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Dietary Changes in Preventing Type II Diabetes Mellitus Among Young Hispanic Adults

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

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Walden University
2023

Abstract

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MSN, Walden University, 2018

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Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

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Abstract

Diabetes mellitus continues to be a major chronic disease affecting the global population today with more prevalence amongst minority groups in the United States. The genetic susceptibility to obesity and higher insulin resistance seen in the Hispanic population puts them at the highest risk for development of Type II Diabetes (T2DM). The alarming increase in young adult T2DM diagnosis led to the project question: How can teaching on dietary changes affect Type II Diabetes diagnosis in predisposed young Hispanic adults? The purpose of this project is to accomplish the goal of Healthy People 2020 towards improving the quality of life of people at risk of developing diabetes. Healthy literacy concept, Lewin's change model, Pender's Health Promotion Model, Chronic Care Model, and Clinical Practice Guideline Implementation Model were all used to develop and implement this project. An educative teaching handout on diabetes was created to show the effectiveness of educational programs in increasing knowledge towards the prevention of T2DM diagnosis in predisposed young Hispanic adults. The Patient Education Materials Assessment Tool, Suitability Assessment of Materials and Discern Instrument were questionnaires used to evaluate the handout. A descriptive statistical analysis was conducted using the results of the questionnaires to determine statistically significant relationship between the literacy assessment tools. The *One-way ANOVA* analysis reported none of them differ in measuring validity and reliability of a teaching material. Quality teaching materials promote better health outcome and prevent chronic illnesses such as diabetes amongst predisposed individuals.

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Dedication

I would like to dedicate this project to God Almighty. My wonderful family with their continued love, support and encouragement were pivotal to the successful completion of this journey.

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I am grateful for the support and guidance of Dr. Lutricia Harrison, Dr. Barbara Gross, Dr. Andie Tatkon-Coker, Michelle Rowland, Janice Walters, Lola Parks, Jennifer Sanchez, and Maria Ortiz. Each of them contributed a wealth of information and feedback throughout this project and made this evidence-based project a success.

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Section 1: Nature of the Project

Introduction

Diabetes mellitus is one of the major chronic diseases affecting people today with higher prevalence amongst the minority groups. Diabetes is a multifactorial health issue like obesity that can be caused by different factors and can contribute to the development of other serious health problems. Unmanaged diabetes can lead to severe or fatal complications, especially when other comorbidities are present. Type 2 diabetes (T2DM) is a chronic condition that affects the body's ability to use insulin effectively. People with T2DM either don't make enough insulin to keep up with rising blood sugar levels, or their body isn't able to use the insulin effectively. Sedentary lifestyles and the combination of unhealthy diet, smoking, substance use, and lack or low level of exercises can all be driven by stress and be a contributory factor to developing chronic diseases and some infectious diseases. The genetic susceptibility to obesity and higher insulin resistance seen in the Hispanic population puts them at the highest risk for development of T2DM.

Problem Statement

Chronic diseases are becoming more prevalent in the society today. A large population in the United States has at least one of the following chronic diseases: heart disease, chronic lung disease, chronic kidney disease, cancer, and/or diabetes. The management of these diseases can be quite expensive and seem to be continuously affecting the cost of healthcare.

It was previously assumed that chronic diseases start to develop between the age of 40-50; however, that is no longer the case. Younger adults are starting to develop chronic diseases as well, due to several risk factors (National Diabetes Statistics Report, 2020). According to the Centers for Disease Control and Prevention (n.d.), an estimated six in 10 adults in the United States have a chronic disease, while four in 10 adults have at least two, therefore costing the nation estimate of $3.5 trillion in annual health care expenditures. The goal of Healthy People 2020 towards diabetes includes reducing its burdens and improving the quality of life of the people at risk of or living with the disease (Healthy People, 2020). In addition to being patient advocates, nurses are also educators and are tasked with the responsibility of educating patients with information necessary to live healthier lifestyle.

Purpose Statement

Diabetes mellitus (DM) is a metabolic condition that affects how sugar is broken down in the body for the purpose of energy. There are three major types of diabetes: Type I, Type II, and gestational diabetes (during pregnancy). This project focuses mainly on Type II diabetes mellitus (T2DM), a chronic condition that affects the body's ability to use insulin effectively. People with T2DM either do not make enough insulin to keep up with rising blood sugar levels, or their body is not able to use the insulin effectively. Sociocultural and environmental factors along with a sedentary lifestyle cause higher risk of β-cell damage in those at genetic risk. Diabetes management greatly affects the healthcare cost of the society. Thus, it is important to understand how sociocultural, genetic, environmental/lifestyle, and cultural factors affect the development of T2DM for

the condition to be effectively managed. The purpose of this evidence-based practice (EBP) project is to accomplish the goal of Healthy People 2020 towards diabetes by reducing its burdens and improving the quality of life of the people at risk or living with the disease (Healthy People, 2020). This can be achieved through implementation, evaluation, and dissemination.

