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# A Plan for the Implementation and Evaluation of Diet Education in Type 2 Diabetes

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Walden University

College of Health Sciences

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Soy Ramsumeer

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2015

Abstract

A Plan for the Implementation and Evaluation of Diet Education in Type 2 Diabetes

by

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MS, Walden University, 2013

BS, Ryerson University, 2004

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

Walden University

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## Abstract

Type 2 Diabetes Mellitus (T2DM) is the seventh leading cause of death in the United States with a projected increase of 552 million people worldwide who will be affected with this illness by 2030. The need to address this issue is vital to prevent complications and reduce healthcare spending. The DNP project is aimed at planning and designing a nutritional education program tailored toward specific ethnic groups in order to increase knowledge in making healthy food choices. This project is intended to educate Registered Nurses (RNs) on nutrition so that they can offer dietary knowledge to T2DM patients. Additional patients can be reached by educating the RNs rather than patients being limited to consultations with a Certified Diabetes Educator or Registered Dietician. This project focused on whether healthy nutrition tailored toward the individual's own ethnic foods helps to stabilize glycemic values for patients with Type 2 diabetes. A toolkit was utilized to aid with the RNs' learning on healthy nutrition and its impact on the management of blood glucose. It addressed areas such as food groups and calories, grocery shopping, preparation methods, and portion control. The framework for design utilized the basic concepts associated with the systems theory with an intended goal to prevent further complications and improve patients' glycemic value through consuming nutritious foods. The logic model will be used to evaluate the impact of healthy nutrition on blood glucose through pre- and post-program tests of the RNs' nutritional knowledge on healthy eating. The continuation of this program will promote positive social change by helping patients to achieve a healthier lifestyle and reduce healthcare expenditures.

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## Dedication

I dedicate this project to my deceased mother, my rock of Gibraltar. I would've never accomplished this without her unending support; may you rest in peace, mom.

## Acknowledgments

I would like to acknowledge and thank my preceptor, my Capstone Project Committee, my academic advisor and classmates who have helped me to reach this point in my academic career. A special thanks to my best friend, Pete for putting up with me during the stressful times in this program.

## Table of Contents

Section 1: Nature of the Project .....	1
Introduction.....	1
Background.....	2
Problem Statement.....	4
Purpose Statement.....	5
Project Objectives.....	5
Significance/Relevance to Practice.....	7
Evidence-based Significance of the Project.....	8
Implications for Social Change in Practice.....	9
Definitions of Terms.....	11
Assumptions and Limitations.....	13
Summary.....	15
Section 2: Review of Literature and Theoretical and Conceptual Framework.....	17
Specific Literature.....	17
Conceptual Models, Theoretical Frameworks.....	21
Literature Related to Dietary Educational Programs.....	23
Summary.....	25
Section 3: Methodology.....	26
Approach.....	26
Project Design/Methods.....	26
Patient Population.....	28

The Project Team and Roles .....	28
Primary Products and Secondary Products .....	29
Project Evaluation Plan.....	30
Ethical Implications .....	31
Summary .....	31
Section 4: Findings, Discussion, and Implications .....	33
Introduction.....	33
Discussion of Findings.....	33
Project Strengths and Limitations.....	36
Recommendations for Remediation of Limitations .....	38
Implications.....	38
Practice.....	39
Research .....	40
Social Change .....	40
Analysis of Self.....	41
As Scholar .....	41
As Practitioner .....	42
Future Professional Development.....	42
Summary .....	44
Section 5: Scholarly Product.....	45
Project Summary and Evaluation Report.....	45
Background, Purpose and Nature of Project.....	45

Evaluation .....	47
Conclusion .....	48
References .....	49
Appendix A: Logic Model Developed for Dietary Education for T2DM Patients.....	61
Appendix B: Welcome and Overview .....	62
Appendix C: PowerPoint Presentation.....	63
Appendix D: Posttest, and Program Evaluation .....	67

