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Vida Saludable (Healthy Life): A Pilot Program at Camino Clinic

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Abstract

Self-management and sustainable life changes are essential to achieve glycaemic control with Type 2 Diabetes (T2DM). Diabetes is challenging to navigate, especially for Hispanic immigrants living in the US. Hispanics are the largest US immigrant population and have an 80% higher occurrence rate of T2DM than other non-Hispanic, white adults.

Methodology

A pilot study was conducted at the Camino Clinic, implementing a culturally sensitive diabetes empowerment and educational program (DEEP).

Results

Pre and Post program participation HbA1c values and Diabetes Distress Survey scores were compared. Statistically significant improvements were achieved in both.

Discussion

Cultural practices influence an individual's health and impact their ability to cope and adopt improved self-management behaviours. Knowing the high rate of T2DM in this vulnerable population, it is imperative to implement culturally sensitive approaches for Hispanic Immigrants, in an effort to combat the disproportionately high rate of T2DM occurrence.

Introduction

At 18.7% of the total population, the Latino/Hispanic immigrant population is currently the largest minority in the United States (US). While this population continues to be the fastest growing population in the US, it also continues to grow as one of the largest segments of US healthcare consumption [1]. Health disparities, such as lower income levels and decreased access to culturally congruent healthcare, compounds the genetic susceptibilities of insulin resistance and obesity that are inherent in this population [2]. These noted factors perpetuate the incidence and severity of type 2 diabetes (T2DM) in this patient population. Type 2 diabetes occurs at a rate five times higher in Hispanic children over non-Hispanic white children and 80% higher in Hispanic adults than in non-Hispanic white adults. In addition to higher rates of occurrence, Hispanic patients also experience higher rates of diabetes-related complications. It has been documented in previous studies that ethnic minorities receive lower quality of preventative health services as well as more limited health services in general, compared to other individuals [3]. Statistically, one out of every four US healthcare dollars is spent on disease complications from type 2 diabetes. Knowing the high occurrence in this vulnerable population, it is imperative to find better ways to intervene. The patient population of the Camino Clinic located in Charlotte, North Carolina is approximately 95% immigrant Latino individuals. Out of the thousands of patients the clinic serves, greater than 25% have a documented diagnosis of type 2 diabetes. Many of these patients served in this primary care setting have unique stories of treacherous migration, often involving sacrifice and struggle. To listen to their individual stories, one will hear depictions of journey from more than twenty different Latin countries from all around the world.

Many of these patients are newer to the United States, oftentimes coming to the clinic for first time medical care in the US,

or at the very least, the first time receiving medical care after an extended period. The Camino Clinic was established in 2003 after a community need was identified by the latino church-Camino. Located in Mecklenburg County, North Carolina (a county currently having a 14% Hispanic population), this clinic was originally much smaller and was only open part-time (CDC, 2020). Unfortunately, the Latino community was hit incredibly hard during the COVID-19 pandemic. The Centers for Disease Control reports that Hispanic individuals are 1.7 times more likely to contract COVID-19, 4.1 times more likely to be hospitalized fromCOVID-19 and 2.8 times more likely to die from the virus than non-Hispanic white individuals(CDC, 2021). In addition to the health vulnerability, much of the immigrant population (especially the undocumented) had little to no financial safety net during the shutdown of the country. Over the last several years in this pandemic, the clinic has grown quickly due to these unique needs. The health clinic is part of a larger organization titled, Camino Worldwide Inc. This larger organization includes a thrift store (The Wearhouse), a food pantry (Food Farmacy), behavioural health services (Camino Contigo), an exercise facility (Camino Vida) and a research department, Camino Research Institute. The goal of the organization is to provide resources that can help the patient improve in all areas of their life. Today the clinic and other segments of Camino Worldwide serves as a major resource for Hispanic immigrants in the Charlotte area.

