes education (Zhao, 2014).

Language, health literacy, and religion have all been identified as barriers to diabetes management in my practicum site. Socioeconomic status and access to health care were not considered barriers to diabetic care in this project because the clinic providing the health care is a nonprofit, community-based, free clinic. The current diabetes education program offered by the clinic is not culturally sensitive to the clinic's large Hispanic diabetic population. The clinic currently uses a generalized diabetes education program that is not based upon current diabetes education recommendations or best practice guidelines. The current education class is provided by volunteers, who are often not trained medical professionals, and a volunteer Spanish translator, who is often not a native Spanish speaker. Therefore, this diabetes education class developed by me, using native-Spanish-speaking translators, was designed to address the barriers of language, health literacy, and religious beliefs in the diabetic Hispanic population in relation to glycemic control and diabetes self-management.

Purpose Statement and Project Objectives

The purpose of this quasi-experimental control group project was to explore whether or not a culturally tailored diabetes self-management education class, based on generally known elements of the Hispanic culture improved the diabetes self-management knowledge of Hispanic adults with diabetes, when compared to a non-culturally based diabetes self-management program. Adequate health interventions have

proven to decrease the risk factors and health effects associated with diabetes; however, evidence has shown that diabetes education can reduce hemoglobin A1c levels in the Hispanic population (Metghalchi et al., 2008). A pilot study conducted by Castillo et al. (2010) indicated that implementation of a diabetes self-management education class designed specifically for Hispanics can effectively improve behavioral skills and glycemic control. The literature indicates that, although there is evidence to support the use of culturally based diabetes education programs in clinical practice, there is little evidence concerning the interventions or their outcomes (Gonzales, Berry, & Davidson, 2013). A chasm exists between the knowledge that a culturally based diabetes education program can improve diabetes self-management in Hispanics and the successful implementation of this knowledge in clinical practice. The project's primary objective was to determine whether a culturally tailored, student-developed diabetes self-management education class, based upon generally known elements of the Hispanic culture, improved diabetes knowledge in this ethnic group.

Project Question

Will a culturally based diabetes self-management education program, based on generally known elements of the Hispanic culture, improve diabetes knowledge in adult diabetic Hispanics residing in Montgomery County, Texas, when compared to a non-culturally based diabetes self-management program?

Theoretical Framework for the Project

The project used the stages of change transtheoretical model (SCTM) as its theoretical framework. A theory or model can be used to guide the development of an intervention as well as provide direction in the design of the project itself (Grove, Burns,

& Gray, 2013). Models or theories must be appropriate for the intervention and what it is attempting to accomplish. The design of a program used to reach populations and individuals requires an understanding of how social systems operate and how change occurs within systems (Oldenburg, Glanz, & Ffrench, 1999). The five stages of the SCTM represent a step-by-step process by which to understand how change is perceived and initiated by a community or an individual. In the case of a culturally based diabetes education program, success of the education class relies on the researcher's ability to change the lifestyle habits of members of the Hispanic population who have diabetes. The SCTM is covered in greater detail in Section 2 of this manuscript.

Nature of the Project

The project used a quasi-experimental control group design to determine whether a culturally tailored diabetes self-management education class using a student developed diabetes self-management education class, based on generally known elements of the Hispanic culture improved the diabetes self-management knowledge of Hispanic adults with diabetes when compared to a non-culturally based diabetes self-management program. Quasi-experimental studies in nursing are conducted to determine the effects of nursing interventions or treatments among groups by examining relationships between variables (Grove, Burns, & Gray, 2013). The project examined the relationship between a non-culturally based diabetes education program and a student-developed education program based on generally known elements of the Hispanic culture and the effect that the culturally based program had on diabetes knowledge and self-management in the Hispanic population.

Data for the project came from a pre-test/post-test administered to project participants. The Michigan Diabetes Research and Training Center's (MDRTC) Brief Diabetes Knowledge Test (Appendix A) was used as the pre-test/post-test tool. Data retrieved from this tool were analyzed using the Statistical Package for the Social Sciences (SPSS, 2013), Version 21 for Windows, paired *t* test analysis. Data collection and analysis are explained in detail in Section 3 of this manuscript.

Evidence-Based Significance of the Project

Diabetes self-management has been shown to benefit the general diabetic population (Gonzalez, Berry, & Stamos, 2013). A key factor in diabetes prevention at the population level is education concerning risk factors and accurate risk perceptions (Rosal et al., 2011). The value of a culturally sensitive diabetes education program has gone largely unknown (Gonzalez, Berry, & Stamos, 2013). An increase in diabetes knowledge is the first step toward effective disease control. Diabetes self-management education is an important part of disease treatment and is critical to ameliorating this problem in the Hispanic population (Pena-Purcell & Boggess, 2014). Hatcher and Whittemore (2007) showed that culturally competent care plays an important role in reducing health care disparities and improving health outcomes in ethnically diverse adults with diabetes. Tucker et al. (2014) also found that a culturally sensitive health promotion program could positively affect health outcomes of adult patients with diabetes. Although both of these studies showed the positive effects of a culturally sensitive diabetes program, studies that have specifically targeted the Hispanic population are almost nonexistent. Few diabetes investigations have examined the differences in diabetes education and self-management practices between Hispanic and non-Hispanic Whites (Coronado et al., 2007).

The evaluation of health outcomes is an important part of any clinical intervention. While it has been established that diabetes self-management education, a complex health intervention, is generally effective in enhancing self-care behaviors, improving glycemic control, lowering health care costs, and improving quality of life, the outcomes generated by these interventions have not been evaluated for specific ethnic populations (Gucciardi, Chan, Manuel, & Sidani, 2013). Diabetes self-management education intervention has been the focus of previous research studies; however, none of these studies has comprehensively examined these interventions or their outcomes (Stamos, Berry, & Davison, 2013).

Culturally sensitive diabetes self-management programs have been shown to be effective in improving glycemic control in the Hispanic population; however, specific interventions to achieve this have not been examined (Cabellos, Coronado, & Thompson, 2010). Understanding the factors that influence diabetes-related behaviors and how they differ in the Hispanic population may offer insight for development of a culturally sensitive diabetes educational intervention and provide much-needed data to determine whether this form of intervention will lead to improved patient outcomes.

Implications for Social Change in Practice

Positive social change must be the fundamental goal of any health care intervention. In order to promote social change, a high level of trust must be achieved within the Hispanic community. Many Hispanic immigrants mistrust or have a fear of the medical community (Juckett, 2012). This mistrust stems from many different arenas such as culture, immigration status, illiteracy, a different set of health beliefs, and a predisposition to seek alternative care before professional medical care (Juckett, 2012).

Cultural and language differences often lead to a feeling of fear and mistrust causing many Hispanic patients to believe that they are not respected by medical providers. The goal of an organizational process is to build enough trust among community members to successfully move forward in the organizational process (Brady & O'Conner, 2014).

Trust is often built when people work together to better an organization or community. The involvement of members of the target population helps to develop ownership of the program, which is critical for the target population's eventual involvement and acceptance of the program (Hodges & Videto, 2011). Ownership of a program often empowers its members to make positive changes in the community, and members of a community who experience empowerment are likely to participate in a community intervention (Brady & O'Conner, 2014). A higher level of awareness surrounding a problem or issue can lead to a feeling of empowerment and an increased level of trust (Brady & O'Conner, 2014).

I developed a culturally based diabetes self-management education program for this study. This program was intended to promote positive social change by instilling a sense of empowerment in members of the Hispanic diabetic population who participated in the project. This feeling of empowerment stems from an enhanced knowledge of diabetes and of how it is possible to maintain and incorporate cultural beliefs and traditions in the self-management of diabetes. Brady and O'Conner (2014) found that successful community organization and participation lead to two major outcomes of positive social change: positive individual social change and positive systemic social change.

Positive social change can also be achieved by bringing attention to health disparities that are associated with ethnic minorities. Prevention efforts are needed to decrease the prevalence and burden of diabetes in the United States, especially in high-risk and underserved groups such as Hispanics (Ruggiero, Oros, & Choi, 2011). According to Ceballos, Coronado, and Thompson (2010), behavior change in Hispanics is a multidimensional process, and factors such as education, language, and health beliefs that influence diabetes-related behaviors may differ from those identified in other populations. By providing a diabetes self-management education class that targets the Hispanic population's behaviors that impede diabetes, self-management can be specifically targeted. The challenge of overcoming barriers to diabetes self-management in the Hispanic community offers health care professionals an opportunity to design culturally appropriate interventions to address racial and ethnic health disparities in regard to diabetes self-management (Martyn-Nemeth, Vitale, & Cowger, 2010).

Definition of Terms

Hispanic: Term describing a diverse population of Latin American descent that includes people of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin (Juckett, 2012).

Religiosity: Religion plays an important role in the life of the Hispanic population. *Religiosity* refers to the degree of participation in and adherence to the teaching and the organized activity of a particular religion (How, Ming, & Chin, 2011).

Religious belief: There are many forms of religious beliefs in the world. *Religious belief* refers to the fundamental belief system that influences individuals' ideas, values, and ways of living (How et al., 2011).

Culturally competent health care: *Culturally competent health care* entails understanding the importance of social and cultural influences on patients' health care beliefs and behaviors and taking into consideration how these factors interact at multiple levels in the delivery of health care services (Betancourt, Green, Carrillo, & Ananeh-Firempong, 2003).

Culturally sensitive health care: Although many health providers are sensitive in the care they give patients, not all care can be considered culturally sensitive. This paper defines *culturally sensitive care* as that which is responsive to the values, beliefs, and practices of individuals who share a cultural and linguistic heritage and identifying characteristics such as religion, race, and socioeconomic status (Tucker et al. 2014).

Empowerment: The act of helping people discover and use their innate ability to self-manage their diabetes (McCloskey & Flenniken, 2010).

Health literacy: Skills such as the ability to read, write, comprehend, and act upon new information that allow patients to function in the health care environment (O'Brien & Shea, 2011).

Process of care: How and when a patient receives care can be important in the management of a disease. *Process of care* refers to the timing and receipt of appropriate testing (White et al., 2013).

Health outcomes: When considering diabetes, there are many behaviors that must be changed to improve glycemic control. *Health outcomes* refer to changes in behavior related to diabetes self-management (Vaccaro et. al., 2012).

Health-related quality of life (HRQL): HRQL is related to an individual's capacity to function at the highest degree possible physically, psychologically, emotionally, and socially (Mier, Bocanegra-Alonso, Zhan, Zuniga, & Acosta, 2008).

Modifiable risk factors: There are many risk factors associated with diabetes. Some, such as genetics, cannot be changed by the patient, but other factors, such as physical activity, diet, and obesity, can. *Modifiable risk factors* are those factors that can be changed or modified by an individual to improve glycemic control (Gonzalez-Castro, Shaibi, & Boehm-Smith, 2009).

Positive social change: The deliberate process of creating and applying ideas, strategies, and actions to promote worth, dignity, and development of individuals, communities, organizations, institutions, cultures, and societies which results in the improvement of human and social conditions (Walden University Catalog, 2014).

Individual social change: The change that relates to the positive gains achieved by community members from successfully engaging in the organizational process (Brady & O'Conner, 2014).

Systemic social change: The change that relates to positive outcomes attained from the organizing process and through meeting specific outcomes and goals (Brady & O'Conner, 2014).

Assumptions

It was the assumption that all project participants participated freely without feeling coerced. The target population for this project was patients who received care at a non-profit free clinic. It was understood that diabetic patients might feel that they would be denied access to care if they did not agree to participate in the project. Careful

consideration was taken to assure individuals that refusal to participate in the project did not affect their access to or level of care received at the clinic. Assumptions for this project were necessary based on the premise that many of the patients who receive care in the clinic are in the country illegally and may have felt threatened that their immigration status would play a role in their continued access to the clinic based upon whether or not they participated in the project. Another assumption of this project was that the student-developed diabetes self-management education class would improve the knowledge of the project participants, resulting in an improvement in diabetes self-management skills. It was also an assumption that the knowledge and skills obtained from this education program would help to facilitate the lifestyle changes necessary to prevent the future development of complications stemming from diabetes.

Limitations

The project did have limitations. One limitation was the population size. The project only targeted Hispanics with diabetes at one local free clinic. There is the possibility that findings of the project are not representative of the larger population of Hispanics with diabetes. Another limitation of the project was the use of interpreters. The interpreter who was used was a clinic volunteer. This volunteer was a native Spanish speaker but did have some problems with the multitude of dialects that were spoken by the study participants. This diverse ethnic background could have adversely affected translation and the perceived meaning of terms and conditions. Due to the diverse nature of the clinic's ethnic Hispanic population, certain words or terms may not have conveyed the same meaning for each project participant. Eskes et al. (2013) remarked that a term may have completely different meanings or connotations in different cultures. Terms

used by individuals from Central or South America in relation to health may not have the same meaning for someone from Cuba or Puerto Rico. Several terms and definitions had to be explained in different ways during the education program. A significant limitation to the project was my inability to speak Spanish. This may have played a role in the interpretation of data, as the data had to be translated by a third party. A literature review conducted by Mayo et al. (2007) found that many practitioners felt that working with an interpreter affected their control over the communication process, and they were not certain that their exact message was being communicated. It is my opinion that this barrier was lessened to an acceptable level by using a native-Spanish-speaking interpreter with whom I had a good rapport due to working together on many occasions in the clinical setting.