## Section 1: Nature of the Project

### **Introduction**

The purpose of this project was to develop a nutritional education program that RNs can use to educate patients with Type 2 Diabetes Mellitus (T2DM). The goal of this teaching educational program is to improve dietary practices in an effort to stabilize blood glucose; thereby, preventing complications related to hyperglycemia. A gap was identified between nurses perceived versus real knowledge in diabetes education (Griffis, Morrison, Beauvais, & Bellefontaine, 2007), which emphasized the need for this program as patients are not receiving adequate health teaching on the management of this chronic illness. The rate of T2DM is expected to increase to a worldwide number of 552 million by 2030 from 366 million in 2011 (Malik, Tesfaye & Ziegler, 2013). As this chronic illness increases both nationally and globally, the need to educate patients on dietary intake and proper nutrition is of high priority in order to prevent complications. The main program planning activities were to provide nutritional training to RNs so that they are able to conduct educational sessions for T2DM patients with a focus on affecting a positive change in glycemic values. Pre and posttests will be done in order to assess the RNs' knowledge on healthy nutrition because they will be teaching the program to patients. The impact on social change that this educational program brings is to improve the patients' health by avoiding complications from T2DM.

## **Background**

Type 2 Diabetes Mellitus is the seventh leading cause of death in the United States with over 29.1 million people affected (National Diabetes Statistics Report 2014, 2014); thus, the need to address this issue is vital to prevent complications and reduce healthcare spending associated with its treatments. In 2007, \$174 billion was expended in the United States alone to treat patients with diabetes (Healthy People 2020, 2013). The complications that result from this illness are numerous and devastating to its victims; not only are the patients faced with physical pain but the loss of sight, or a limb from lower extremity amputations (LEA) can lead to many issues such as depression (Healthy People 2020, 2013). This chronic illness attacks several body organs and systems including the vascular system; complications such as peripheral vascular disease (PVD) accounts for nonhealing wounds, which is a direct result from poorly managed blood glucose (Berthold, Bestehorn, Jannowitz, Krone, & Gouni-Berthold, 2011).

Of the 29.1 million individuals affected with this illness in the United States, 21 million are diagnosed and 8.1 million are undiagnosed (National Diabetes Statistics Report 2014, 2014). Because the rate continues to escalate worldwide, the need to address this health issue is crucial to patients, healthcare providers, and the government as the complications can result in serious illnesses, which can severely strain the healthcare budgets as well increasing the nursing workload to care for these patients. According to Waller and Tzeng (2011), diabetes education on glycemic index has shown to prevent or delay microvascular complications in addition to achieving stable blood glucose values. In another study, Barclay et al. (2008) suggested that patients who

received diabetes education had greater knowledge of glycemic index and its use. Thus, education on diabetes self-management behaviors regarding lifestyle alterations and food choices can greatly impact the glycemic index and reduce the complications from T2DM (Siminerio, 2007).

Despite efforts to bring awareness to this health concern, the rate continues to increase for all age groups and for both genders with the highest rate noted in the 20 years of age and older population group, which is 28.9 million individuals or 12.3% of Americans (National Diabetes Statistics Report 2014, 2014). A comparison between the sexes indicated that men had a higher rate of 15.5 million or 13.6% who are diagnosed with T2DM compared to women with 13.4 million or 11.2% (National Diabetes Statistics Report 2014, 2014). The most affected groups with this illness are American Indians/Alaskan Natives, Non-Hispanic blacks, Hispanics, Asian Americans, and Non-Hispanics Whites; their rates are 15.9, 13.2, 12.8, 9.0, and 7.6 respectively; the report further provides statistics on the age-adjusted percentage of people who are 20 years of age and older and are diagnosed with T2DM in the United States for 2010-2012, and they are placed in subcategories with details of its breakdown (National Diabetes Statistics Report 2014, 2014). The number of new cases is 1.7 million with 371,000 in the age group of 20-44 years, 892,000 for the age group of 45-64 years, and 400,000 for the 65 years and older age group (National Diabetes Statistics Report 2014, 2014). The Diabetes Attitudes Wishes and Needs 2 (DAWN2) study suggested that collaboration between the diabetes team and patients, along with support from all levels of government and society is necessary in order to reduce both personal and economic burdens that this

chronic illness brings; hence, the need to tailor ethnic food preferences is vital to aid with both compliance and achieving stable glycemic values as dietary management is the most challenging for T2DM patients (Peyrot et al., 2013).