Background

Diabetes is challenging to manage, especially if you are a Hispanic immigrant with social barriers of culture, language non-concordance, or the possible lack of social and familial support. These barriers can lead to a low level of disease knowledge and a lack of motivation, thus hindering the ability to achieve improved glycemic control [4]. estimates that from 2010 to 2019, the Hispanic population in the US grew to an all-time high at just over 60.6 million. This increase accounts for the overall growth of this minority from 16% to 18% of the total US demographic make-up. The Hispanic sector is the largest minority living in the United States [5]. Disportioncate to other groups, the prevalence of Type 2 Diabetes in this population is 80% higher for Hispanic adults and five times higher for Hispanic children than the non-Hispanic white population (CDC, 2020). Many socioeconomic factors are believed to contribute to this; a higher prevalence of insulin resistance, genetic susceptibility to obesity, lower income levels, and barriers to healthcare (CDC, 2020). Of all the factors identified, barriers to healthcare, particularly decreased access to language concordant and/or culturally competent healthcare providers and environments and lack of social and familial support, are some of the greatest issues stated.

Development of this study

The primary author for this pilot study has been working in the Latino community for many years. While working in a variety of different roles; volunteer, nurse, educator, healthcare provider and researcher, the author has always been passionate about advocating for this population. Most recently working as a Family Nurse Practitioner in the non-profit Camino Clinic, the need for additional diabetes teaching became apparent. As previously stated, greater than 95% of the Camino Clinic patient population is Hispanic, representing over twenty Latin countries of origin. Of these patients, greater than 25% have a diagnosis of type 2 diabetes, many with uncontrolled haemoglobin A1c levels. Realizing that more resources are needed to combat this growing healthcare crisis, the pilot study was developed to determine if culturally specific educational interventions are helpful in lowering a patient's level of diabetes distress and potentially increasing their desire and/or ability to lower their daily blood glucose levels.

Purpose and goal

Understanding the challenges and vulnerability of this patient population, the purpose of this project was to explore diabetes distress levels and glycemic control before and after implementation of a culturally appropriate diabetes education program. The pilot study titled Vida Saludable or Healthy Life in English, focused only on type 2 diabetic, Latino patients utilizing the Camino Clinic. The goal of Vida Saludable was to observe whether participation in a culturally tailored, diabetes self-management education program, improved one's diabetes distress level and/or glycemic control for these patients. The initial aim was to recruit participants that meet the following criteria. Latino Immigrant status now living in the United States who are 18 years of age or older with a diagnosis of Type 2 Diabetes Diagnosis (excluding Type 1 Diabetes and Gestational Diabetes). Participants must be willing to commit to participate in the six-week program of diabetes education classes. The goal of Vida Saludable was to determine if these culturally tailored classes helped to improve diabetes distress and ultimately yield signs of glycemic improvement. Another important goal of Vida Saludable was to create a supportive resource for the diabetic patients at Camino. In addition to providing this immediate resource, it was important to establish long-term sustainability of the program, so that future classes could continue to be offered. This will be important for current patients of Camino, as well as those new to Camino in the months and years to come. Once copyright was purchased, Camino secured the right to use the DEEP curriculum for the next five years.

Literature Review

The initial literature search was conducted via Google Scholar. An additional advance search was conducted through Academic Search Ultimate, CINAHL Complete, and Medline. PubMed was accessed individually. A backwards search of the reference list from systematic and scoping reviews located on the topic was performed to exhaust the literature. Search syntaxes were developed considering these key terms. Health disparities, Hispanics, Latino or Latina, Mexican Americans, immigrants in the United States, diabetes distress, diabetes education classes and glycemic control or Haemoglobin A1c/blood glucose. If an article could not be identified or excluded based on the abstract, then it was advanced to a full text review. In addition to the increasing rate of the US Hispanic population, and multiple articles mentioning