Scope and Delimitations

The focus of this project was determining whether a student-developed diabetes education class that incorporated generally known elements of the Hispanic culture increased the diabetes knowledge of Hispanics who have the disease and improved their diabetes self-management skills when compared to a non-culturally based diabetes self-management program. This topic was deemed important, given the knowledge that Hispanics suffer from a high prevalence of diabetes and are at high risk for poor glycemic control and diabetes-related complications (Gucciardi et al., 2013). The cultural basis for the education program was determined to be of importance due to the social and cultural influence that is often associated with poor glycemic control in the Hispanic population (Hu et al., 2014).

Significance/Relevance to Practice

The care of a chronic illness such as diabetes requires not only due diligence from the medical professional in its treatment, but also a certain level of understanding and competency in the self-management of the chronic disease from those who are afflicted with it. Diabetes is an illness that requires a high level of health literacy (Martyn-Nemeth, Vitale, & Cowger, 2010). In order to achieve this level of knowledge, an education program must be created and put into practice that specifically addresses diabetes in Hispanics. Healthy People 2020 has included diabetes education programs as one of its objectives (Healthy People 2020, 2014). Specifically, Diabetes Objective D-14 of Healthy People 2020 addresses the need to increase the percentage of the population that has received formal diabetes training from 56.8% to 62.5%. Health care practitioners are in a position to help facilitate this Healthy People 2020 objective through the development and implementation of diabetes self-management programs that are geared toward specific ethnic populations. Healthy People 2020 also addresses educational and community-based programs as priority objectives (Healthy People 2020, 2014). The goal of this objective is to increase the quality, availability, and effectiveness of educational and community-based programs that are designed to improve health and enhance quality of life (Healthy People 202, 2014). This project's student-developed diabetes self-management program helped to meet both of these Healthy People 2020 objectives through the implementation of a diabetes education class that was used in a community setting and was designed to specifically improve the health outcomes of the Hispanic population.

Diabetes has also been addressed by the Affordable Care Act (ACA). One of the programs in the ACA of 2010 was developed to work with the Centers for Disease Control and Prevention (CDC) and the Institutes of Medicine (IOM) to address diabetes in the United States (Diabetes Health, 2009). Under the ACA, the Secretary of Health and Human Services (HHS) has the ability to award grants and fund initiatives to improve diabetes health through diabetes education and wellness programs (National Conference of State Legislators, 2011). Of particular interest to this project is the funding that has been allocated under the ACA for the Prevention and Public Health (PPH) Fund. The PPH was established by the ACA to fund wellness initiatives such as diabetes prevention programs and other evidence-based health programs (National Conference of State Legislators, 2011). Currently, the PPH has allocated 15 billion dollars to be used over the next 10 years for these programs (National Conference of State Legislators, 2011). The ACA, IOM, and CDC have all determined that diabetes education should be addressed at the community level. Allocation of federal funds for such programs gives credence to the importance of diabetes education. The student-developed diabetes self-management class, created for this project, helped to make the recommendations from these three federally run programs/agencies a reality for the Hispanic population that participated.

Another positive factor for diabetes health and education is the Diabetes Report Card (DRC). The DRC is mandated by the ACA and by the Catalyst to Better Diabetes Care Act of 2009 to provide a comprehensive report of the state of diabetes in the United States (DRC, 2012). The report is required to be published every 2 years and is meant to aid in the identification of gaps in diabetes prevention, screening, care, and treatment (DRC, 2012). Health care providers and federal lawmakers will be able to use this annual

report to ensure that funding for diabetes prevention and treatment is provided to the areas in most need. Because this diabetes education program encompasses all the gaps identified by the DRC, data obtained from this project has, the potential to help with future health care policy and funding for the treatment and prevention of diabetes in the state of Texas.

Diabetes in the Hispanic population is rising to levels that are epidemic in proportion (Metghalchi et al., 2008). Nursing and other health care providers are in a position to use initiatives such as the ACA and the DRC to plan, develop, and implement diabetes self-management programs geared toward a specific ethnic group. The knowledge gained from the development and implementation of these programs can help provide and improve evidence-based practice guidelines for future use in other ethnic populations.

Summary

There are many factors such as cultural beliefs, religion, family, mistrust of western health care practices, and lack of self-empowerment that play a role in the self-management practices of Hispanic diabetic patients. Cultural and traditional beliefs must be incorporated into a diabetes self-management education class in order for the class to be a success in promoting positive social change. Aspects of Hispanic culture, such as diet, view of physical activity, religion, and the role of family, must all be understood, and information must be presented to members of the target population in a way that respects their beliefs and traditions. Gaining the trust of this population is of paramount importance to the successful implementation of a culturally sensitive diabetes self-management education program. It is imperative that all features of the project be based

upon the Hispanic culture and directly engage diabetic Hispanics in the modification of their dietary and lifestyle habits. Before this project was pursued, a complete review of all evidence was performed to ensure that the premise of the project and its interventions were evidence-based and supported by current literature.

Section 2: Review of Scholarly Literature

Introduction

The Hispanic culture is unique and incorporates many beliefs and social factors that can be barriers to diabetes self-management. Due to these strong beliefs and social factors, the following project question was asked: Will a culturally based diabetes self-management education program, self-developed by the study's author and based on generally known elements of the Hispanic culture, improve diabetes knowledge in adult diabetic Hispanics residing in Montgomery County, Texas, when compared to a non-culturally based diabetes education program?

The literature review focused on areas pertaining to the Hispanic population's beliefs concerning illness, health behavior, lack of trust in western medicine, and barriers such as rural living, language, access to health care, acculturation, literacy, and socioeconomic conditions, which can all act negatively in regard to proper diabetes self-management. Diet, exercise, and the role of family can play both positive and negative roles in diabetes self-management in Hispanics, and all aspects of this disease, whether good or bad, need to be understood. Diabetes self-management in the Hispanic population can be a challenging and delicate undertaking. The literature review revealed the plethora of factors that had to be considered before developing and implementing a culturally sensitive diabetes self-management class for the Hispanic population. The purpose of this quasi-experimental project was to explore whether or not a culturally tailored, student-developed diabetes self-management education class, based on generally known elements of the Hispanic culture, could improve the diabetes self-management knowledge of Hispanic adults with diabetes.

Literature Search Strategy

The initial search strategy involved the identification of articles located in CINAHL, MEDLINE, and Cochrane. Specific key words used in the search were *Hispanic, diabetes, diabetic education and self-management, and diabetes empowerment*. This search strategy yielded 2,290 articles. A Boolean search using the words *culture* and *diabetes education* was conducted, and a total of 164 articles were found. Peer-reviewed publications published between the years 2004 and 2014 and written or translated into English were reviewed. Inclusion criteria for the review included publications that focused on culturally specific diabetes self-management for the Hispanic population. Publications that were geared toward diabetes prevention, those that were not culturally specific to the Hispanic population or combined populations such as African Americans, Asians, or other ethnic groups with the Hispanic population, and those that focused on children were excluded from consideration. Seventy-eight publications were selected for review and inclusion in this project.

In order to analyze the strength of each project, the 2008 version of the American Association of Critical Care (AACN) evidence leveling system was used. Levels of evidence or grading systems are used to rank research studies and other forms of literature and offer practitioners a reliable hierarchy to determine the strongest evidence for clinical practice (Armola et al., 2009). Four studies fell under Level A. These were meta-analysis studies that reported results that supported a specific action or intervention (Armola et al., 2009). Fifteen articles were evaluated and found to fall within Level B. Studies in this level are well designed, controlled studies that are both randomized and non-randomized, with results that consistently support a specific action, intervention or

treatment. An additional 51 articles were placed within Level C, which encompasses qualitative studies, descriptive or correlational studies, integrative reviews, systematic reviews, or randomized controlled trials with inconsistent results (Armola et al., 2009). Nine of the 51 Level C articles were systematic literature reviews. All other articles fell under Level D, which consists of articles that are peer reviewed and cite clinical studies to support their recommendations (Armola et al., 2009).

Specific Literature

Lack of access to care has been identified as a significant barrier to diabetes self-management (Ho, Wallace, & Tesh, 2010; Metghalchi et al., 2008; Whittemore, 2010). Limited access to health care services in low-income areas with a highly concentrated Hispanic population results in a significant decrease in optimal health status (Metghalchi et al., 2008; Whittemore, 2010). Inadequate access to care prevents Hispanic individuals from receiving proper diabetes prevention and management programs along with quality care (Hu, Wallace, & Tesh, 2010). Barriers to accessing care can occur for many reasons. Many Hispanics are aware of services in the community where they can receive care, but many do not have enough money for treatment (Long et al., 2012). If Hispanics can afford care, some fear that their immigration status will be made known if they seek health care (Hardy et al., 2012). In Arizona, health care providers have reported a dramatic drop in health care visits by the Hispanic population, which can be directly attributed to the fear of deportation (Hardy et al., 2012).

The majority of Hispanics in Texas live in rural areas that lack many amenities that can be found in urban areas (Heuman, Scholl, & Wilkinson, 2013). Rural living may affect the Hispanic population's access to care due to transportation difficulties and a lack

of medical clinics in the vicinity (Millard et al., 2011). The largest ethnic group living in United States rural areas is Hispanics, with 11.1 million Hispanic immigrants working on rural farms (Loi & McDermott, 2010). Sadowski, Devlin, and Hussain (2012) found that rural Hispanics may be considered doubly disadvantaged, demonstrating a higher prevalence of diabetes and diabetes complications, than urban Hispanics. Brown-Guion et al. (2013) found that poor treatment response and increased diabetes in rural Hispanic populations may be due to a lower likelihood of receiving diabetes education. The importance of diabetes education in improving outcomes, increasing self-management behaviors, and achieving glycemic control is well documented (Gonzalez, Berry, & Davison, 2013; Walton et al., 2012). Most efforts have been directed toward Hispanics living in urban areas (Brown-Guion et al., 2013). Understanding the prevalence and challenges of diabetes in rural populations was important in this project because the State of Texas has the largest rural population in the United States (Texas Comptroller of Public Accounts, n.d.). The rural Hispanic population in Texas is expected to double by the year 2020 (Texas Comptroller of Public Accounts, n.d.).

Acculturation must be considered when examining diabetes in the Hispanic population. Acculturation is recognized as an important sociocultural variable related to Hispanic health (Chang et al., 2013). Perez- Escamilla (2011) defined acculturation as a complex dynamic process that is shaped by the experiences and interactions of individuals with their environment, while Mainous, Diaz, and Geesy (2008) defined acculturation as an indication of the cultural change of minority individuals to the majority culture. Measurement of acculturation is usually based upon generational status. Higher levels of acculturation can be measured by a greater number of years living in the

United States or by subsequent generational status (foreign born, first-generation United States born, second-generation United States born (Castro, Shaibi, & Boehm-Smith, 2009). Hispanics living in rural areas are less acculturated than those living in urban areas and retain more of their original cultural values (Sobralke, 2006). Acculturation has been associated with poor lifestyle choices such as smoking, poor nutrition, inactivity, substance abuse, and higher body mass index (Castro et al., 2009; Perez-Escamilla, 2011). Although acculturation has been found to have adverse effects on lifestyle choices, there are limited data to show that it has a direct effect on diabetes. Studies conducted by Mainous et al. (2008) and Coronado et al. (2007) showed little evidence that acculturation had an adverse effect on the development of diabetes in the Hispanic community. Although there are limited data to show the role of acculturation in diabetes in the Hispanic population, attention must be given to lifestyle choices such as diet and exercise that are known to affect acculturation. Healthy lifestyle choices incorporating Hispanic traditions were a focus of the diabetes education program in this project. Education was provided concerning the inclusion of traditional Hispanic foods into a healthy diabetic diet that promotes better glycemic control.

Language barriers can have a detrimental effect on the welfare of Hispanics with diabetes. Ding and Hargraves (2009) reported that a unique characteristic associated with immigrant health, that affects a fairly large number of immigrants, is a language barrier. Thirty-nine percent of Hispanics report having a poor understanding of the English language (Fernandez et al., 2010). Lack of communication due to lack of proficiency in the English language can have a detrimental effect on Hispanic health and diabetes self-management. Lack of effective medical information communication and translation can

prove dangerous to patients (Collins, Gullette, & Schnepf, 2004). Walton, Snead, Collinsworth, and Schmit (2012) reported that trust and communication barriers prevent Hispanic patients from receiving the information they need in regard to their health care. Patients who have limited English proficiency do not receive needed health care or quality health care (Jacobs, Shepard, Suaya, & Stone, 2004). A survey conducted by Ding and Hargraves (2009) indicated that language barriers contribute to stress in the Hispanic population and lead to poor health status. More specifically, Fernandez et al. (2010) conducted a race-stratified randomized trial on the effect of a language barrier on glycemic control, which found that a language barrier was directly related to poor glycemic control.

Both health literacy and socioeconomic factors contribute to poor diabetes self-management in the Hispanic population. Florez et al. (2009) found that a positive correlation between socioeconomic status and Native American ancestry can increase the risk of diabetes in the Hispanic population. Social barriers such as low income, transportation problems, child care, and lack of medical insurance have all been identified as barriers to diabetes prevention and treatment (Ruggiero, Oros, & Choi, 2011). A cross-sectional study performed by Diaz-Apodaca, Ebrahim, McCormack, de Cosio, and Ruiz-Holguin (2010) indicated that Hispanics who lived in neighborhoods with low socioeconomic status had a high risk for diabetes and diabetes complications. A descriptive study conducted by Duran (2012) indicated that a lack of income and health insurance in Texas Hispanics led to higher levels of diabetes in the Hispanic population.