Nature of the Doctoral Project

Primary care settings and community health settings continue to see high cases of diabetes, while continuously seeking ways to better manage and reduce the prevalence. It is important to understand how sociocultural, genetic, environmental/lifestyle, and cultural factors affect the development of such chronic condition for it to be effectively managed. Environment has a great impact on a person's behavior, mood, and enthusiasm to act. Unfortunately, a larger Hispanic and African American population belong in the lower income spectrum. Therefore, the type of cultural meals they eat include the most affordable and unhealthy food. It is important to first understand the difference between the two common reasons for treatment failure or complication of chronic illnesses.

The project site provides services to surrounding low-income communities, mainly consisting of Hispanic and African American populations. The project includes teaching on dietary changes to a selected group of minority young adults predisposed to T2DM diagnosis. The project focuses on an education program for nurses on health promotion as it relates to diabetes prevention, especially amongst low-income Hispanic young adults, thus reducing healthcare cost and resource demand for diabetes management. Nurses will focus more on preventative teaching on diabetes and greatly

reduce the need for diabetes management teaching, as well as resources necessary for the teaching and management.

Significance

Dietary modification is a great way to ensure a healthier lifestyle and prevent many health conditions. Healthy lifestyle is most successful when culture, health risk factors, current conditions, and socioeconomic background are incorporated into the dietary modification tools. Healthy lifestyle becomes attainable when the proposed adjustment is perceived to be realistic.

I used Havelock's theory of change (building a relationship, diagnosing the prem, acquire resources for change, selecting a pathway for the solution, establish and accept change, and maintenance and separation) in the implementation process of the project (Udod & Wagner, 2018). The concept of healthy literacy is useful to this project due to the aim of the project, which is to promote healthy lifestyle, increase the ability to understand the information, provide instructions for better self-care, and improve outcome within the minority population. Polster (2018) discussed the importance of understanding healthcare literacy, cultural competency, and health disparities/inequalities to successfully provide empathetic care to patients and their family members. Pender's Health Promotion Model (HPM) helps nurses develop and deliver health promoting interventions to improve health of a population.

Summary

A practiced and focused advanced nurse emphasizes on growth and changes within the nursing program. The development and implementation of an evidence-based

practice (EBP) project is an example of displaying the role of a scholastically-prepared DNP nurse. This specific project focuses on implementing progressive changes within the nursing practice by increasing health literacy and promoting affordable healthy lifestyle in underserved communities.

Section 2: Background and Context

Concepts, Models, and Theories

The concept of health literacy is a major component of this project. Health literacy in medicine involves the ability to understand the basic health information, such as cause and effect of a health condition, as well as the necessity to make adjustment. Health illiteracy has been associated with poorer health status, higher healthcare costs, and socioeconomically disadvantaged patients. Models that focus on behavioral changes were also explored in the development of the project.

Lewin's change model promotes change by discussing what he believes to be the three phases of change: unfreezing, change, and refreezing (White et al., 2016). These phases further describe the way dynamics balance forces, which include driving and restraining forces. Lewin's model was developed upon the conclusion of his research which explored how people change their dietary habits. His research showed that people were more likely to change their dietary habits when they were included in the discussion for change and informed of barriers to change (White et al., 2016). Thus, the change model can be used for this project to achieve the desired outcome: improve compliance with treatment regimen.

Pender's Health Promotion Model (HPM) was also another excellent model used. HPM emphasizes increasing a patient's level of well-being by focusing on individual characteristics and experiences, behavior-specific cognitions and affect, and behavioral outcomes (McEwen, 2019). HPM helps nurses develop and deliver health promoting interventions to improve the health of a population. This educative model promotes self-

care through education (Khodaveisi et al., 2017). The Chronic Care Model (CCM) is also useful towards community-based programs. The CCM helps foster community health programs and offers a systematic approach to caring for people with chronic diseases. The model encompasses essential elements of a health care system that encourage high-quality chronic disease care, including community resources, health system, self-management support, delivery system design, decision support, and clinical information systems (Agency for Healthcare Research and Quality, 2017). Lastly, the Clinical Practice Guideline Implementation Model (CPGs) will be used to assess health literacy and cultural influence.

Relevance to Nursing Practice

Diabetes management greatly affects the healthcare cost of society. The American Diabetes Association (ADA) estimated that the economic costs of diabetes in the United States in 2017 had increased by 26% from 2012 due to increased prevalence of diabetes and the increased cost per person with diabetes. Diabetes management accounted for 1 in 4 spent dollars on health in the United States, representing $327 billion when combining direct medical costs and reduced productivity (Aguayo-Mazzucato et al., 2019). Thus, it is important to understand how sociocultural, genetic, environmental/lifestyle, and cultural factors affect the development of T2DM for the condition to be effectively managed.