their high predisposition for type 2 diabetes and complications thereof, the literature review flushed out other repeating themes. The terms Latino and Hispanic are interchangeably used to refer to a person of Spanish culture, regardless of race or country of origin [6]. This population is composed of individuals from Central American, South American, and Caribbean countries. The three largest subgroups of Hispanics living in the United States are Mexican, Puerto Rican and Cuban with Mexican being the largest and on average being more likely to be Limited English Proficient (LEP), have lower levels of education, experience poverty, and lack health insurance [7]. These subgroups have historically settled in urban US cities such as Miami, New York City and border cities of Texas and Southern California. This trend is rapidly changing, with Latinos increasingly moving into the suburbs and integrating rural communities across America. The larger cities historically have more bilingual providers, but these language concordant providers are scarce or sometimes non-existent in the rural healthcare facilities. Some of the greatest challenges Latinos/Hispanics face is that of the language and cultural barrier, especially in many of the rural hospitals. Many rural primary care offices lack trained translators and programs that are specifically designed for their cultural needs.

Methodology

Design

Vida Saludable was developed as a pilot study for the Latino community managing type 2 diabetes. This small study was designed to determine if additional classes and larger groups of participants would benefit from continuing this educational resource. Site approval was obtained from the Camino Worldwide Executive Director and the Camino board of Directors in September 2021. Research and communication with the University of Illinois, Chicago began, and steps were initiated to obtain copyright privileges for educational materials of the Diabetes Empowerment and Educational Program (DEEP). Additional applications were placed for individual training and certifications. Due to COVID-19 restrictions, training classes were via Zoom and offered through third party facilitators. Training consisted of 40 hours of classroom participation and testing, to complete the Peer Trainer certification. This project was approved by the Simmons University Institutional Review Board (IRB).

Sample size and recruitment

Using G-Power software [8]. a priori analysis was conducted to determine the minimum sample size needed to test the hypothesis. To achieve 80% power for detecting a medium eat a significance criterion of α=0.05, the results indicated that a sample size of N=15 was needed for a two tailed paired-t test. Participants were recruited from the patient population of Camino Clinic. An informational text message and email message was distributed to active patients. This is a common means of communication through the clinic for announcements and special offerings. After a ten-day recruitment, forty patients expressed interest in participating. Inclusion criteria was previously established. Type 2 diabetic patients who are 18 years and older and willing to commit to a six-week program. Type 1 Diabetic patients, pregnant mothers with gestational diabetes and paediatric children were excluded. The participants were informed that this program was for diabetes education. From the original 40 participants, 22 were determined to be eligible for the study. Based on the g-power analysis, the participant size of N=22 was adequate to test the hypothesis [9].

Setting

The classes were held in a regular classroom setting located on the Camino campus. Participants met on Tuesday evenings for approximately two hours. The first 15 minutes was socializing, and discussion of the healthy snacks and the healthy recipe provided. The remaining ninety minutes was dedicated to the diabetes educational modules of the Diabetes Empowerment Education Program (DEEP). For ethical integrity, informed consent was collected during the first class. The weasand characteristics of the pilot study were explained in detail to the participants. The participants of this study were notified that based on the results, other classes and/or studies may or may not be performed. As classes were held in a group setting, it was strongly encouraged that each participant be prudent with protecting the confidentiality of other participants' information shared during the class.

The Educational Program

The Diabetes Empowerment and Educational Program (DEEP) is a diabetes educational curriculum that was developed by the University of Illinois, Chicago. This program is a licensed diabetes self-management education (DSME) program and is recognized by Medicaid and Medicare as a valuable resource for navigating diabetes and specifically designed for minority populations [10]. Based on the empowerment approach to diabetes management, DEEP was developed to provide patients and communities with knowledge and tools to better manage type 2 diabetes. Using this approach, a collaboration is established between diabetes educators and their patients, in hopes of helping to improve the patient's attitude about their disease and help them to make informed decisions in the management of the diabetes [11]. The DEEP instructional lessons are developed around psychosocial self–efficacy and diabetes knowledge. The content of the DEEP curriculum that was developed specifically for the empowerment of minority individuals navigating diabetes, is made up of ninety minutes of class instruction. Each participant is encouraged to bring a family member or friend each week for immediate and long-term support. Implementation of the DEEP curriculum consists of eight learning modules, designed to be taught in weekly, 2-hour sessions over a span of six weeks. The eight modules address the basics of diabetes as a disease process and do so through illustrations and understandable terminology. The first module helps with understanding how the human body works. The program has activities that illustrate not only how the human body functions when it is healthy, but also how diabetes negatively impacts the different systems. Other modules address