Understanding of disease prevention and management is crucial for a diabetes education program to be successful. *Health literacy* is defined as the degree to which

individuals have the capacity to obtain, process, and understand basic health information and is an essential aspect of health care (Aguirre, Wilhelm, & Joshi, 2012; Heinrich, 2010). Currently, the Hispanic population of the United States has a low level of health literacy (Aguirre et al., 2012). Schillinger et al. (2002) found that diabetic patients with low levels of health literacy were more likely to have poor glycemic control (Heinrich, 2012). A cross-sectional study completed by Heinrich (2012) showed that non-English-speaking Hispanics had lower levels of health care literacy when compared to Hispanics who spoke English, Blacks, and non-Hispanic Whites. A descriptive study conducted by Chilton, Hu, and Wallace (2006) indicated that lower education levels in the Hispanic population may prevent the early detection and prevention of diabetes. The evidence further found that, due to low literacy levels, Hispanics may not have adequate knowledge of diabetes, and therefore, self-management of the disease could be difficult (Chilton et al., 2006). In order for the diabetes self-management class to be successful, the class had to incorporate knowledge of diabetes as a disease and the effects it has on the body and on health in general. A diabetes education program based on generally known elements of Hispanic culture is an avenue to improving the Hispanic population's knowledge concerning diabetes and the complications that may develop if it is not controlled.

Diabetes self-management programs can be difficult to develop for the Hispanic population. The lack of diabetes self-management education may contribute to the disproportionate burden of diabetes complications among Hispanics (Coronado et al., 2007). Long et al. (2012) stated that health care providers face multiple challenges in working with Hispanics with diabetes. A major challenge to health promotion among

Hispanics is that they are not a captive audience that is easily accessed (Castro, Shaibi, & Boehm-Smith, 2009). Engagement of the target population is critical to a project's success (Hodges & Videto, 2011; Oldenburg, Glanz, & Ffrench, 1999).

The influence of culture and traditional Hispanic beliefs must be understood and incorporated into any education program that includes Hispanics. Cultural attitudes can negatively affect diabetes management (Walton et al., 2012). Chukwueke and Cordero-MacIntyre (2010) found that general health education, provided to Hispanics with diabetes, improved blood glucose control and health outcomes. Other evidence has shown that diabetes education, provided by community health care workers, improved diabetes self-efficacy in the Hispanic population (Prezio et al., 2012). Although these studies have shown that generalized education does have a positive effect on glycemic control in this population, it has also been found that making diabetes education culturally sensitive can have an even greater effect on glycemic control in the Hispanic population (Carbone, Rosal, Torres, Goins, & Bermudez., 2007; Coronado et al., 2007; Guccuardi et al., 2013; Pena-Purcell, Boggess, & Jimenez, 2011; Vaccaro et al., 2012).

In the Hispanic population, effective diabetes self-management begins with the ability to recognize and understand the disease (Long et al., 2012). Diabetes self-management education is seen as the key to management of diabetes in the Hispanic population (Coronado et al., 2007). A literature review conducted by Guccuardi et al. (2013) discovered 13 randomized control trials and comparative studies that all found positive rate differences in culturally based diabetes self-management education when compared to general diabetes education. Toobert et al. (2011) conducted a blind randomized study of 280 Hispanic women with diabetes and found that culturally

appropriate lifestyle interventions reduced disparities in diabetes outcomes. Although this study was conducted using Hispanic females, this finding is significant because Hispanic women are the primary source of food preparation in the Hispanic population (Carbone et al., 2007). Rosal et al. (2009), in a randomized trial of 250 Hispanic diabetic patients, found that interventional approaches, tailored specifically to Hispanics, can improve diabetes self-management. A randomized trial conducted by Rosal et al. (2005) showed a significant improvement in hemoglobin A1c levels when a culturally tailored diabetes self-management class was used. Culturally based diabetes self-management in the Hispanic population can improve hemoglobin A1c levels (Gonzalez, Berry, & Davison, 2013).

Although much of the evidence was focused on general, culturally sound educational interventions, some studies focused on specific cultural factors in diabetes education. McCloskey and Flenniken (2010) found a positive correlation between culturally tailored diabetes self-management education and the control and prevention of the disease. Culturally competent interventions for diabetes self-management were found to improve diabetes-related knowledge and are a prerequisite to diabetes self-management in the Hispanic population (Whittemore, 2007). Ramal, Petersen, Ingram, and Champlin (2012) stated that multiple studies have found positive effects of using culturally tailored diabetes self-management programs. Hispanics will take ownership of a diabetes self-management program that is participatory and tailored to their culture (Millard et al., 2011). Therefore, this project was designed to provide diabetes education based on generally known elements of the Hispanic culture that serves to empower Hispanics to become active participants in diabetes self-management activities.

The role of family was found to have a profound effect on diabetes self-management in the Hispanic population. Carbone et al. (2007) found that Hispanic patients drew strength from spending time with family and that families were positive factors in diabetes self-management and for enhancing motivation to change lifestyle habits. Weiler and Crist (2007) conducted a qualitative descriptive study that concluded that family traditions can have both positive and negative consequences for Hispanics with diabetes. Tailoring clinical care and developing novel educational approaches that include the family and community can improve diabetes outcomes (Weiler & Crist, 2007). Family is an important aspect of the Hispanic culture and needs to be used in a positive way when developing and conducting diabetes self-management education (Hu et al., 2014; Weiler & Crist, 2007; Carbone et al., 2007). Although family support has been shown to improve diabetes self-management, it can also have a detrimental effect on a person's diet.

Participants of a study conducted by Ramal et al. (2012) stated that dietary changes were difficult because they affected the entire family, and the rest of the family might not like consuming a diabetic diet. The study participants also indicated that many family members did not buy into the need for dietary changes and felt that it was bothersome to eat healthy (Ramal et al., 2012). Family gatherings are often cited as a problem with diabetes self-management due to a feeling of resentment toward other family members who can eat whatever they want (Hatcher & Whittemore, 2007). The Hispanic family can be a strong support system for a diabetic patient, but family relationships also bring forth a number of dietary challenges that can affect diabetes self-management. Families were encouraged to participate in the project in the hope that the

student-developed education class would show them the benefits of healthy food and lifestyle choices. The diabetes education class can also show families how healthy food choices can be a part of large family gathering without impeding or taking away from the festivities. Family involvement in the class may possibly have a trickle-down effect for extended family members and friends once it is demonstrated that traditional Hispanic foods that are healthy and part of a diabetic diet can be used and enjoyed. Only one of the project participants brought an additional family member, but it was stressed that family participation was not a requirement for inclusion in the culturally based diabetes education class.

The benefit of exercise has been found to play a pivotal role in diabetes self-management (Martyn-Nemeth, Vitale, & Cowger, 2010). Martyn-Nemeth, et al. (2010) conducted a pilot study to examine the feasibility and effectiveness of a culturally focused exercise program for Hispanic adults. A convenience sample of Hispanic adults ranging in age from 18 to 65 years was recruited for the study. The study measured demographic data, metabolic parameters such as capillary blood glucose and hemoglobin A1c levels, body mass index, psychological well-being, and daily exercise. The study found that a culturally focused exercise program was effective in promoting regular exercise and improving glycemic control (Martyn-Nemeth, et al., 2010). Exercise is an important part of glycemic control. It would be remiss of any education class, whether it is culturally based or not, to omit the importance of exercise in any diabetes self-management endeavor. Treatment regimens to promote health and wellbeing of Hispanics with diabetes typically include engaging in physical activity (Tucker et al., 2014). Physical activity is important in the self-management of diabetes (Martyn-

Nemeth, Vitale, & Cowger, 2010). This project's diabetes self-management program addressed the importance of exercise in the self-management of diabetes and offered suggestions for physical activities that could include family and friends in order to make daily exercise seem less rigid and more in line with a social gathering, which is seen as enjoyable. The knowledge of why exercise is important to the self-management of diabetes and the ways in which it can be performed is a fundamental component of any diabetes self-management education class.

General Literature

The Hispanic culture includes unique perceptions of illness and health behaviors. Hispanic health beliefs and behaviors are the result of the blending of aboriginal healing practices of the Aztecs, Toltecs, and Mayans with the religious rituals of the Spanish explorers and the Greek humoral school of medicine, which was revived during the Spanish Renaissance (Jimenez, 1995). Porter, Chapman-Novakofski, and Scherer (2009) determined that cultural appropriateness spans far beyond language to encompass varying health beliefs, cultural bias, and social norms as they relate to the Hispanic population. Hispanics often interpret illness and symptoms based on cultural predispositions, meaning that Hispanics may feel as if illness or the symptoms of illness are from a loss of the soul, an evil eye or are otherwise related to sorcery (Juckett, 2013). Latham and Calvillo (2013) found that many Hispanics still held culturally embedded beliefs about illness attribution such as the effects of an evil eye on young children and blood poisoning caused by anger. Hispanics will often seek care from brujas or brujos (witches or wizards) for their medical care (Juckett, 2013). Mikhail, Wali, and Ziment (2004) found that many Hispanics use alternative therapies which are not promoted or taught in

Western medical schools and do not conform to the social norm. Ramal et al. (2012) reported a lack of trust by Hispanics in reference to western medicine and health care practitioners. Many Hispanics use a variety of herbal or natural remedies, such as cinnamon tea, as alternative forms of treatment (Long et al., 2012). Health beliefs need to be understood as being part of the Hispanic culture, and open communication is key to bridging the gap between traditional folk medicine and modern medicine (Mikhail, Wali, & Ziment, 2004).

Patient empowerment was identified as a major theme during the literature review. Empowerment plays an integral role in helping Hispanics self-manage their diabetes. Rodwell (1996) defined *empowerment* as a helping process whereby groups or individuals are enabled to change a situation when given the skills, resources, opportunities and authority to do so (Ho, Berggren, & Dahlborg-Lyckhage, 2010). Adolfsson (2008) describe the *empowerment process* as a client-centered collaborative process that involves an active client role, shared decision making, freedom to make choices, and acceptance of responsibility for one's actions (Ho, Berggren, & Dahlborg-Lyckhage, 2010). Patient empowerment is required for any education program to be effective, especially in the Hispanic community. Empowerment is a partnership which respects and values self and others and aims to develop a positive belief in self and the future (Ho, Berggren, & Dahlborg-Lyckhage, 2010). Pena-Purcell, Boggess, and Jimenez (2011) found that a culturally sensitive diabetes self-management program for Hispanics can yield positive glycemic control and self-care behavioral benefits if it is empowerment based. Castillo et al. (2010) found that community health workers are an important element in community empowerment strategies. A pilot study was conducted by Castillo

et al. (2010), which showed that community health workers played a positive role in diabetes empowerment in a community setting. A meta-ethnographic study conducted by Ho, Beggren, and Dalhborg-Lyckhage (2010) indicated that patient empowerment played a vital role in helping patients achieve successful diabetes self-management.

The evidence revealed multiple barriers to diabetes self-management in Hispanics such as low socioeconomic status, acculturation, poor access to health care, language disparity, and low literacy levels (Castillo et al., 2012; Qi et al., 2012; Ramar & Desani, 2010; Walton et al., 2012). Hu et al. (2013) reported that studies of diabetes self-management in Hispanics have reported low income, low education, low acculturation, spoken language and literacy issues, different cultural beliefs, and lack of social support as barriers to diabetes self-management.

Conceptual Models, Theoretical Framework

The SCTM was used as the theoretical framework for this project. Positive lifestyle changes are the fundamental goal for any education program, and the readiness for its participants to undergo the needed requirements for these positive lifestyle changes must be addressed. The effectiveness of educational interventions to promote positive changes can differ based on the study participant's readiness to change (Mochari-Greenberger, Terry, & Mosca, 2010). According to Brug et al. (2005), changes to complex health issues like physical exercise and diet can be difficult. This can be especially true in the Hispanic population who are often less physically active than other ethnic groups. A clear picture of a patient's readiness and motivation for change is important for both short and long term lifestyle modifications to be successful. Understanding a person's motivation and readiness for change is an important

prerequisite for developing and using interventions effectively in the clinical setting (Oldenburg, Glanz, & Ffrench, 1999). SCTM can be used to assess project participants' readiness to make lifestyle changes and their motivation to sustain the change.

SCTM is based on the premise that behavior change is a dynamic process that involves progression across five stages: pre-contemplation, contemplation, preparation, action, and maintenance (Mochari-Greenberger, Terry, & Mosca, 2010). In the pre-contemplation stage, an individual is not aware that a change is needed and does not perceive any negative side effects from current lifestyle choices (Oldenburg, Glanz, & Ffrench, 1999). Rosal et al. (2011) found that most Hispanics had a basic knowledge of factors related to poor glycemic control but felt they could not do anything to prevent or even improve their diabetes. Hispanics with diabetes need to be made aware of the negative side effects of diabetes through the use of culturally sensitive education. Once this has been accomplished, the patient will start to feel empowered and begin to believe lifestyle changes can be made.

Contemplation begins when the person sees the benefits of the behavioral change but has not acted upon them yet (Oldenburg, Glanz, & Ffrench, 1999). During this stage of SCTM, the education program can focus on the benefits of lifestyle change. Motivation to change poor health behaviors and enhance quality of life can then set the stage for the preparation stage.