Local Background and Context

Many healthcare professionals believe higher health literacy level or health awareness increases healthy lifestyle and choices. In alignment with that idea,

community-based clinics mainly provide care to underserved population and often face challenges such as limited resources and lack of the willingness for change. These challenges must be addressed when attempting to propose a change, especially that which affects behavior and lifestyle. The key complaints mentioned by low socio-economic population is the cost of healthy food, which shows that understanding the risk of certain food choices is sometimes not the problem, but rather access and affordability to better choices or necessary supplies.

A person's environment plays a major role in the individual's behavior, mood, and motivation to act. The environmental risk factors of T2DM that stem from the home are food, pollution, stress, and social isolation. The type of food eaten is often culturally and socioeconomically influenced, people tend to eat the type of food they can afford. Unfortunately, the most affordable and unhealthy cultural food are often selected and consumed.

Carbohydrates are one of the most common food groups consumed by this population. Carbohydrate-heavy foods are tasty, cheap, addictive, and highly dangerous when consumed in large amounts. Physical activity is also limited due to the financial demand that exists in the home. Most people struggle so hard to make ends meet and have little time to exercise as a result.

Additionally, financial and work burdens cause stress to the body. Stress is a precursor to the development of T2DM due to cortisol released during the stressful event. Cortisol is a stress hormone that has the tendency to raise blood sugar and blood pressure. The loneliness felt from social isolation can be detrimental to the health as well as being

stressful. In turn, social isolation increases cravings for unhealthy food and limited physical activity. Finally, pollution is an unhealthy environmental hazard that contributes to the development of T2DM through its influence on insulin resistance. People with lower socioeconomic status tend to live in polluted environments such as places where air and water quality are significantly damaged either because of natural disasters (storms, hurricane) or human nature (chemical waste and byproducts from surrounding factories).

Role of the DNP Student and Project Team

The participants will include experts such as Family Nurse Practitioner, Dietitian, Nurse Educator, the DNP student, and other nursing staff at a selected clinic in the local community. These participants will provide evidence about how well the education program worked to increase knowledge gain towards preventing a T2DM diagnosis in predisposed young Hispanic adults. Each member is motivated to effectively contribute towards the initiative, especially when everyone's knowledge, experiences, ideas are acknowledged and included in the process through communication. They were inspired when they recognized the proposed improvement strategies will create positive change in the healthcare system.

As the DNP student, I am responsible for conducting current, evidence-based research on the topic and collaborating with the experts listed above to create effective educative materials appropriate for the targeted population. Once the educative materials have been created and approved by the team, I will conduct a PowerPoint presentation to the staff, explaining the purpose of the educative teaching handout and the anticipated

outcome. The feedback received from the presentation will determine how soon the materials can be implemented at the facility.

The new practice guideline created from this project will include mandatory health literacy assessment, cultural influence, and the patient's willingness. The guideline will be adopted using CPG. The appropriate standard of care related to the new guideline(s) proposed a continuous dynamic interaction between the patient, his or her environment, and his or her behavior. I will conduct an evaluation of the project using qualitative analysis. Cost is an important component to evaluate, the full cost of all the components and consequences of an intervention will also be considered. Time spent to gather information and collaborate on this project will be included in the cost analysis. The cost of materials used will also be considered.

Summary

Health disparities affect all health outcomes because they determine the progress made to achieve health equity. Underserved communities often struggle with financial difficulty and access to healthcare. The setting for this project consists of a community of low-income Hispanic families with living conditions and sedentary lifestyle that put them at risk for health conditions such as diabetes. The clinic caters to the underserved population without insurance, as well as Medicaid-insured patients. It is feasible to accomplish the project in this setting due to the demographic and socioeconomic background of the population being treated at this facility.

Section 3: Collection and Analysis of Evidence

Introduction

Chronic diseases are becoming more prevalent in today's society. A large population in the United States have or will eventually develop diabetes. The management of this condition can be quite expensive and seem to be continuously affecting the cost of healthcare. There are three major types of diabetes: Type I, Type II, and gestational diabetes (pregnancy). Type I is an autoimmune attack to the body's ability to produce insulin that unfortunately cannot be prevented. Type II and gestational diabetes can be prevented with healthy lifestyle (food choices, exercise, and reduced stress). Healthcare professionals often forget to consider socio-economic status when discussing healthy lifestyle. Community-based clinics mainly provide care to underserved populations and often face challenges such as limited resources and the lack of willingness for change. These challenges must be addressed when attempting to propose a change, especially one that affects behavior and lifestyle. The Walden library and other appropriate databases such as ScienceDirect, CINAHL Plus with Full Text, MEDLINE with Full Text, PubMed, Gale Academic OneFile Select and Directory of Open Access Journals were utilized to locate scholarly written articles appropriate for the EBP project.