both modifiable and non-modifiable risk factors, as well as the importance of physical activity and meal planning. There are two modules that address risk factors for diabetes and management of different diabetes medications, including insulin. In depth discussion occurs regarding diabetes medications and how they work in different locations of the body to lower the glucose level. The last module in the series is considered to be one of the most important modules. This module titled, mobilizing your friends and family, encourages participants to share their diagnosis and disease challenges to build their base of social support.

Data Collection and Measurements

The collection of the data was conducted at the beginning of the first class and then again at the end of the last class. The two measurements designated for data collection were Haemoglobin A1c scores and scores from the Diabetes Distress Survey (DDS). Descriptive data was collected during the first week of class and

included age in years, gender assigned at birth and country of origin (Table 1). The DDS was self-administered by the participants with pen and paper and then properly scored and recorded by the researcher. The primary outcome is to assess if there are positive changes in the first survey score compared to the second survey score, and improvements in the Glycosylated Haemoglobin A1c (HbA1c) results from pre class participation to post class completion.

Glycosylated Haemoglobin A1c

The Glycosylated Haemoglobin A1c test (HbA1c), is a common blood test used to diagnose and monitor diabetes (ADA, 2019). HbA1c is the only biomedical marker collected for this pilot study and is the best test to monitor how well daily blood glucose levels are being controlled. The HbA1c test result, reflects the average blood sugar level for the past two to three months (ADA, 2019). There are two ways that the HbA1c result can be obtained; venipuncture blood draw and a finger stick point of care. For the purposes of this study, a blood sample was obtained via a blood draw and sent to the lab a week prior to class participation as well as one week after completing the DEEP program.

Diabetes Distress Survey

Another measurement being utilized in this study is the Diabetes Distress Survey (DDS). First published in 2005, The DDS is a self-administered Likert Scale questionnaire, designed to determine if an individual's stress is linked to their diagnosis of type 2 diabetes [12]. The term, "Diabetes Distress" refers to when a person feels frustrated, anxious, or overwhelmed by their diabetes diagnosis. The symptoms of this type of distress are actually more common than symptoms of depression. Although diabetes distress can turn into depression if it is not managed properly, depression diagnosis is considered a mental health disorder, while diabetes distress is viewed more as an emotional reaction to the stressors of diabetes [13]. As the total DDS score is beneficial in determining if the diabetes distress exists, it is also a beneficial tool in determining what aspects of diabetes are causing the greatest amount of anxiety and frustration. In addition to the overall score, there are four subcategory scores (Emotional Burden, Physician- related Distress, Regimen-related Distress, and Interpersonal Distress) that flush out the points of greatest concern. Answers on the survey are scored from 1-6, with 1 being not a problem and 6 a very serious problem. This survey is available in an English (Cronbach alpha 0.83) and Spanish (Cronbach alpha 0.81) version, and both translations were made available for this study. This Diabetes Distress Survey was administered at the start of the first class and then again after the final class, in efforts to document the patient's diabetes distress level pre and post program participation [14].

Results

Demographics

The pilot study included 22 participants that met the inclusion criteria for the program (see Table 1). Of these 22 that participated in the diabetes education classes, 13 were female (59%) and 9 male (41%), ranging in age from 32-64 years old. A variety of different home countries were represented. Central America had the greatest representation at 12 (54.6%) and South America next at 7 (31.8%). The Caribbean countries were represented as well at 3 (13.6%). Of all the countries represented, Mexico (located in Central America) had the largest number of participants at 4 (18.3%).

Table 1: Descriptive Statistics.