Diabetes self-management classes, using generally known elements of the Hispanic culture, can offer Hispanics with diabetes the materials and knowledge required to prepare for needed lifestyle modifications for their diabetes. Goals and priorities need to be identified in the preparation phase of the SCTM (Oldenburg, Glanz, & Ffrench,

1999). A culturally based diabetes self-management class, using generally known elements of the Hispanic culture could effectively help Hispanic diabetes patients set priorities and attainable goals. Goals such as greater exercise frequency and weight loss need to be reasonable for sustained behavioral change. Many Hispanics feel frustrated with their struggle to lose weight citing lack of time, the expense of healthy food and loss of motivation when weight is not quickly lost (Rosal et al., 2011). Attainable goal-setting should be a priority in any diabetic education class.

The fourth stage of SCTM is the action stage, which is the engagement of the individual in the behavioral change process (Oldenburg, Glanz, & Ffrench, 1999). A diabetes education class, using generally known elements of the Hispanic culture would play a pivotal role in this stage. Strategies and skills are needed in order for lifestyle and behavior modifications to occur. Some skills and strategies were taught in the student developed diabetes self-management class including the use of diabetic recipes that incorporate traditional Hispanic foods, exercise options that included family and friends in a variety of methods that are found enjoyable to Hispanics, and the ability to read and understand food labels to ascertain the carbohydrate, sugar and fat content of foods.

The final stage of the SCTM is the maintenance stage. This stage is marked by the ability of an individual to sustain new behavior and lifestyle changes for a minimum of six months (Oldenburg, Glanz, & Ffrench, 1999). Diabetes self-management classes need to offer resources for setbacks in diet, exercise and other lifestyle modifications in order to sustain long-term behavioral change.

The SCTM model gives a step-by-step process for the evaluation of an individual's willingness and readiness to make needed lifestyle changes in order to

improve glycemic control and has been used successfully to help facilitate behavior change in other studies. Mochari-Greenberger, Terry, and Mosca (2010) successfully used the SCTM when developing an educational intervention to improve the diets of cardiovascular patients. The SCTM was also used successfully by Genberg, Lee, Rogers, Wiley, and Wilson (2013) during a randomized trial that dealt with adherence to antiviral medication for patients with HIV.

Change can be a daunting phenomenon for most individuals, and many people are apathetic to the need for change. The evidence has indicated that a culturally tailored diabetes self-management program, using generally known elements of the Hispanic culture, is needed to successfully manage diabetes in the Hispanic population. For an intervention to be successful, the recipient must be aware of the need for change and have a willingness to implement the change. An intervention tailored to a person's stage of change can be more effective to promote the desired behavioral change (Bridle et al., 2005). Therefore, the SCTM model has all the tenets required to help bring about the lifestyle changes needed for proper diabetes self-management and glycemic control in Hispanic adults who exhibit poor glycemic control due to poor diabetes self-management.

Background and Context

The mission of my practicum site is to "Improve the wellbeing of our community by providing assistance in health care services that would not otherwise be accessible" (Interfaith Community Clinic, 2014). The practicum site is a small community based clinic that relies on donations, fund raising projects, and federal grants. The site cares for all people, free of charge, who do not qualify for medical care offered by other state and

federal government agencies. The clinic has a large population of Hispanic patients with many of these patients having diabetes.

My role in this project was to identify a need within the practicum site and to develop an intervention that could help improve patient outcomes. In order to be successful in this endeavor, I needed to form relationships within the practicum site, exhibit superior communication and leadership skills, and act as a change agent within the system. After a clinic needs assessment was performed, and, upon collaboration with the practicum site's staff, volunteers, and administration, it was determined that a culturally based diabetes self-management class for Hispanics with diabetes would benefit the clinic, its staff, and patients.

Summary

Diabetes in the Hispanic population is an ongoing burden to this ethnic group. A literature review was conducted using multiple data search engines and key words which provided a clear understanding of the magnitude of the diabetes problem within the Hispanic population. The evidence indicates that proper diabetes self-management is needed to ensure optimal patient outcomes. However, the evidence was clear that generic diabetes self-management education classes are not as effective as those that are culturally based when dealing with the Hispanic population. The Hispanic culture has a deeply rooted sense of family, religion, and culture that must be taken into consideration before a diabetes education class can be successful (Carbone et al., 2007; Martyn-Nemeth, Vitale & Cowger, 2010; Millard et al, 2011Whittemore, 2007). Education that includes preferred Hispanic dietary options and alternative forms of exercise, which includes family and friends, is key to the successful management of diabetes in this

ethnic group. The evidence indicated that trust was a key component that had to be established between the facilitator and the project participants. This mutually receptive and trusting relationship allows project participants to feel a sense of empowerment to improve their diabetes knowledge and self-management behavior (Ho, Berggren, & Dahlborg-Lyckhage, 2010). Behavioral change is critical for the success of a diabetes self-management program. In order to facilitate this process, the SCTM was used. The SCTM recognizes that change is a dynamic process that progresses with knowledge and empowerment (Mochari-Greenberger, Terry, & Mosca, 2010). This model helped facilitate the lifestyle changes needed by project participants while also allowing me a step-by-step plan to achieve success. In order for a project to be successful, reliable and valid, a step-by-step process must be mapped out, so there is a clear understanding and vision of the project by all stakeholders. By using the evidence presented in the literature (the SCTM for behavioral change), and following a clear and precise project design or model, which is outlined in the next section, it was the premise of this project that the proposed student-developed diabetes education class, using generally known elements of the Hispanic culture, would improve diabetes knowledge and self-management skills for the Hispanic diabetic population.

Section 3: Project Design/Methods

Introduction

Diabetes in the Hispanic population is rampant. The evidence indicated that education concerning proper diabetes self-management would increase the success of treating the disease, especially when the training was culturally based. A needs assessment was conducted at the beginning of this project, in collaboration with the clinic's medical director, nursing staff, and other administrators, to determine the requirements of the clinic and its patient population. Based on this in-depth assessment, it was found that, at my practicum site, the diabetes education program was largely ineffective in meeting the needs of its diabetic Hispanic population. The project question asked was the following: Will a culturally based diabetes self-management education program, self-developed by the study's author and based on generally known elements of the Hispanic culture, improve diabetes knowledge in adult diabetic Hispanics residing in Montgomery County, Texas, when compared to a non-culturally based diabetes self-management program? The purpose of this quasi-experimental control group project was to explore whether or not a culturally tailored diabetes student-developed self-management education class, based on generally known elements of the Hispanic culture, would improve the diabetes self-management knowledge of Hispanic adults with diabetes when compared to a non-culturally based diabetes self-management program. Section 3 presents the project design and methods along with the study population and sampling technique. Instruments chosen for this project have been used extensively to assess the knowledge of diabetic individuals and have been tested for reliability and validity and, therefore, were deemed to serve as a reliable tools to answer this project's question. Data

collection and protection of human subjects related to this study were also included to demonstrate that the data process was reliable for statistical analysis.

Approach and Rationale

A student-developed diabetes education program, using generally known elements of the Hispanic culture, was the primary intervention and focus of this project. The student-developed diabetes education program was compared to the current non-culturally based diabetes education program used by my practicum site. The project approach used a quasi-experimental pre-test/post-test design to help answer the project question: Will a culturally based diabetes self-management education program, developed by me and based on generally known elements of the Hispanic culture, improve diabetes knowledge in adult diabetic Hispanics residing in Montgomery County, Texas? Wu et al. (2011) used a quasi-experimental design when proving the effectiveness of a diabetes self-management program for people with type 2 diabetes, and the same type of study design was used successfully to test the efficacy of controlled nursing interventions focused on education and counseling in adults with type 2 diabetes (Gallegos, Ovalle-Berumen, & Gomez-Meza, 2006).

The MDRTC Brief Diabetes Knowledge Test (Appendix A) was used as the project's pre-test/post-test data tool (University of Michigan Health System, 2014). The MDRTC was shown to be valid in a study specifically designed to determine its validity and conducted by Fitzgerald et al. (1998). The study used the MDRTC Brief Diabetes Knowledge Test (Appendix A) to determine the knowledge of patients who received diabetes education. Cronbach's alpha was used to calculate the reliability of the tool (Fitzgerald et al., 1998). The results of the study showed that the MDRTC Brief Diabetes

Knowledge Test (Appendix A) had a coefficient of $> .7$ indicating that the tool was reliable (Fitzgerald, 1998). Demographic data for the study was collected using a demographic questionnaire that I personally developed.

Educational Intervention

Culturally based diabetes education has been shown to be effective in lowering hemoglobin A1c levels and promoting self-management of the disease (Metghalchi et al., 2008). The student-developed education class that was used for this project focused on diabetes self-management, which included the disease process, comorbidities, and complications associated with diabetes, the role of diet and exercise in the self-management of diabetes, the importance of family and other support systems, and how the self-management of diabetes does not require giving up traditional Hispanic foods and cultural practices. The class focused on the role of family and community in the self-management of diabetes and broached the subject of other members of the Hispanic community having the same fears and misgivings in regard to the disease. Group education interventions underscore the shared experiences of managing diabetes, emphasizing that empowerment can be facilitated through reassurance from others in a similar situation (Hu, Berggren, & Dahlborg-Lyckhage, 2010).

The educational intervention, consisting of a student-developed diabetes education class using generally known elements of the Hispanic culture, was approximately two hours in duration, and was held at my practicum site. The education class was conducted by me with the assistance of a native-Spanish-speaking translator. The English/Spanish speaking translator, engaged for the project, had been educated on the purpose and goals of the project. The translator and I have worked closely for many

years while caring for Spanish speaking patients. The education class consisted of a PowerPoint presentation (Appendix B) and handouts depicting diabetic food choices and proper amounts that can be eaten, visual stations in which class participants could practice placing foods into the proper food groups using an empty paper plate that they could divide into sections and label which food group should go into each section, and an area where class participants could “shop” for healthy foods that fit into a diabetic diet.

The exercise portion of the class consisted of playing traditional Hispanic music and allowing the class participants to dance, thus showing that any physical activity that elevates the heart rate could be used as a weight-loss or weight-control method. The class was then given a sample of recipes that used traditional Hispanic foods that are considered diabetic friendly. Finally, a diagram was used to show how diabetes can affect a family over several generations if lifestyle changes are not embraced by the entire family. Visual information may help to shape how items are represented during initial encoding and ultimately guide longer term learning about the items (Fan & Turk-Browne, 2013). The class was conducted in the free clinic since this gave the project participants a sense of familiarity with their surroundings and made them feel more comfortable during the class. The timeframe for the education class was approximately two hours. After the formal class, participants were encouraged to socialize with other class participants leading to other pertinent questions being presented that had gone unanswered during the formal class. Participants for the student-developed diabetes self-management class were randomly assigned to either the experimental group or the control group during the initial intake process. Each project participant was assigned a numerical identifier upon entering the clinic. Once the identifier had been assigned, each project participant randomly drew

a lot from a container. Those project participants who drew a lot with the letter “E” were assigned to participate in the student-developed diabetes self-management class, and those who drew a “C” were assigned to the control group. I oversaw this entire process.

Control Group Education Program

The current diabetes education class offered by the clinic is in no way culturally based and is offered once every 3 to 6 months. All diabetic patients who receive care at the clinic, regardless of whether their diabetes is newly diagnosed, controlled, or uncontrolled, is required to attend one diabetes education class each year. The education program is typically attended by approximately 25 participants from multiple ethnic backgrounds and countries. The class has normally been held in the lobby of the clinic and performed by a registered nurse with the assistance of a Spanish translator. The registered nurse and Spanish translator have always been clinic volunteers who agreed to facilitate the education class. The class content consisted of a prewritten PowerPoint lecture that included sections on food, exercise, blood glucose monitoring, diabetic medications, and travel information. Culturally specific diabetes details were not included in the education class in reference to food, exercise, or family. The education class did not use visual or static displays to enhance learning. After completion of the class, there was a brief question-and-answer session that allowed class participants to ask specific questions related to diabetes. No pre-test or post-test was administered to determine if an increase in diabetes knowledge was obtained through use of the education program.

For the purpose of this study, assignment to the control group education class was accomplished during the initial intake process. Each project participant was assigned a

numerical identifier. Once the numerical identifier had been provided, the project participant randomly drew a lot from a container. Those project participants who drew a lot with the letter “C” were assigned to participate in the control group education class, which, except for the pre and post-test, was identical to the non-culturally specific classes that had always been provided by the clinic in the past. I presided over the lot draw.

Population and Sampling

Project participants were recruited from a community clinic located in Montgomery County, Texas. The clinic population consists of individuals who do not have any form of health insurance and do not qualify for health care assistance from state or local entities. Many of the clinic patients are non-documented residents of the United States, who originated from Mexico, Central America, or South America. The project began by obtaining Institutional Review Board (IRB) approval from Walden University. Inclusion criteria for the project consisted of Hispanic adults between the ages of 18 and 65 with an established diagnosis of diabetes and with a hemoglobin A1c level of 7% or higher based upon their most recent hemoglobin A1c blood sample analysis. Pregnant women were excluded from the project.