Practice-Focused Question(s)

How can teaching on dietary changes affect Type II Diabetes diagnosis in predisposed young Hispanic adults?

Sources of Evidence

Evidence-based data for the project were collected using educational textbooks and electronic sources such as the Walden library and other appropriate databases. These databases provided scholarly written information by experts from research journals and professional organizations that are appropriate for the EBP project. Textbooks such as *Translation of Evidence into Nursing and Health Care Practice* (2nd ed.) and *Theoretical Basis for Nursing* were included. Databases such as ScienceDirect, CINAHL Plus with Full Text, MEDLINE with Full Text, PubMed, Gale Academic OneFile Select and Directory of Open Access Journals were consulted. Lastly, professional organizations such as the Agency for Healthcare Research and Quality, the American Diabetes Association, the Centers for Disease Control and Prevention, Healthy People 2020, and the U.S. Department of Health and Human Services Office of Minority Health were also consulted.

According to Nall (2020), the estimated number of people over 18 years of age with diagnosed and undiagnosed diabetes is 30.2 million. Further, there seems to be a growing epidemic of type II diabetes in the Hispanic population living in the United States. Hispanic adults are 1.7 times more likely than non-Hispanic white adults to get diagnosed with diabetes (U.S. Department of Health and Human Services Office of Minority Health [OMH], 2019). Further, the American Diabetes Association (ADA) estimated that the economic costs of diabetes in the United States in 2017 had increased by 26% from 2012, due to increased prevalence of diabetes and the increased cost per person with diabetes. Diabetes management accounted for 1 in 4 spent dollars on health

in the United States, representing $327 billion when combining direct medical costs and reduced productivity (Aguayo-Mazzucato et al., 2019). Thus, it is important to understand how sociocultural, genetic, environmental/lifestyle, and cultural factors affect the development of T2DM for the condition to be effectively managed. African American and Hispanic food culture include significant consumption of food high in carbohydrates and grease. In 2018, 14.3 percent Hispanic men and 12.4 percent women over age 18 in the U.S. were diagnosed with diabetes compared to 8.7 percent non-Hispanic white men or 7.5 percent women (OMH, 2019). Sociocultural factors such as lower income and decreased access to education and health care contribute to the development of the disease (Aguayo-Mazzucato et al., 2019). Wolff et al. (2016) identified that diabetic patients with low literacy face challenges understanding health information given to them and affects their ability to self-manage their care. The Partnership to Improve Diabetes Education (PRIDE) toolkit was developed by Wolff and her colleagues to help improve diabetes self-management education. Similarly, Squiers et al. (2012) developed the health literacy skills framework to illustrate the relationship between health literacy and health-related outcomes.

Approach or Procedural Steps

Evidence Generated for the Doctoral Project

Following the instructions in the Walden University DNP Project manual, education programs/projects can be successfully developed using ADDIE model. ADDIE is an acronym for Analysis, Design, Development, Implementation, and Evaluation.

ADDIE was used to implement an educational based intervention to address the Type 2 diabetes (T2DM) health problem affecting society members, especially those in the Hispanic community. Due to the presence of the internet, health information and misinformation are easily available to people. Thus, providing correct information is paramount to health promotion, especially with a chronic disease such as T2DM. The educational based intervention will be most effective when incorporated in a community-based program, such as the Hispanic community in this case. Health education-based interventions are instrumental in improving people's knowledge and behavior (Kusuma et al., 2019).

Participants

The participants included experts such as a Family Nurse Practitioner, a Dietitian, a Nurse Educator, myself (the DNP student), and other nursing staff (Licensed Vocational Nurse, and Medical Assistants) at a selected clinic in the local community. Each participant effectively contributed towards the initiative by bringing knowledge, experiences, and ideas necessary for the project.

Procedures

The intervention of choice to reduce the T2DM diagnosis included the use of educational tools containing information specific to cultural dietary changes that can help prevent the development of T2DM. The Diabetes Literacy and Numeracy Education Toolkit and PRIDE (Partnership to Improve Diabetes Education) Toolkit served as a guide to creating teaching sheets for use at a selected community-based clinic. The information suggested substitutes for the typical unhealthy but culturally common food,

such as greasy food and high carbohydrates. Suggestions included baked goods instead of greasy ones, and healthy grains to replace carbohydrates. The focus of the tool is directed towards lifestyle modifications such as eliminating simple carbohydrates from diet due to the high glucose concentration found in carbohydrates, reducing alcohol intake, and increasing physical activity.