### **Problem Statement**

Type 2 Diabetes Mellitus is both a national and a world health issue that currently affects 366 million individuals and is expected to increase to 380 million by 2025, and 552 million by 2030 (International Diabetes Federation. 2006, p.19-22; Malik et al., 2013). According to the Centers for Disease Control and Prevention (CDC, 2013), 26.9% or 10.9 million Americans over 65 years of age are diagnosed with T2DM, and 79 million individuals over the age of 20 years have prediabetes, with another 1.9 million who are newly diagnosed. As the rate of this illness increases, T2DM complications and the financial costs to treat them also increase. According to Young (2011), T2DM affects over 25% of hospitalized patients with an inpatient healthcare cost of almost \$40 billion per year. In order to reduce the complications from T2DM, achieving stable glycemic values with the use of diet and healthy nutrition is required. Additionally, support from family members, significant others, communities, and organizations are necessary.

At this alarming rate, organizations such as the American Diabetes Association (ADA), the National Diabetes Education Program (NDEP), and the Indian Health Services (IHS) need to become aggressive in promoting the awareness through education and support to prevent this epidemic from expanding. Despite the efforts and programs in place to help reduce its rate and complications, this chronic illness continues to rise at pandemic levels. Diet has a significant impact on glycemic values; therefore, providing

education in this area is needed to help prevent complications from T2DM. In every culture, there are both healthy and unhealthy food choices; thus, the knowledge gained from this program will help T2DM patients to focus on the preparation methods and make healthy food choices using their own ethnic foods.

### **Purpose Statement**

The purpose of this DNP project was to create an educational program that RNs would use to teach T2DM patients proper nutrition. The program's focus is to educate RNs on choosing nutritious foods along with healthy preparation methods so that they can teach specific ethnic groups proper food choices using the patients' own cultural foods. According to Carney, Stein, and Quinlan (2013), nurses lacked both counseling skills and time to offer education on the nutritional management of T2DM despite the numerous requests from patients asking for advice on healthy eating.

### **Project Objectives**

There were two specific objectives that are related to the goal of providing dietary education to every patient with T2DM. The first objective was to conduct a literature review on utilizing diets and healthy nutrition to identify which ethnic tailored foods have the potential to control and stabilize blood glucose values. The second objective was to conduct research on educational training methods, and to create a toolkit to instruct nurses on educational methods to teach T2DM patients healthy nutrition, and proper food choices. According to Hirst et al. (2009), nutritional education is important in reducing the incidence of T2DM by changing the amount and dietary contents of foods and drinks in the school environment such as the cafeteria, vending machines, and in the provided

snacks. Hirst further stated that obesity is common among African Americans, Mexican Americans, and American Native Indians. Thus, communication, peer involvement, and family support helped to facilitate healthy food choices and nutritious meal consumption. Additionally, sampling different types of food and training of staff were also effective in encouraging healthy nutrition in order to lower the rate of T2DM in school children (Hirst et al., 2009).

Furthermore, the nurses would receive educational sessions conducted by a Certified Diabetes Educator (CDE) and a Registered Dietician (RD). In meeting these objectives, the nurses' knowledge would increase with the education provided enabling them to offer nutritional education to T2DM patients on choosing and eating healthy meals. By enhancing the RNs' nutritional knowledge on the management of T2DM, the program's outcome goals would have the potential to be realized. The plan would utilize the logic model for guidance during its development stage; it would focus on both dietary recommendations that are specific to the Hispanic-Mexican culture, and teaching techniques that have been successful in improving RNs nutritional knowledge in the workplace. The implementation stage used the activities section as a basis to provide dietary education for the RNs who would be delivering nutritional education. This model would provide details of the plan by categorizing the events in sequence of how the program should progress with the use of a visual description (Hodges & Videto, 2011). Kettner, Moroney, and Martin (2013) suggested that the activities should be linked to the outcomes of the program's objectives. After the design and implementation of the plan, an evaluation would take place to ensure that the RNs are proficient to conduct nutritional

teaching to T2DM patients. This would be accomplished by using a pre and posttest to evaluate the increase in nutritional knowledge and teaching techniques of the RNs during the implementation of the program.