Referral for potential project participants was obtained from the clinic medical providers, who consisted of doctors, nurse practitioners, and physician assistants. The clinic medical providers were advised of the project parameters through the use of educational flyers, which were placed at the provider work-stations, and also by verbal announcement of the project by me. Written referrals for the project (Appendix D) were made after a potential project candidate had been seen by a clinic medical provider and been identified as having a hemoglobin A1c of greater than 7% during a scheduled

medical visit. The project participant's name was placed on a list that was kept in a file located at the nurse's station, which was always stored in a secured drawer when not in active use. Only the two staff nurses, clinic administrators, and I, had access to this drawer. The file of each potential project participant was then screened by me to ensure the individual met the project inclusion criteria. The referral process continued until 30 potential project participants had been identified. In order to determine the number of participants needed to ensure accurate data, a power analysis was performed. A power analysis helps researchers make informed decisions on how large their project population should be in order to minimize the risk of a type II error (Polit, 2010). A type II error is created by accepting the null hypothesis when it is false, creating a false negative (Polit, 2010). A power analysis was conducted using the Statistical Solution Power and Sample Size Calculator. A minimum project population of nine was found to be necessary for this project to achieve a power level of 0.80 with a significance of 0.05,. (Statistical Solutions, n.d.). Understanding that some diabetic patients would not be able to attend for a myriad of reasons, it was determined that 30 potential project participants would allow a sufficient recruitment population to ensure a minimum of nine participants for each of the two groups.

I approached each of the potential participants, during medical appointments, who were identified by the clinic medical providers as meeting the criteria for project inclusion, and presented an invitation to participate in the project. If the potential project participant did not speak English, a Spanish interpreter from the clinic was used to interpret. The purpose of the project was explained in-depth at the time of the interview, and the date, time, and location of the education class was provided. If the potential

project participant attended the education program and actively participated in the class, it was understood by the project participant that assent to participate in the project had been given. Assent was chosen as a means for obtaining consent to participate in the project due to potential variability in the project participants' literacy levels and English comprehension ability. Having a legal written consent form translated into Spanish for this project was cost prohibitive.

Protection of Human Rights

Nursing has a distinguished history of concern for the welfare of sick, injured, and vulnerable populations (Code of Ethics for Nurses, 2001). Due diligence must be taken to protect the subjects of a research project. Guidelines for ethical principles in regard to research subjects can be found in the Belmont Report. Part B of this report outlines three ethical principles to guide human research (Belmont Report, 1979). The first principle is that of *respect for persons*, which consists of two moral requirements. These are the acknowledgement of autonomy and the requirement to protect those with diminished autonomy (Belmont Report, 1979). The second principle is *beneficence*, meaning that people should be treated in an ethical manner by respecting their decisions and protecting them from harm (Belmont Report, 1979). The final principle of the report is that of *justice*, meaning that the results of the research will be distributed to all in a fair and meaningful manner and that no person in need will be denied the benefits of the research (Belmont Report, 1979).

After both the Walden University IRB and the clinic authorized this project, participants who were identified as meeting the project's parameters were approached in person and invited to join the project. All participants of the project were asked if they

were willing to participate prior to the start of the education program. Native-Spanish-speaking interpreters, who had been educated and trained on the content of the project and its parameters, explained the project procedures to each participant who did not speak or understand English. After the project was explained in depth to each participant and all questions had been answered to the satisfaction of the participant, verbal agreement to participate in the project was obtained. Assent was implied if the subject attended the educational session and willingly participated in the education class. A native-Spanish-speaking translator was available to translate all material written in English for all non-English-speaking project participants. At the beginning of the educational process, each participant was assigned a numerical identifier. No names or personal data were used as identifiers for the project. Data from the project have been kept on a password-protected computer located either at the community clinic or at my home. All paper data have been kept in a safe at my home and will be maintained for 3 years, then destroyed. According to the U.S. Department of Health and Human Services (USDHHS; 2006), there is not a set standard of time to keep collected data; however, the USDHHS requires that its data be kept for a minimum of 3 years. An Institutional Review Board (IRB) is an appropriately constituted group that has been formally designated to review and monitor biomedical research involving human subjects (U.S. Food and Drug Administration, 2014). Walden University's IRB is responsible for ensuring that all Walden University research complies with the university's ethical standards as well as U.S. federal regulations (Walden University IRB, n.d.). IRB approval is required before the implementation of a project and prior to any data being collected (Walden University IRB, n.d.).

Data Collection

Data collection is the precise, systematic gathering of information relevant to the research purpose or specific objectives or questions (Grove, Burns, & Gray, 2013). The first step in data collection was to receive approval for conducting the project from Interfaith Community Clinic and both the Walden University IRB and the project faculty committee. Once approval was obtained from all three entities, the recruitment of project participants began. Project participants were recruited through the use of medical provider referrals and screened for inclusion criteria by me. All patients who had been referred by a clinic medical provider were interviewed by me, and those who were found to meet all inclusion criteria of the project were asked to participate in the project. The class was conducted at the community clinic where the project participants normally received care.

Upon the participants' arrival to the clinic, a native-Spanish-speaking translator who had been educated on the project was available to explain the project and answer any questions that non-English-speaking participants had. Each project participant was assigned a sequential number, for example 1, 2, and 3. This number was the identifier for each patient and that person's data for the remainder of the project. A master list of all project participants and their identifiers was kept by me in a password-protected computer.

The initial intake process included the assignment of a project identifying number and a project lot draw for education class randomization. Project participants were assigned to either the experimental group or the control group through random lot selection. The education class selection process was conducted by having each project

participant draw a lot from a container that consisted of a total of 24 lots. The lot draw was conducted on the day of the education class. Prior to the start of the education class, half of the lots were prepared with a “C” written on them and the other half had an “E” written on them. I presided over the lot draw. Those participants who drew a lot labeled “C” were assigned to the control group and those who drew a lot labeled “E” were assigned to the experimental group. The lot draw continued in this manner until all project participants were assigned to one of the two groups. This process took place in the clinic foyer and took approximately 1 hour.

Project participants were asked to complete a demographic questionnaire, (Appendix C), before the start of each education class. The demographic questionnaire consisted of inquiries for the patient’s age, gender, marital status, race, number of years being treated for diabetes, and whether or not any other diabetes education programs, culturally based or not, were ever attended. The questionnaire was administered prior to the start of the education class by me with the assistance of a native speaking Spanish speaking translator. The demographic questionnaire was administered to the project participants as a group in the classroom in which the educational intervention took place. The control and experimental education classes each began with the project participants completing the MDRTC Brief Diabetes Knowledge Test (Appendix A). This test was administered by me and the trained native speaking Spanish translator. Project participants completed the pre-test at the beginning of the education classes. Each participant was given approximately thirty minutes to complete the MDRTC Brief Diabetes Knowledge Test (Appendix A), and additional time was allotted for the test completion as needed. The administration of the pre-test and post-test was also conducted

by me and the Spanish translators. The MDRTC Brief Diabetes Knowledge Test (Appendix A), used as a pre-test and post-test were given in a group setting in the room where the experimental education class was provided. The post-test was administered directly after the completion of each education class under the same conditions and time frame as the pre-test. Each test was then collected and scored by me immediately after the completion of the post-test. The test was scored by summing the number of questions answered correctly. A higher score indicates that the project participant had a higher level of diabetes knowledge than those who scored lower on the test. The completed tests and scores were kept in a secured file cabinet in the clinic administrator's office. The experimental education class was approximately two hours long and was conducted by me and the trained native Spanish-speaking translator. I then analyzed the data from the pre-MDRTC diabetes knowledge test and the post-MDRTC diabetes knowledge test using the Statistical Package for the Social Sciences (SPSS, 2013), Version 21 for Windows, paired *t*-test analysis. The compared means of the pre-test and post-test was used with the pre-test value identified as variable one and the post-test value identified as variable two for each educational group. I manually loaded the data into the SPSS software.

Instruments

University of Michigan's Diabetes Research and Training Center Brief Diabetes Knowledge Test

The Michigan Diabetes Research and Training Center (MDRTC) developed several survey instruments for diabetes patients and health professionals. When someone downloads the forms, that person agrees to acknowledge the MDRTC as the source of the

items in the survey instruments in any written instruments, reports, or publications resulting from their use or reproduction (Michigan Diabetes Research and Training Center, 2014).

The MDRTC Brief Diabetes Knowledge Test (Appendix A) consists of 23 questions used to assess the patient's knowledge of diabetes (MDRTC, 2014). The test was developed by recruiting a nationally representative group of experts which included dietitians, diabetologists, nurses, education specialists, and psychologists who were all recognized as experts in diabetes (Fitzgerald et al, 1998). The test's readability was measured by the Flesch-Kincaid grade level, and the reading level for the test items was found to be consistent with the sixth grade (Fitzgerald et al., 1998). The diabetes knowledge tool has been shown to be both valid and reliable in multiple studies. West and Goldberg (2002) stated that the MDRTC Brief Diabetes Knowledge Test (Appendix A) has been shown to be a reliable and valid instrument for estimating a patient's general diabetes knowledge. Clark and Utz (2011) found the MDRTC Brief Diabetes Knowledge Test (Appendix A) to be valid, reliable and culturally appropriate while conducting a literature review of effective diabetes knowledge tools for African-Americans with diabetes. The MDRTC Brief Diabetes Knowledge Test (Appendix A) was also successfully used by Mufunda, Wikby, Bjorn, and Hjelm (2012) in a cross-sectional study on diabetes knowledge of Zimbabweans. Another cross sectional study performed by Alaboudi, Hassali, Shafies, Al Rubeaan, and Hassan (2014) used the MDRTC Brief Diabetes Knowledge Test (Appendix A) while investigating the association between diabetes knowledge and attitude related to the quality of life in patients with diabetes. Al-Qazaz, Hassali, Shafie, Sulaiman, and Sundrum (2010) conducted a validation study of

the 14 question modified version of the MDRTC Brief Diabetes Knowledge Test (Appendix A) and found that the test is a reliable and valid measure of diabetes knowledge which can be used in clinical and research practice. Two additional descriptive studies conducted by Abdullah, Margolis, and Townsend (2001) and Saleh, Mumu, Ara, Begum, and Ali (2012), found the MDRTC Brief Diabetes Knowledge Test (Appendix A) to be valid and reliable when assessing the knowledge of individuals with diabetes.

The test is comprised of 14 multiple choice general knowledge questions and nine insulin knowledge questions and can be conducted over a fifteen minute time frame (MDRTC, 2014). Since insulin dependency is not a prerequisite for participation in the project, the modified 14 question test, that has all questions concerning insulin removed, was used for this project. The 14 questions on the MDRTC Brief Diabetes Knowledge Test (Appendix A) concern diabetic diet knowledge, appropriate food choices, general diabetes disease process knowledge, the effects of exercise on blood sugar, and preventative measures to avoid diabetes complications. Each question is asked at a sixth grade reading level in a multiple choice format using an alphabetical nominal measurement format. The test was scored by summing the total number of correct answers. A higher number of correct answers on the post-test when compared to the pre-test indicated that a greater knowledge of diabetes self-management had been achieved.

Demographic Questionnaire

The demographic questionnaire (Appendix C) is a self-developed questionnaire used to obtain basic demographic data from the study participants. Patient demographics were obtained through the use of a questionnaire administered prior to the start of each

education class. The demographic questionnaire inquired of the patient's age, gender, marital status, how long the patient has been diagnosed with diabetes, education level, whether or not the participant had undergone previous diabetes self-management education and if this education was culturally based or generic. I administered and collected all demographic data from each participant. Questionnaires were used to determine facts about the study participants (Grove, Burns, & Gray, 2013). For the purpose of this project, the questionnaire was used only to obtain demographic data on project participants in order to have a better understanding of the project's population and its characteristics. The total sample size and mean age, marital status, gender, years diagnosed with diabetes and previous diabetes education was extracted from the demographic questionnaire.

Data Analysis

According to Grove, Burns, and Gray (2013), data analysis is the precise systematic gathering of information relevant to the research purpose or the specific objectives, questions, or hypothesis. Study variables are concepts of various levels of abstraction that are measured, manipulated, or controlled in a study (Grove, Burns, & Gray, 2013). The independent variable in this project was the culturally sensitive diabetes education class. The dependent variable, or outcome variable, was the participants' knowledge level prior to and upon completion of the intervention. The validity of a study must be determined in order for the study to be scientifically sound (Zaccagnini & White, 2011). In order for a study to be determined valid, all variables must be defined and free from confounding variables (Zaccagnini & White, 2011).

Variables must be defined in order to give them theoretical meaning (Fawcett & Garity, 2009). For the purpose of this project, the independent variable of *culturally sensitive health care/education* was defined as that which is responsive to the values, beliefs, and practices of individuals who share a cultural and linguistic heritage and identifying characteristics such as religion, race, and socio-economic status (Tucker et al., 2014). For the purpose of this project, *diabetes knowledge*, the dependent variable, was defined as an acceptable level of knowledge that one needs in order to maintain a hemoglobin A1c level below 7%.