I conducted a PowerPoint presentation for the staff, explaining the purpose of the educative teaching tool (handout), anticipated outcome of the handout, assessing patients' ability to read, understand, and retain information, and how to educate patients on T2DM using the materials. The validity and reliability of the handout were initially evaluated using literacy measuring tools before it will be distributed and given to patients. I scheduled the presentation on days and allocated time frames to accommodate all staff members since there were alternating shifts involved.

The student conducted three 1.5 hour sessions of staff education with both presentations and room for questions and input on how to improve patient teaching. Two sessions included three staff members (two medical assistants, one licensed vocational nurse), the last one included the remaining two medical assistants. The handout was used after all the sessions had been completed. I also conducted biweekly observation and debrief meetings with the staff to discuss what was observed in relation to assessment of patients' ability and willingness to learn as well as other factors noted.

When developing an evidence-based project or initiative, it is important to note that identifying goals and desired outcomes are equally significant to needs assessment. It is essential to outline the goals and desired outcomes in the initial stage of the project.

These set goals and desired outcomes assist in selecting the most appropriate strategies through evidence-based research. They will also help measure the progress or lack thereof. Measurable outcomes describe and measure the effects of the proposed change on a targeted population with the execution of appropriate strategies (RAND, 2011).

Guided by the Centers for Disease Control and Prevention (CDC) SMART concept, the selected outcomes for the proposed change emphasized on knowledge, attitude, and behavior using these evaluation criteria: what will change, for whom, and how will it be measured. Other tools such as The Patient Education Materials Assessment Tool (PEMAT), Suitability Assessment of Materials (SAM), and Discern Instrument (questionnaire) will be used to evaluate the quality of consumer health information before sharing with patients (McGill Library, 2021).

Table 1

SMART

Goals	Desired Outcomes Questions	Desired Outcomes Answers
Goal 1: Reduce risk of developing T2DM	What will change?	Rate of new T2DM diagnosis
	For whom?	Young Hispanic Adults
	How will it be measured?	Lab values (Hgb A1c, Cholesterol, LDL, HDL, Triglycerides, etc)
Goal 2: Promote healthy diet into lifestyle	What will change?	Understanding the benefits of substitute carbohydrate, fat diet to health
	For whom?	All Young Hispanic Adults especially those susceptible to T2DM
	How will it be measured?	Patients' survey (face to face) Eating Diary (food intake log)
Goal 3: Improve health literacy within the	What will change?	Eating habits and routines
	For whom?	All Young Hispanic Adults especially those susceptible to T2DM

Goals	Desired Outcomes Questions	Desired Outcomes Answers
targeted population	How will it be measured?	Patients' survey (face to face) Lab values (Hgb A1c, Cholesterol, LDL, HDL, Triglycerides, etc)

Staff used PEMAT to evaluate the understandability and actionability of the handout I created. The handout was initially given and explained to the nursing staff with instructions on how to use the handout to educate patients. PEMAT-P (printable version) was used as the patient teaching evaluation tool and the PEMAT user guide for reference (See Appendix A). SAM was used to address how well the handout information fit the targeted audience. The DISCERN instrument was used after patient teaching by the Staff and myself to evaluate the effectiveness of the material given to patients.

Protections

Ethics approval was sought for the proper protection of all participants and was granted from Walden University's Institutional Review Board (IRB) as required for all DNP projects. The IRB approval application process was thoroughly completed, and approval was granted with approval identification number #07-25-22-0727328. Per Walden University's Staff Education Project Manual, the partnered organization's name and location were changed and generalized. All identifiable information was redacted from the DNP Project document. Coercion through compensation or incentives is unethical and was not used or allowed to pressure potential participants (Barrow et al., 2020).

Analysis and Synthesis

Before starting a project, one must first analyze the current practice problem. It must be adequately defined first because an inadequately defined problem cannot be effectively solved. This is to be followed by a need assessment that helps determine factors that influence ways in which solutions to needs are affected. The discrepancy between the problem and the desired goals must also be measured to appropriately identify the need. A project planning is then developed to be used in the design phase. At this stage, literature evidence necessary for the implementation phase is gathered and developed (Walden University, 2019). Specific learning objectives pertaining to the project are formulated after feedback is carefully revised and reviewed (development phase). In the implementation phase, the revised project is presented with questionnaire review involving organizational leadership and end-users (Walden University, 2019). In the evaluation phase, participants anonymously complete an impact evaluation (Walden University, 2019). The effectiveness of the project is then determined through the analysis of the provided evaluation.

According to Vulpen (n.d.), each phase comprises of key activities necessary for successful implementation.