Variable (N=22)		Frequency	Percentage
Age (Years)	31-40	3	13.60%
	41-50	9	40.90%
	51-65	10	45.50%
Gender	Male	9	41.00%
	Female	13	59.00%
Country of Origin	Caribbean	3	13.60%
	Central America	8	36.30%
	Mexico	4	18.30%
	South America	7	31.80%

Data Analysis and Results

Haemoglobin A1c results of the paired-t test prior to participation and post program participation indicated that there is a statistically significant difference in the values, with pre- program participation score (M=9.9, SD=1.3) compared to the post class participation score (M= 8.2, SD= 0.9). In the eight weeks of participating in the DEEP program, the class average of Haemoglobin A1c lowered 1.7%. This change indicated that at least during the DEEP program participation, a high clinical significance of lower glycemic levels resulted.

The Diabetes Distress Survey comparison of the mean total score of pre-program participation (M=4, SD= 0.7) and the post participation (M=1.7, SD= 0.4) resulted in a decrease of 2.3 points in the total score. This drop in the class average moved the group from "High" distress category into the "little to no diabetes distress" zone. Although the total score for the DDS is valuable, the subcategory scoring of the DDS revealed the most detailed information about the diabetes distress that the class was feeling. The emotional burden or "Can I manage this diagnosis long term" had the highest pre participation scores (M= 4.7 SD = 0.7) and did show statistically significant improvement post participation (M=1.9, SD= 0.6). Regimen-related distress ("Am I checking my blood sugar enough and doing insulin, right?") also scored high pre- participation (M=4.6, SD=0.7). This category revealed even greater post participation improvement (M=1.9, SD=0.5). Interpersonal Distress (feeling supported and having family and friends understand) had the largest drop in score from pre participation (M=4.5, SD= 1) compared to post participation scores (M=1.6, SD= 0.7). The last category, scoring the patient/ provider relationship, also revealed statistical significance but the pre participation scores were lower (M=2.8, SD=0.9). In this category, scores still improved, dropping 1.7 points (M=1.1, SD 0.2). The mean scores for all the pre and post participation DDS scores and the pre and post participation HbA1c results were analysed by using SPSS version 26 software (Table 2).

Table 2: Statistical analysis of pre and post Diabetes Distress Survey scores, broken down into specific distress categories.

	PAIRED DIFFERENCE (n=22)				T	df	Sig. (2. tailed)
	MEAN	STD Deviation	95% Confidence Interval of the difference				
			Lower	Upper			
pre/post DDS Total Score	2.3	0.7068	-2. 0757	-2.7025	-15.85	15.9	p<.001
pre/post DDS Emotional Burden	2.8	0.7684	-2.4593	-3.1407	-17.09	17.1	p<.001
pre/post DDS Physician Distress	1.7	0.9256	-1.2827	-2.1036	-8.58	8.6	p<.001
pre/post DDS Regimen Distress	2.7	0.8297	-2.3412	-3.077	-15.31	15.3	p<.001
pre/post DDS Interpersonal Distress	2.9	0.9957	-2.4372	-3.2846	-14.04	14	p<.001

Discussion

There are a few limitations to this study. Due to the designs of the project, there was an absence of a control group for comparison. Another limitation is that the patients that participated in the pilot project volunteered and were not randomly selected. The Diabetes Distress Survey is self-administered, which opens the potential for self-reporting bias. Confusion in the survey questions can happen, causing inaccurate answers. Skipping or omitting answers to some questions entirely is also a possibility, causing limitations from data gaps. Overall, the information from this study is supportive for continued diabetes classes. These outcomes are valuable in understanding more about the exact issues that Latino patients of Camino Clinic are finding most challenging when managing their diabetes. With this insight, steps can be taken to combat these concerns, maybe not by eliminating them entirely, but by lowering them to a more manageable level. Above all else and most importantly, this program is another resource for the diabetic patients of Camino to have better control of their disease, when many other issues may seem to be out of control. HbA1c levels drawn at 6 months, 9 months and 12 months post participation would be informative for indicating long term impact. The ultimate success of this program will be to see the patients of Camino clinic live a Vida Saludable (Healthy Life), even though they are managing Type 2 Diabetes against many odds [15-18].

Declaration Of Conflicting Interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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