Descriptive statistics are crucial to understanding the fundamental properties of variables being studied (Grove, Burns, & Gray, 2013). The numerical data that was retrieved from this project was the project participants' diabetes knowledge before and after the educational intervention. The paired *t* test was used to analyze the data collected from this project. The utilization of the paired *t* test occurs when the means for the same group of people are compared at two points in time (Polit, 2010). The paired *t* test can also be used to compare two samples in cases where each value in one sample has a natural partner in another sample, meaning that it considers the difference in the values of the two samples (Statistical Tutorial Paired *t* test, n.d.). This project compared the increase in diabetes knowledge gained from the administration of a traditional non-culturally based diabetes self-management class to the increase in knowledge resulting from the administration of a student-developed diabetes education class that incorporated generally known elements of the Hispanic culture. The Statistical Package for the Social Sciences (SPSS, 2013) Version 21 for Windows was used for statistical analysis of the

data obtained from the diabetes pre and post-tests. I manually placed all data into the SPSS software for analysis.

Summary

The purpose of this project was to determine if a diabetes self-management education program, using generally known elements of the Hispanic culture, could improve overall diabetes knowledge in the Hispanic population when compared to a non-culturally based diabetes self-management program. In order to achieve the desired outcome of valid data, the project design and method must be carefully and thoroughly planned in order to ensure a scientifically valid study (Grove, Burns, & Gray, 2013). A research design is a blueprint for maximizing control over factors that could interfere with a study's desired outcome (Grove, Burns, & Gray, 2013). The project was designed to ensure that all mandates of Walden University's IRB had been met and careful consideration was given to ensure the protection of all project participants' human rights. The instruments used for data collection were used in previous studies and had been found to be valid and reliable. All education materials were written at a level that facilitated ease of comprehension by all project participants. The paired *t*-test was chosen for data analysis because the test allows for the comparison of dependent groups of people to determine if one education program was superior to the other education program. The findings of this project have the potential to change evidence-based practice and to decrease the health disparities of the Hispanic diabetic population, thus producing positive social change within this ethnic group.

Section 4: Findings and Recommendations

Introduction

The purpose of this quasi experimental control group pre/post-test project was to determine whether diabetes self-management knowledge would be improved through the use of a culturally based diabetes self-management program for Hispanic adults with diabetes, which I developed using generally known elements of the Hispanic culture, when compared to a non-culturally based diabetes self-management program. The research question asked for the project was whether or not a diabetes self-management education program that incorporated generally known elements of the Hispanic culture could improve diabetes knowledge in the Hispanic population when compared to a non-culturally based diabetes self-management program.

Health disparities within the Hispanic population continue to be of significant importance to the United States health care system, especially due to the high rate of diabetes among Hispanics in comparison to other ethnic groups and the associated comorbidities that adversely affect this population. Hispanics continue to be a vulnerable population of interest to the United States health care system because of their increased susceptibility to chronic diseases such as obesity, diabetes, and hypertension (Valencia, Oropresa-Gonzalez, Hogue, & Flores, 2015). Medical management and patient centered self-management of diabetes are both of paramount importance to the successful treatment of diabetes and the prevention of comorbidities associated with the disease. Diabetes self-management education in the Hispanic diabetic population has traditionally been lacking in substance in areas such as culture and socioeconomic factors, which often leads to gaps in diabetes care and education (Alvarez, 2015). Many diabetes self-

management educational offerings generally consist of generic and culturally bland classes that overlook the cultural needs of the Hispanic population.

Project participants were administered the MCDRTC Diabetes Knowledge Test, (Appendix A) as a pre-test prior to any education class, then again as a post-test after participation in either the generic diabetes class or the self-developed, culturally based diabetes class. The test scores were analyzed using the Statistical Package for the Social Sciences (SPSS, 2013), Version 21 for Windows, paired *t* test analysis. Findings from the project indicated that there was a statistically significant increase in the diabetes knowledge of the experimental group after the culturally based education class was attended, but that there was no increase in the diabetes knowledge of the control group. Section 4 presents an in-depth review of the project's findings, implications for individuals, communities, and institutions, recommendations to address practice gaps for this problem, and the strengths and weaknesses of the project.

Findings and Implications

IRB approval from Walden University was obtained (IRB approval number 07-31-15-0446892), prior to the start of the project. The research question for the project asked whether or not a diabetes self-management education program that incorporated generally known elements of the Hispanic culture could improve diabetes knowledge in the Hispanic population when compared to a non-culturally based diabetes self-management program. The goal of the project was to determine whether a culturally based diabetes self-management program would improve diabetes knowledge in Hispanics with diabetes when compared to a non-culturally based diabetes self-management program.

Data collection consisted of gathering demographic data from all project participants (Appendix C), and the results garnered through the administration of the MDRTC Brief Diabetes Knowledge Test (Appendix A) used as both a pre-test and post-test for both my self-developed, culturally based diabetes self-management class and the control group's generic education class. Study participants were referred for inclusion in the project by medical providers at a local free clinic through the use of a written referral. A total of 30 referrals were submitted for participation in the project. Of these referrals, 27 people agreed to participate in the project; however, only 23 participants actually showed up. At the completion of the project, the collected data did indicate a statistically significant difference between the pre-test and post-test scores of the experimental group but showed that the mean score for the control group did not change from the pre-test to the post-test. In-depth data analysis is presented later in this chapter.

Project Participant Demographics

The project took place at a local community clinic located in The Woodlands, Texas. All project participants were recruited from the same community clinic. Upon arriving, the 23 project participants were placed into either the experimental group or the control group by a random lot draw. The project included both male and female participants, all with a diagnosis of diabetes and a hemoglobin A1c level of greater than 7. Of note is that there was a larger number of male project participants than female participants. The group's average interval since being diagnosed with diabetes was 7.7 years. The education level of the project participants varied, with 8 individuals indicating some high school education, 8 having completed the sixth grade, and 7 not having received any formal education. Fifteen of the 23 project participants indicated that they

had never previously attended any diabetes education classes, and 8 of the 23 participants stated that they had attended at least one diabetes class in the past, but, that the diabetes education had never been culturally based. Figures 1, 2, 3, 4, and 5 break down the demographic data.

Figure 1

Experimental group gender makeup

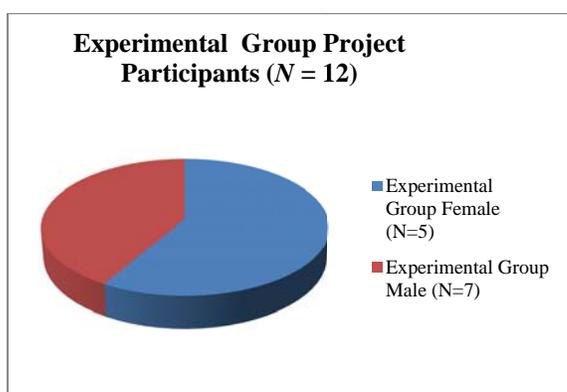


Figure 2

Control group gender makeup

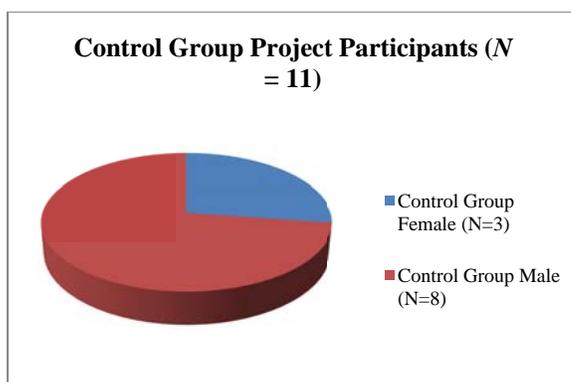


Figure 3

Project participants' age and marital status

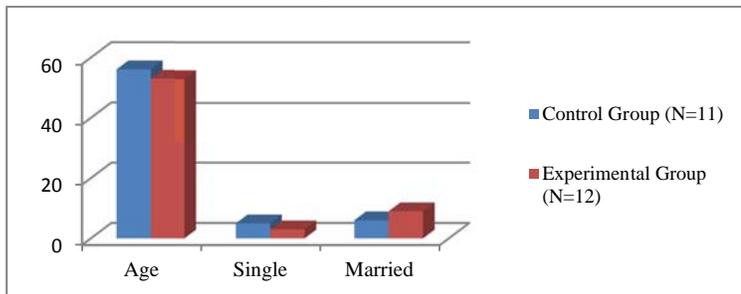


Figure 4

Experimental group education level

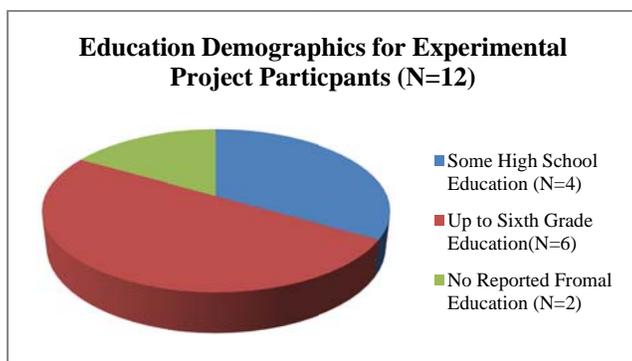
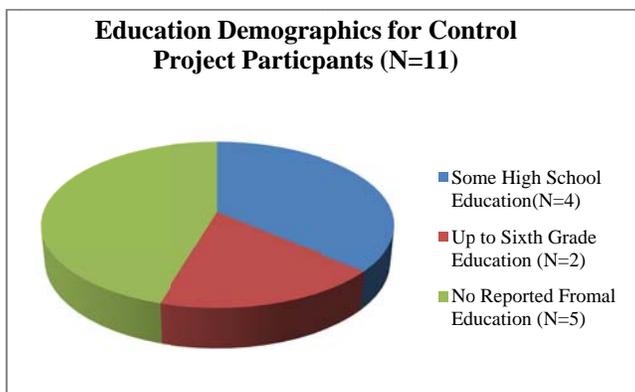


Figure 5

Control group education level



Data Findings

A paired-sample t test, using the Statistical Package for the Social Sciences (SPSS, 2013), Version 21 for Windows, was conducted to compare the pre-test and post-test results of the experimental group and the control group. The study population for the entire project was 23 individuals. The average pre-test score for the experimental group was 10.25, and the average post-test score was 11.25. The pre-test average for the control group was 9.18. The post-test showed no difference, with an average that was also 9.18 (Table 1). The Sig (2-tailed) value for this self-developed, culturally based diabetes self-management class was 0.007, and the value for the control group was 1.000 with a p value of 0.05 (Table 2).

Table 1

Paired-Sample Statistics

		Mean	N	Std. deviation	Std. error mean
Pair 1	Experimental group pre-test	10.25	12	1.215	0.351
	Experimental group post-test	11.25	12	1.055	0.305
Pair 2	Control group pre-test	9.18	11	2.359	0.711
	Control group post-test	9.18	11	3.371	1.016

Table 2

Paired-Sample t Test

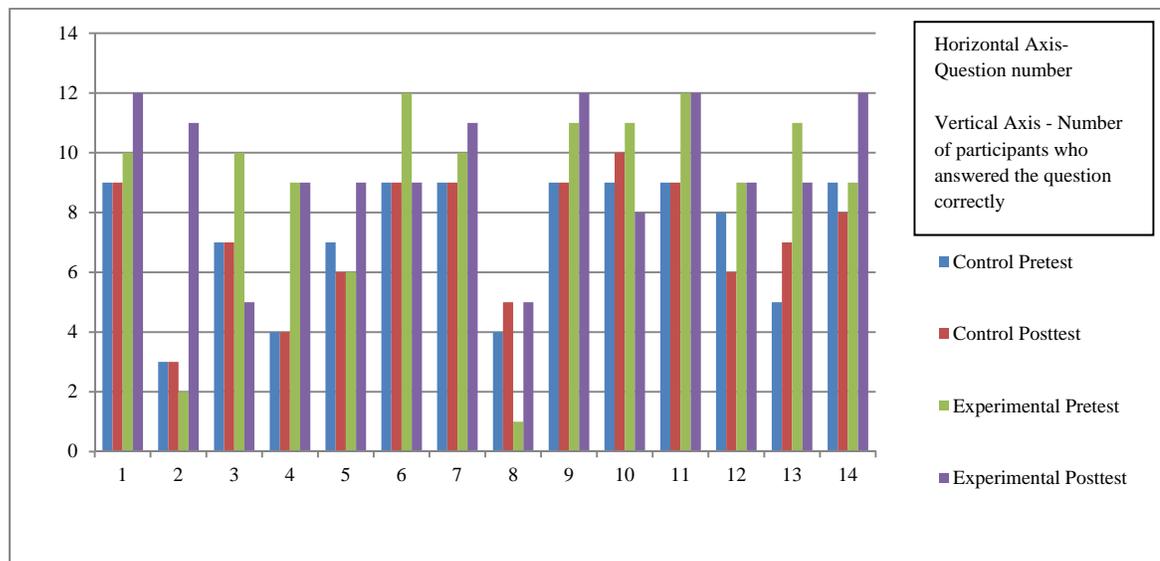
	Mean	Std. deviation	Paired differences		t	df	Sig. (2-tailed)	
			Std. error mean	95% confidence interval of the difference				
				Lower				Upper
1	-1.000	1.044	0.302	-1.664	-.336	-3.317	1	0.007
2	0.000	1.844	0.556	-1.239	1.239	0.000	1	1.000

These results indicate that there was a statistically significant difference between the pre-test and post-test scores of the experimental group since the Sig (2-tailed) value of 0.007 fell well below the maximum value of 0.05 that is required to show significance. However, since the mean values for the pre-test and post-test for the control group were identical, the Sig (2-tailed) value for that comparison came out to 1.000, which is far above 0.05 and essentially means no statistical change.