Table 2

ADDIE Model Steps

Stage	Key Activities
1. Analyze	Problem identification; Training needs analysis; Identify top-level learning; goal; Identify target audience; Identify stakeholder needs; Map required resources

2. Design	Create a learning intervention outline; High-level mapping of learning intervention; Mapping of evaluation methods; Development of a communication strategy; Alignment with stakeholders
3. Development	Determine the delivery method; Production of the learning product; Determine the instructional strategies, media, and methods; Quality evaluation; Development and evaluation of assessments & tooling; Deployment of learning technology; Development of a communication strategy
4. Implementation	Participation in side-programs; Training delivery & participation; Changes in the physical environment; Implementation of communication plan; Execution of formal evaluation
5. Evaluation	Integral part of each step; Evaluation Continuous learning; Propose points of improvements; Evaluation of the business case

Summary

Health education-based interventions are instrumental in improving people's knowledge and behavior (Kusuma et al., 2019). Providing correct information is paramount to health promotion, especially with chronic disease such as T2DM. The focus of the tools will be directed towards lifestyle modifications such as eliminating simple carbohydrates from diet due to the high glucose concentration found in carbohydrates, reducing alcohol intake, and increasing physical activity. The educational based intervention will be most effective when incorporated in a community-based program (Hispanic community). Affordability and access must be kept in consideration and included in the information presented.

Section 4: Findings and Recommendations

Introduction

Diabetes continues to be one of the major chronic illnesses crippling the healthcare system. T2DM and GDM can be prevented with healthy lifestyle choices. Positive results can be better achieved when healthcare professionals' patient teaching tools include realistic healthy choices that can be embraced across all demographic and socio-economic statuses. The purpose of this doctoral project was to convey the gap in diabetes education amongst predisposed young Hispanic adults. Pertinent evidence-based research data were extracted from reliable sources such as educational textbooks and peer-reviewed research journals obtained electronically through Walden library's search engines. Additionally, the ADDIE model was used to generate the evidence for this educational project. The goals and desired outcomes of the project were outlined using SMART Concept. The Diabetes Literacy and Numeracy Education Toolkit and PRIDE (Partnership to Improve Diabetes Education) Toolkit was also used as a guide to create realistic lifestyle modification teaching handout for a targeted audience at a selected community clinic. The Patient Education Materials Assessment Tool (PEMAT), Suitability Assessment of Materials (SAM), and Discern Instrument (questionnaire) were incorporated to evaluate the suitability, understandability, actionability, and effectiveness of the handout.

Findings and Implications

The patient education handout I created contains information on lifestyle modifications such as eliminating simple carbohydrates from diet due to the high glucose

concentration found in carbohydrates, reducing alcohol intake, and increasing physical activity. The handout also included resources on low-price quality food markets, community centers with food drive activities, and public and free recreational centers with age-appropriate activities. Participating staff members were provided anonymity consent form prior to the PowerPoint presentation and collection of questionnaires. The questionnaires served as assessment tools for the project and are found in the appendices. Staff members were each given a patient education handout and questionnaires (PEMAT, SAM, and Discern) to fill after the PowerPoint presentation and questionnaire instructions. The SAM questionnaire evaluated the suitability of the handout in relation to the desired goals and outcomes; the PEMAT evaluated understandability and actionability; and the DISCERN questionnaire evaluated the quality and effectiveness of the handout.

Based on the result of the questionnaires, participants appraised the handout and found it suitable, understandable, and substantially effective towards achieving the desired outcome. PEMAT and SAM scores are calculated in percentage; the higher the score the more understandable, actionable, and suitable the information presented. The DISCERN (quality and effectiveness) score is calculated in points, with 75 being the most points, and 1 being the lowest score.

Table 3

Distribution of Participants Evaluating with Assessment Tools

SID	SAM	DISCERN	PEMAT-A	PEMAT-U
1	82	83	71	79
2	93	93	86	84
3	86	80	71	74
4	95	93	86	89
5	95	93	86	95

Table 4

ANOVA Summary

Groups	Count	Sum	Average	Variance
SAM	5	451	90.2	34.7
DISCERN	5	442	88.4	40.8
PEMAT-A	5	400	80	67.5
PEMAT-U	5	421	84.2	67.7

Table 5

ANOVA

Source of Variation	SS	*df*	MS	F	P-value	F-crit
Between Groups	311.4	3	103.8	1.97057428	0.15907639	3.23887152
Within Groups	842.8	16	52.675			
Total	1154.2	19				

A major objective of this project was to discover how teaching on dietary changes affects Type II Diabetes diagnosis in predisposed young Hispanic adults. An educative teaching handout directed towards lifestyle modifications was created for this purpose. The validity and reliability of the handout was evaluated using three different literacy assessment questionnaires. A descriptive statistical analysis was conducted using the results of the questionnaires to determine if there is a statistically significant relationship between the literacy assessment tools. Table 3 shows the distribution of the results. The *ANOVA* analysis in Table 4 finds that the p-value (0.159) is greater than the sig value (0.05), indicating the null hypothesis (H_o) is accepted in this study; therefore, there is no significant difference in the assessment tool of choice. None of the assessment tools differ in measuring validity and reliability of a teaching material.

Although the evaluation of the handout yielded positive results, distribution of the handout to the substantial amount of the targeted audience may be a bit challenging at this time. The current economic crisis and immigration policy, particularly affecting Hispanic communities, impacts the delivery of vital health information to these communities. Many patients that consider themselves healthy, especially young adults, no longer come for their annual doctor's visits. A recent study showed millennials and Gen Z are more health conscious than older generations and tend to pay more attention to their food selection, physical wellness, emotional wellness, and social wellness (Texas Health, 2023). The fear of an impending recession and inflation has driven many to focus strictly on work rather than health. The hunger for health information observed during the pandemic has greatly reduced since the beginning of the 2023. Many Americans are

starting to postpone health needs and are focusing on critical household expenses (Abelson, 2023).

Recommendations

The findings from this study reveal the importance of inclusivity in the delivery of health information. Healthcare professionals must continue to encourage better relationship with their patients and incorporate health literacy and readiness to learn assessment tools in their day-to-day practices. Understanding a person's health literacy and readiness level with help identify the most appropriate educative tool for that individual. Providing appropriate teaching tools will help yield better health outcomes and prevention of chronic illnesses such as diabetes amongst predisposed individuals.

Contribution of the Doctoral Project Team

The selected community clinic is managed by a Family Nurse Practitioner who also serves as the administrator of the facility. The doctoral project team includes me as the DNP student, a Family Nurse Practitioner, a Dietitian, a Nurse Educator, a Licensed Vocational Nurse, and four Medical Assistants. I worked with the Dietitian and Nurse Educator to create the patient handout while the administrator reviewed and approved the final version of the handout. The nursing staff (Licensed Vocational Nurse, and Medical Assistants) were responsible for evaluating the proposed handout in relation to the targeted population. Each participant effectively contributed towards the initiative by bringing knowledge, experiences, and ideas necessary for the project. The administrator plans to incorporate the teaching handout and the evaluation tools in her practice to further reduce health disparities.

Strengths and Limitations of the Project

The main purpose of this project was to demonstrate the effectiveness of a teaching on dietary changes to prevent Type II Diabetes diagnosis in predisposed, young Hispanic adults. The desired measurable goals and outcomes impacted the need for selection of appropriate evaluation tools, which yielded positive result. Although the teaching tool received positive feedback, the desired outcomes cannot be properly measured due to the short length of the study. The limitation in sample size (N=5) also poses a major challenge, thus preventing the generalization of the study. A bigger sample size and longer length of study should be considered in future similar projects.

Section 5: Dissemination Plan

The implementation and dissemination of an evidence-based practice project fosters the awareness of the new knowledge generated and promotes collaboration. The dissemination of this doctoral project will be greatly utilized and beneficial to community-based stakeholders. As community-based facilities are often faced with limited resources and are unable to successfully reduce health disparities amongst vulnerable population, the tools generated from the project can help increase health literacy and promote affordable healthy lifestyle in these underserved communities. Although this project targets a specific audience, the information and resources provided can be used across all sociocultural systems. This project also emphasizes the importance of assessing patients' ability and willingness to learn.

Analysis of Self

This DNP journey seem to have been the most challenging yet most fulfilling academic journey. I faced a lot of personal difficulties halfway through the journey, which greatly affected the delivery of the project. I improved and exercised my leadership and collaborative skills throughout this experience. Additionally, I successfully navigated the different roles as practitioner, scholar, and project manager with the assistance of my preceptor, who was once a DNP student as well. I was exposed to multiple community resources available; unfortunately, many people are unaware of these resources exist. The implementation of the project demonstrated importance of assessing patients' willingness to learn and evaluation of the teaching material (suitability, understandability, actionability, and effectiveness).

Summary

Health disparities reduction requires successful collaboration between healthcare professionals and patients. Providers must first identify barriers such as literacy, language, socioeconomic status, culture, and willingness/readiness to learn in order to ensure patients' ability to comprehend patient educational tools. The likelihood of developing a chronic disease such as T2DM will decrease when suitable educative materials with information on how to participate in healthy dietary choices and activities are provided. People make better health decisions when provided with knowledge through teaching and readily available resources. This population often struggles to purchase healthy food due to low-income status, and are more predisposed to the development of T2DM as a result. This DNP project raised awareness of affordable community resources available, such as religious food banks, city and county foodbanks, and low-priced food markets in respective neighborhoods. Successfully reducing the rate of newly diagnosed T2DM amongst young Hispanic adults will improve the health system as diabetes continues to be a leading condition affecting both the health and financial sector of the economy.