Upon examination of how each question was answered by the individual participants of both the experimental group and the control group, it was shown that the experimental group answered more questions correctly on the post-test than the control group. The average mean of the pre-test when compared to the posttest of the experimental group went from 10.25 to 11.25, whereas the mean of the pre-test and post-test of the control group stayed steady at 9.18. Figure 6 provides a graphical analysis of how each pre-test and post-test question was answered by both the experimental group and the control group.

Figure 6

Analysis of individual test questions



Implications of Findings

Since this project indicated a significant difference in knowledge gained when a diabetic education class included generally known elements of the Hispanic culture, the implications of the findings could be clinically and emotionally significant for Hispanics living with diabetes. Health care institutions, and, communities at large, may also find these implications worth consideration. This self-developed, culturally based diabetes self-management class, when compared to the control group education, did show a vast increase in the level of diabetes knowledge. An unanticipated observation was made when I was asked by a study participant whether or not I had anyone in my family who was Hispanic. Prior to this particular question, the study participants had not been very engaged verbally in the class. Once it was revealed that I had a Hispanic son-in-law, many project participants seemed to take a more active role in the class. This may

indicate that Hispanics are more comfortable and willing to engage with a person who has personal or familial links to the Hispanic culture.

As previously stated, Hispanics represent the fastest growing ethnic group in the United States. This indicates that communities should be actively finding ways to address the health disparities affecting this ethnic group. Factors such as language barriers, health literacy, and adverse socioeconomic or environmental situations all play a role in the self-management of diabetes. Many of the project participants were employed as yard workers and day laborers or were full-time homemakers. All of them indicated that it was often difficult to find transportation and the time needed to attend medical appointments and educational classes at the clinic. During the class, many participants also indicated that it was hard for them to afford the healthy foods that they should be eating in order to combat present or future health problems. Communities with large Hispanic populations should be aware that transportation plays a major role in the ability of a person to shop for healthy and affordable food due to the fact that many Hispanic communities are isolated from metropolitan or urban areas and often lack access to a local grocer.

Health literacy could also play a role in diabetes self-management. Many of the class participants in both the control and experimental groups often required additional education concerning medical terms and phrases that are associated with diabetes. A low level of health literacy may have an impact on a diabetic Hispanic's understanding of diabetes and the steps needed to control the disease. All diabetes self-management classes should assess the individual health literacy levels of the class participants prior to the beginning of the class, via a health terminology session, to ensure that all participants

have the ability to comprehend the education. A health literacy assessment will also help the class facilitator tailor the education for each class participant.

Transportation often plays a role in obtaining diabetes education. Three potential project participants indicated that they could not participate in the project due to their lack of transportation. The difficulty of attending and participating in a diabetes education class should be of great concern for all communities with large Hispanic populations.

The economic and social impact of Hispanics with diabetes on the nation's health care system is significant (Alvarez, 2015). Managing diabetes reduces health risks in Hispanics with diabetes, which directly results in fewer hospitalizations and reduced health care costs (Lopez-Class & Jurkowski, 2010). The project findings indicated that many of the study participants had never received any form of diabetes education, and several participants of the experimental group disclosed during the class that they were unaware that diabetes could cause blindness, renal disease, cardiovascular disease, or limb amputation. Valencia et al. (2015) indicated that language barriers and other social limitations may dissuade Hispanics from entering health care systems. Language barriers and perceptions concerning illness, adherence to treatment, and understanding of treatment can all play a role in diabetes care and self-management. Diabetes self-management classes that are sensitive to these particular nuances of the Hispanic culture could potentially decrease the stress placed upon today's health care system and reduce the mortality and morbidities associated with diabetes and Hispanics.

Culturally based diabetes education can effect social change in many ways. The participants of this self-developed education class group indicated that they wanted to

become an integral part of their own diabetes management and treatment but often did not have the resources or knowledge necessary to accomplish that goal. Alvarez (2015) stated that Hispanics often feel less engaged in mainstream society than the rest of the United States population. Education classes that acknowledge and identify with the Hispanic culture can help to empower Hispanics with diabetes to make better diet, exercise, and lifestyle choices that are needed to control their diabetes. Culturally based diabetes education allows Hispanics to become active participants rather than passive spectators in their treatment, thus improving health outcomes. Empowerment of Hispanics with diabetes can often have a multiplier effect to encourage participation in diabetes self-management (Alvarez, 2015). If someone feels empowered and comfortable in any endeavor, that person can have a profound effect on others, leading to the same positive behavior. Empowerment of individuals to improve their health and lives always facilitates positive social change.

Recommendations

One of the important recommendations that can be derived from this project is that culturally based diabetes education should be used when performing diabetes self-management education for Hispanics with diabetes. Education classes should be offered throughout the community in venues such as churches, community centers, and community health fairs. Conducting education in a community setting would help in overcoming the transportation difficulties that preclude some Hispanics with diabetes from receiving diabetes self-management education. Another recommendation arising from the project would be to ensure that people teaching the education class have strong links to the Hispanic community. This would help to overcome the sense of

disenfranchisement that is felt by many Hispanics when interacting with health care professionals or the health care system. A final recommendation of this project is that both general and health literacy knowledge and language skills be assessed prior to the commencement of all diabetes self-management programs. This will ensure that the content of the diabetes self-management program is easily understood and comprehended by all program participants. Health care workers need to help open doors for Hispanics with diabetes to ensure that those people have the required knowledge, skills, and sense of empowerment to interact with health care workers, both in the community and health care systems, to manage their diabetes.

Strengths and Limitations of the Project

A limitation to this project was the sample size that was used. The power analysis indicated a sample size of nine for each group was sufficient to obtain a power level of 0.80 and a significance level of 0.05. Although the minimal project population size was attained, it was deemed that a larger project population may have given better results in regard to the efficacy of this self-developed, culturally based diabetes self-management class. Another limitation noted was in the referral process. The project did receive sufficient referrals, but it was time prohibitive for both me and the associated clinic to reschedule patients to return to be screened for participation. This part of the project may have been more streamlined through telephone consultations or mailed project participation invitations for the convenience of the participants and the participating clinic. Another limitation of the project was that it did not include any formal follow-up. Follow-on projects could include a tele-health component that includes reinforcing

diabetes education, the ability for participants to ask further questions, and also to provide support to the class participants with their diabetes self-management skills.

Project strengths can be seen in the realization that people with links to the Hispanic culture might be better suited to facilitate the class. Once it was established that I had a familiar link to the Hispanic population, class participation and interest increased. Another strength of this project was that it helped to identify a need in the participating clinic and has helped to encourage new methods for interacting with and engaging Hispanics with diabetes. During the preparation and research for this project, the clinic staff was educated on the strong cultural beliefs that play a pivotal role in how Hispanics with diabetes perceive and self-manage their diabetes. Due to this education, health care workers in the clinic have a new understanding of the importance that culture plays in the Hispanic population, particularly in diabetes self-management.

Analysis of Self

During this project, I feel that my skills as a leader, project manager, nurse practitioner and nurse scholar have grown tremendously. Prior to the start of the project, I felt that I had a solid foundation of what it meant to be a nurse leader and project manager. As I progressed through the project, I realized that my leadership and managerial skills were merely adequate. During the planning and implementation of this project, I have grown as both a leader and manager, especially in the arena of having a better understanding of how to facilitate change within a health care system.

I believe that scholarship in nursing is an ongoing process, and although you are considered an expert in your field once you receive your Doctorate of Nursing Practice (DNP), your scholarly pursuit never truly ends. Bringing evidence-based practice into

clinical nursing is a challenging and much needed process. While working on this project, I came to realize that evidence-based nursing and its use in the clinical setting is paramount to patient safety and improved health outcomes. I now believe that I have the knowledge and skills required to bring evidence-based nursing into the clinical setting, but, much more importantly, I have the drive to do so. I feel that I have grown overall as a person both professionally and personally during the course of this project and its implementation.

During the completion of this project, I encountered several challenges. The overwhelming challenge I had to overcome was my own shortcomings in my ability to be patient and let the process of the project take its normal pace. I have now realized that patience allows one time to think rationally about a situation and plan for the appropriate method in which to handle it. Another challenge I faced was in learning how to deal with many completely different people and their thoughts and attitudes concerning how a project or intervention should be developed and integrated. My skills as an arbitrator have grown, and I have realized that all of the project stakeholder's opinions matter and should never be taken lightly.

This journey has made me a better person in all aspects of my life by teaching me the value of patience and listening and has given me the drive to improve the profession of nursing. My long term goals after the completion of my DNP, is to continue to practice as a Family Nurse Practitioner, and, at the same time, bringing new research into the clinical setting. I plan to continue to work on improving diabetes knowledge and self-management skills for diabetic Hispanics. Education will also play a significant role in my long term plan. I will continue as a nurse educator at both the baccalaureate and

Master's levels. I feel that, in the field of nursing, positive social change starts in the classroom with the education of nurses on the importance of social responsibility in patient care and the use of evidence based practice.

Summary

Diabetes in the Hispanic population is a problem that poses serious risk to communities and the US health care system. As the Hispanic population rises in the US, so will the number of diabetes cases and the comorbidities associated with those cases. The cultural beliefs of Hispanics often inhibit the treatment and self-management of diabetes. Aponte, Campos-Dominguez, & Jaramilla (2015) state that there is an urgent need to explore how Hispanics understand, perceive, and experience behavioral change in relation to their diabetes and to identify and incorporate more culturally sensitive interventions and strategies that may be helpful in diabetes self-management. This project has shown that the Hispanic population has strong cultural beliefs that play an integral role in the perception and management of their health and health seeking behaviors. It has been demonstrated that diabetes education programs should incorporate major aspects of the Hispanic culture to garner the most success in their application. Diabetes self-management education for Hispanics should be based upon the long standing cultural traditions of Hispanics and include important cultural aspects such as family, community, traditional foods, and religious beliefs. Culturally specific diabetes education helps to empower Hispanics with diabetes to manage their disease without giving up their cultural heritage and beliefs. Empowerment of an individual or group helps to promote positive social change and improve health care outcomes for all people.

Section 5: Scholarly Product

Submitted for publication

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Appendix A: University of Michigan Health System MDRTC Brief Diabetes Knowledge

Test

1. The diabetes diet is:
 - a. the way most American people eat
 - b.* a healthy diet for most people
 - c. too high in carbohydrate for most people
 - d. too high in protein for most people

2. Which of the following is highest in carbohydrate?
 - a. Baked chicken
 - b. Swiss cheese
 - c.* Baked potato
 - d. Peanut butter

3. Which of the following is highest in fat?
 - a.* Low fat milk
 - b. Orange juice
 - c. Corn
 - d. Honey

4. Which of the following is a “free food”?
 - a. Any unsweetened food
 - b. Any dietetic food
 - c. Any food that says “sugar free” on the label
 - d.* Any food that has less than 20 calories per serving

5. Glycosylated hemoglobin (hemoglobin A1) is a test that is a measure of your average blood glucose level for the past:
 - a. day
 - b. week
 - c.* 6-10 weeks
 - d. 6 months

6. Which is the best method for testing blood glucose?
 - a. Urine testing
 - b.* Blood testing
 - c. Both are equally good

7. What effect does unsweetened fruit juice have on blood glucose?
 - a. Lowers it
 - b.* Raises it
 - c. Has no effect

8. Which should not be used to treat low blood glucose?
- a. 3 hard candies
 - b. 1/2 cup orange juice
 - c.* 1 cup diet soft drink
 - d. 1 cup skim milk
9. For a person in good control, what effect does exercise have on blood glucose?
- a.* Lowers it
 - b. Raises it
 - c. Has no effect
10. Infection is likely to cause:
- a.* an increase in blood glucose
 - b. a decrease in blood glucose
 - c. no change in blood glucose
11. The best way to take care of your feet is to:
- a.* look at and wash them each day
 - b. massage them with alcohol each day
 - c. soak them for one hour each day
 - d. buy shoes a size larger than usual
12. Eating foods lower in fat decreases your risk for:
- a. nerve disease
 - b. kidney disease
 - c.* heart disease
 - d. eye disease
13. Numbness and tingling may be symptoms of:
- a. kidney disease
 - b.* nerve disease
 - c. eye disease
 - d. liver disease
14. Which of the following is usually not associated with diabetes?
- a. vision problems
 - b. kidney problems
 - c. nerve problems
 - d.* lung problems

Survey Instruments

The Michigan Diabetes Research and Training Center (MDRTC) developed several survey instruments for diabetes patients and health professionals. By downloading the forms you are agreeing to acknowledge the MDRTC as the source of the items in the survey instruments in any written instruments, reports, or publications resulting from their use or reproduction (Michigan Diabetes Research and Training Center, 2014).