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Appendix A: PEMAT Instrument

Domain: Understandability
Topic: Content
Item 1: The material makes its purpose completely evident (P and A/V)
Item 2: The material does not include information or content that distracts from its purpose (P)
Topic: Word Choice & Style
Item 3: The material uses common, everyday language (P and A/V)
Item 4: Medical terms are used only to familiarize audience with the terms. When used, medical terms are defined (P and A/V)
Item 5: The material uses the active voice (P and A/V)
Topic: Use of Numbers
Item 6: Numbers appearing in the material are clear and easy to understand (P)
Item 7: The material does not expect the user to perform calculations (P)
Topic: Organization
Item 8: The material breaks or "chunks" information into short sections (P and A/V)
Item 9: The material's sections have informative headers (P and A/V)
Item 10: The material presents information in a logical sequence (P and A/V)
Item 11: The material provides a summary (P and A/V)
Topic: Layout & Design
Item 12: The material uses visual cues (e.g., arrows, boxes, bullets, bold, larger font, highlighting) to draw attention to key points (P and A/V)
Item 13: Text on the screen is easy to read (A/V)
Item 14: The material allows the user to hear the words clearly (e.g., not too fast, not garbled) (A/V)
Topic: Use of Visual Aids
Item 15: The material uses visual aids whenever they could make content more easily understood (e.g., illustration of healthy portion size) (P)
Item 16: The material's visual aids reinforce rather than distract from the content (P)
Item 17: The material's visual aids have clear titles or captions (P)
Item 18: The material uses illustrations and photographs that are clear and uncluttered (P and A/V)
Item 19: The material uses simple tables with short and clear row and column headings (P and A/V)
Domain: Actionability
Item 20:The material clearly identifies at least one action the user can take (P and A/V)
Item 21: The material addresses the user directly when describing actions (P and A/V)
Item 22: The material breaks down any action into manageable, explicit steps (P and A/V)
Item 23: The material provides a tangible tool (e.g., menu planners, checklists) whenever it could help the user take action (P)
Item 24: The material provides simple instructions or examples of how to perform calculations (P)
Item 25: The material explains how to use the charts, graphs, tables, or diagrams to take actions (P and A/V)
Item 26: The material uses visual aids whenever they could make it easier to act on the instructions (P)

Appendix B: DISCERN Instrument

Number	Question	Score				
1	Are the aims clear?	1	2	3	4	5
2	Does it achieve its aims?	1	2	3	4	5
3	Is it relevant?	1	2	3	4	5
4	Is it clear what sources of information were used to compile the publication (other than the author or producer)?	1	2	3	4	5
5	Is it clear when the information used or reported in the publication was produced?	1	2	3	4	5
6	Is it balanced and unbiased?	1	2	3	4	5
7	Does it provide details of additional sources of support and information?	1	2	3	4	5
8	Does it refer to areas of uncertainty?	1	2	3	4	5
9	Does it describe how each treatment works?	1	2	3	4	5
10	Does it describe the benefits of each treatment?	1	2	3	4	5
11	Does it describe the risks of each treatment?	1	2	3	4	5
12	Does it describe what would happen if no treatment is used?	1	2	3	4	5
13	Does it describe how the treatment choices affect overall quality of life?	1	2	3	4	5
14	Is it clear that there may be more than one possible treatment choice?	1	2	3	4	5
15	Does it provide support for shared decision making?	1	2	3	4	5
16	Based on the answers to all of these questions, rate the overall quality of the publication as a source of information about treatment choices	1	2	3	4	5

Appendix C: SAM Instrument

SAM Scoring Sheet

Material being evaluated: _____

Points

2	points for a superior rating	0	points for a not suitable rating
1	point for an adequate rating	N/A	if the factor does not apply to this material

Factor to be rated	Score	Comments
1 Content		
(a) Purpose is evident		
(b) Content is about behaviors		
(c) Scope is limited		
(d) Summary or review included		
2 Literacy Demand		
(a) Reading grade level		
(b) Writing style–active voice is used		
(c) Vocabulary uses common words		
(d) Context is given first		
(e) Learning aids via road signs		
3 Graphics		
(a) Cover graphic shows purpose		
(b) Type of graphics		
(c) Relevance of illustrations		
(d) List, Tables, etc. explained		
(e) Captions used for graphics		
4 Layout and Typography		
(a) Layout factors		
(b) Typography		
(c) Subheads are used		
5 Learning Stimulation/Motivation		
(a) Interaction is used		
(b) Behaviors are modeled and specific		
(c) Motivation–self-efficacy		
6 Cultural Appropriateness		
(a) Match in logic, language, experience		
(b) Cultural image and examples		

S = Total SAM Score (count up all factors) _____

M = Total maximum Score = 44

N = No. of N/As above = ___ X 2 = _____

T = Adjusted Total maximum score (M - N) _____

Pecentage Score = S ÷ T _____ %

Interpretation of suitability score. _____ (superior, adequate, not suitable)