Appendix B: Education Class PowerPoint

**LIVING
“LA BUENA VIDA”
WITH DIABETES**



CLASS OBJECTIVES

CLASE OBJETIVOS



- Improve Diabetes Knowledge
- Mejorar el Conocimiento de la Diabetes
- Identify Healthy Food Choices
- Identificar Opciones de Alimentos Saludables
- Understand the Importance of Exercise
- Comprender La Importancia del Ejercicio
 - Diabetes Control - Control de la Diabetes
 - Weight Control - Control de Peso
- The Role of Family and Friends in Diabetes Control and Management.
- Papel de Familia y Amigos en el Control y Manejo de la Diabetes
- To help you Live Full and Happy Lives with Diabetes
- Para Ayudarle a la Vida de Una Vida Plena y Saludable con Diabetes

CLASS TOPICS

TEMAS CLASE

Diet - Dieta

Exercise - Ejercicio

Medication - Medicación

Family - Familia

Support - Apoya



MEALS COMIDAS

Breakfast-Desayuno

Lunch- Almuerzo

Dinner- Cena

Snacks- Bocado



- Calories-Calorias
 - 1550-1650 a day - dias
- Carbohydrates- Carbohidratos
 - 45% of calories
- Trans Fats- Trans Destino
 - < 10%
- Cholesterol - Colesterol
 - 300mg a day - dias
- Fiber- Fibra
 - >25 Grams a day - dias
- Sodium- Sodio
 - No more than 2300mg a day - dias

Referencias

American Diabetes Association (2014). Recipes For Healthy Living. Retrieved from <http://www.diabetes.org/info-recipes/about-our-meal-plans.html>

MEALS COMIDAS

When To Eat

Controle Su Peso



REFERENCIA

NATIONAL DIABETES INFORMATION CLEARINGHOUSE (2014). WHAT I NEED TO KNOW ABOUT EATING AND DIABETES. RETRIEVED FROM: [HTTP://WWW.DIABETES.NIDDK.NHLBI.GOV/IN/PUB/EATING_02/NOID_ASRX](http://WWW.DIABETES.NIDDK.NHLBI.GOV/IN/PUB/EATING_02/NOID_ASRX)

DIET

Fruit- Fruta

- Fruit in natural juice or light syrup
- Fresh Fruit – Fruta Fresca
 - Apples - Manzanas
 - Grapes -Uvas
 - Berries - Bayas
 - Cantaloupe - Cantalupo
 - Oranges -Naranjas
 - Citrus Fruits -Citricos
 - Papaya
- Fruit Juice – Zumo de Frutas
 - ½ cup a day



Referencias
American Diabetes Association (2014). Recipes For Healthy Living.
Retrieved from <http://www.diabetes.org/info-recipes/about-our-meal-plans.html>

DIET

VEGETABLES (VEGETALS)

Good Vegetables – Buenas Verduras

- Spinach -Espinacas
- Artichoke -Atrichok
- Asparagus -Esparragos
- Onions -Cebollas
- Peppers -Pimientas
- Squash
- Salad Greens- Ensaladas Verdes



Bad Vegetables- Verduras mals para usted

- Potato -Patata
- Corn -Maiz
- Green Peas
Guisantes Verdes
- Plantain – Platano
- Eat in Small Portions
Comer en Pequeñas Porciones.

Referencias
American Diabetes Association (2014). Recipes For Healthy Living.
Retrieved from <http://www.diabetes.org/info-recipes/about-our-meal-plans.html>

DIET

Bread/Grains – Pan/Granos

- Whole Grains
 - Whole grain or Corn Tortillas
 - Gran Entero/Tortilla de Maiz
 - Brown Rice
 - Arroz Integral
 - Whole Wheat Bread
 - Pan de Trogo Entero
 - Quinoa



REFERENCE
 AMERICAN DIABETES ASSOCIATION (2014). PROTEIN FOODS. RETRIEVED FROM: <http://www.diabetes.org/food-and-fitness/food/what-can-i-eat/making-healthier-food-choices/meat-and-plant-based-protein.html>

DIET

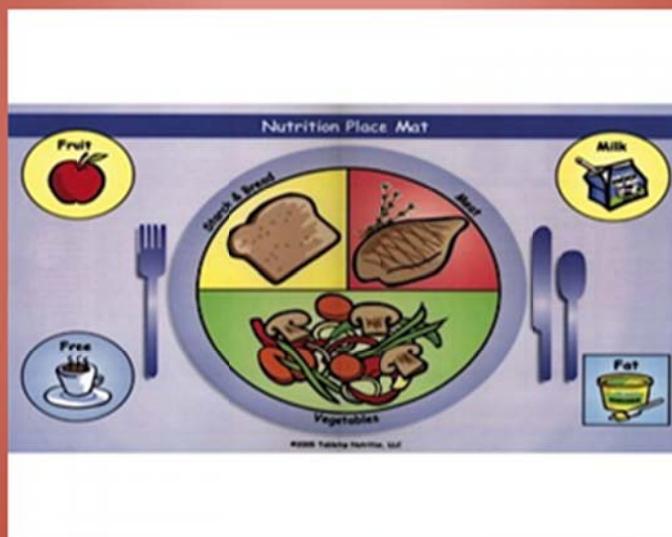
PROTEIN- PROTEINA



- Beans - Frijoles
 - Black/Pinto Beans
 - Baked Beans/Refried Beans
- Fish & Seafood – Pescados/Mariscos
 - Tuna - Atun
 - Salmon
 - Sardines - Sardina
 - Catfish - Bagre
 - Shrimp - Camaron
- Meat - Carne
 - Chicken - Pollo
 - Turkey - Pavo
 - Lean Beef - Carne de Res Magra
 - Lean Pork - Carne Magra de Cerdo
 - Rabbit - Conejo
 - Venison - Venado
- Other Forms of Protein
 - Egg whites and Egg Substitutes
Clares de Hueveo
 - Reduced Fat Cheese
Queso Reducido en Grasa
 - Cottage Cheeses - Requeson

REFERENCE
 AMERICAN DIABETES ASSOCIATION (2014). PROTEIN FOODS. RETRIEVED FROM: <http://www.diabetes.org/food-and-fitness/food/what-can-i-eat/making-healthier-food-choices/meat-and-plant-based-protein.html>

MEAL PLATE PLACATA DE LA COMIDA



Referencia
 Medical Nutrition Therapy For The Patients With Diabetes (2004) Retrieved from
<http://diabeticsmanager.gov.nv.us.com/ncgi/y6-60276/Medical%20Nutrition%20Therapy%20For%20The%20Patient%20With%20Diabetes>

DIET



REFERENCIA
 NATIONAL DIABETES INFORMATION
 CLEARINGHOUSE (2004). WHAT I NEED
 TO KNOW ABOUT EATING AND
 DIABETES. RETRIEVED FROM:
[HTTP://WWW.DIABETESLOOKBOOK.ORG/01/04/PUB%20EATING_0211NDCL15PK](http://www.diabeteslookbook.org/01/04/PUB%20EATING_0211NDCL15PK)

- **Aerobic (Aerobic)**
 - 30 Minute 5 times a week
30 minutos 5 veces a la Semana
 - 10 minutes 3 times a day -10 minutos 3 veces al dia
 - 15 minutes 2 times a day -15 minutos 2 veces al dia
- **Strength - Fuerza**
 - 2 Times a week -
2 Veces a la Semana
- **Stretching and Balance Exercise**
Estiramiento y Equilibrio
 - Daily - Diario

EXERCISE EJERCICIO

HOW LONG? CUANTO TIEMPO?



REFERENCES
AMERICAN DIABETES ASSOCIATION (2014). AEROBIC EXERCISE. RETRIEVED FROM: [HTTP://WWW.DIABETES.ORG/FOOD-AND-FITNESS/FITNESS/TYPES-OF-ACTIVITY/WHAT-WE-RECOMMEND.HTML](http://www.diabetes.org/food-and-fitness/fitness/types-of-activity/what-we-recommend.html)

TYPES OF EXERCISE TIPOS DE EJERCICIO



- Running -Funcionamiento
- Walking - Para Caminar
- Dancing - Baile
- Swimming - Natacion
- Playing Sports- Hacer Deporte
 - Soccer- Futbol
 - Football - Futbol Americano
- Gardening - Jardineria



REFERENCES
AMERICAN DIABETES ASSOCIATION (2014). AEROBIC EXERCISE. RETRIEVED FROM: [HTTP://WWW.DIABETES.ORG/FOOD-AND-FITNESS/FITNESS/TYPES-OF-ACTIVITY/WHAT-WE-RECOMMEND.HTML](http://www.diabetes.org/food-and-fitness/fitness/types-of-activity/what-we-recommend.html)

MEDICATION MEDICACION



Why Take Medication for Diabetes?

Por que Tomar la Medicacion para la Diabetes?



- To prevent your diabetes from hurting your (Para Evitar que su Diabetes se Hago Dano);

- Eyes - Ojos
- Heart - Carazon
- Kidneys - Rinones
- Circulation
Circulacion



MEDICATION MEDICACION

Oral Medication

Medicacion Oral

- Lowers blood sugar by swallowing a pill
 - Take just like your Doctor tells you.
 - Must be taken every day with a meal.
 - Do Not skip any medication unless you call your Doctor
 - If you are sick call your Doctor .

Referencia
American Diabetes Association (2014) Medication.
Retrieved from: <http://www.diabetes.org/living-with-diabetes/treatment-and-care/medication/oral-medications/>



Insulin - Insulina

- Lowers blood sugar by injecting yourself with a needle and syringe
 - Take just like your Doctor tells you.
 - Take your with a meal.
 - Do not skip any medication unless you call your doctor
 - If you are sick call your doctor



MEDICATION MEDICACION

THINGS TO REMEMBER COSAS PARA RECORDER



- Always take all of your medication.
- Never skip a dose.
- Take your diabetes medication with a meal .
- If you are sick or become sick call your doctor.
- Never borrow or trade your medication with friends or family.
- Never take a friends or family members medication.
- If you travel make sure you have enough medication and supplies to take while you are gone.

FAMILY FAMILIA

Will My Children
Get Diabetes?
Mis Hijo Tener
Diabetes?



- Children of people with diabetes often get diabetes due to;
 - Poor Diet
La Mala Alimentacion
 - Soda
 - Chips
 - Candy
 - Junk Food
 - No Regular Exercise
Sin Ejercicio Regular
 - Not being active on a daily basis
 - Being Over Weight
El Sobrepeso
 - Heredity - Hereditario
 - If a parent has diabetes the chance of their child getting it is 1 in 7.

Reference
American Diabetes Association (2014) Genetics of Diabetes. Retrieved
from: <http://www.diabetes.org/diabetes-basics/genetics-of-diabetes>

FAMILY FAMILIA

- Eat a Healthy Diet
Comer Una Dieta Saludable
 - Cook Healthy Food Together
 - Share Meals Together
- Exercise - Ejercicio
 - Take a Family Walk
 - Play Sports Together
 - Be Active Together
- Control Your Weight
Controle Su Peso
 - Plan Family Workouts
 - Encourage Each Other
 - Maintain a Healthy Weight

Things a Family Can Do Together!

Cosas Que Una Familia Puede Hacer Juntos!



DIABETES PROBLEMS PROBLEMAS DE LA DIABETES

High Blood Sugar

- Increase in Urination
Aumento de la Miccion
- Increase in Thirst
Aumento de la Sed
- Blurred Vision
Vision Borrosa
- Shortness of Breath
Falta de Aliento
- Breath Smells Like Fruit
Aliento Huele a Fruta
- Dry Mouth
Sequedad en la Boca
- Nausea and Vomiting
Las Nauseas y Los Vomitos



Low Blood Sugar

- Shakiness - Duda
- Nervous - Nervioso
- Sweating, Chills & Clamminess
Frio, Sudor & Clamminess
- Confusion - Confusion
- Irritability - Irritabilidad
- Light Headed/Dizzy – Mareo o Vertigo
- Hunger/Nausea – Hambre o Nauseas
- Tingling or numbness in lips or mouth.
Hormigueo o Entumecimiento de los Labios de la Boca

Reference:
American Diabetes Association(2014). Living with Diabetes.
Retrieved from: <http://www.diabetes.org/living-with-diabetes/treatment-and-care/blood-glucose-control/hypoglycemia-low-blood.html>

**THINGS TO CHECK
EVERY DAY
COSAS A
COMPROBAR TODOS
LOS DIAS**



- **Check Your Feet Everyday**
Revisé Sus Pies Todos Dias
 - Never Walk Barefoot
Nunca Camine Descalzo
 - Always wear closed toed shoes
Siempre Use Zapatos con Punta Cerrada
 - Be Careful Cutting your Toenails
Ten Cuidado al Cortarse Las Unas de los Pies
- **Make Sure Wounds Do Not Become Infected**
Asegurarse de Que Las Heridas no se Infeccionan
- **If you have a Glucometer at home**
 - Check your blood sugar 2-3 times a day.
- **Eat Healthy Every Day**
Comer Saludable Todos Los Dias
- **Stay Active - Mantenerse Activo**
- **Take Your Diabetes Medicine Everyday**
Tomar Su Medicamento para La Diabetes Todos los Dias

**SUPPORT
SYSTEMS**

**SISTEMAS
DE APOYO**



- **Family - Familia**
- **Friends - Amigos**
- **Church - Iglesia**
- **Community - Comunidad**
- **Interfaith Community Clinic**
*Clinica Interreligiosa
Comunidad*

Questions?



Preguntas?

Appendix C: Demographic Questionnaire

Please select from the following choices

1. Gender Male / Female

2. Current age _____ Years

3. Marital status Married / Unmarried

4. Highest education received _____

5. How many years have you had diabetes? _____ Years

6. Have you ever participated in a diabetes education program before? Yes / No

7. If you have participated in a diabetes education class prior to this class, was it culturally based?
Yes / No

Appendix D: Project Referral Form

Name of Patient _____

Most recent hemoglobin A1c level _____

Last diabetes education class attended _____

Date of referral _____

Date of Return Appointment _____