### **Significance/Relevance to Practice**

Nurses have the advantage to disseminate knowledge and empower their patients to achieve optimal health through education. DNPs are equipped with evidence-based research on topics such as T2DM and its devastating effects from altered glycemic values, and can use their new knowledge to help patients achieve stable blood glucose and avoid complications. Thus, they are able to bring current research and real life experiences to the practice setting to drive the message across to their patients. In gaining trust and acceptance along with buy-in into the new program, a good leader will need to display patience, virtue, dependability, perseverance, and responsibility; the nurse leader should be an effective communicator, and be knowledgeable with a clear organizational vision that empowers the target population and others to see and share the same vision (Toor, 2011).

According to the Centers for Disease Control and Prevention (CDC, 2014), \$245 billion was spent on treating patients with T2DM in 2012; this dollar amount could have decreased if health education and support were given to patients. The financial implication of not addressing this issue is huge as the cost for treating the complications from this chronic illness could drain the healthcare budget. The annual cost for treating patients with diabetes in the United States was over \$130 billion, which accounted for 10% of the total Medicare expenditure (Minshall, 2008). As dietary education continues

on medical nutrition therapy (MNT), the risk factors associated with T2DM and the financial cost would also be reduced. In a study conducted in China, Anderson (2012) sanctioned that diet alone has a significant impact on reducing its rate. In the United States, the annual cost (per capita) associated with treating all patients with T2DM was \$5,694 and this amount increases with age, particularly for the elderly population (Anderson, 2012). Additionally, evidence indicated that a patient's risk is increased by 15 times to have a LEA when compared to a person without the diagnosis of T2DM, but with health education and good care, the possibility of a LEA is reduced by 20% (Nazarko, 2010).

As the positive effects of diabetes health education become evident, both nurses and patients would continue to feel confident, and empowered in complying with a healthy dietary regimen in order to improve health. According to Venkat Narayan et al. (2006), both short and long term implications of diabetes are harmful to the patients and the healthcare system due to complications such as LEA, and stressful events that can lead to a decrease in mental and social functioning.

### **Evidence-based Significance of the Project**

Young, West, Ortiz, and Carlson (2004) stated that dietary intake has shown to dramatically reduce glycemic values in patients with T2DM. When patients adhered to healthy nutritious meals, blood glucose levels were stabilized with fewer complications. In providing diabetes health education, patients would be encouraged to practice what they learn while reducing complications and leading healthier lives; eventually all the added knowledge would serve as a major benefit for the patients, providers, caregivers,

and the healthcare system. Young et al. (2004) indicated that an educational plan could assist patients to reduce glycemic values by empowering and educating them on choosing healthy meals, and utilizing portion control. The logic model was chosen as the framework to guide the program planners in initiating and conducting the nutritional education program (Kettner et al., 2013), with training provided for RNs to offer T2DM patients education on meal planning with preparation methods included, along with choosing healthy foods and portion control.

### **Implications for Social Change in Practice**

Despite numerous studies cautioning healthcare professionals to be prepared for the looming onslaught of newly diagnosed T2DM cases, many organizations are not prepping for the predictable surge in complications that this illness brings, especially neuropathy and LEA. The ADA stated that over 56% of diabetes-related disbursements are used in treating patients over 60 years of age (Lairson et al., 2008). The ADA concurs that the cost and suffering associated with this illness can be reduced with health teachings and apposite care (Lairson et al., 2008). It is estimated that less than 45% of individuals with T2DM have received suitable care ((Lairson et al., 2008). This may be due to contradictory disagreements on advice and care administered by healthcare professionals, as well as the lack of education. The argument continues to strengthen with the inadequate support for self-management with respect to meal planning, weight reduction, physical activity, blood glucose monitoring, smoking cessation, and medication compliance with proper dosages and regimen (Rosenzweig et al., 2010). Both cases and complications of T2DM are increasing, which then places a financial burden on

the healthcare system and patients. Hence, the need to bring healthy nutritional dietary education to reduce the complications associated with this chronic disease requires prompt attention and collaboration from all stakeholders including the patients themselves.

Stabilized glycemic values result in fewer complications and healthier lives; patients with T2DM who have stabilized blood glucose levels have experienced a reduction in complications such as retinopathy, neuropathy, and nephropathy (Gosse, 2014). By reducing healthcare costs for the treatment of complications, this program would have a positive effect on social change by lowering the medical costs associated with surgeries, medications, and loss of work. Providing education on diets and healthy nutrition along with encouraging a healthy lifestyle, patients would be able to achieve stable glycemic values (Bray, Turpin, Jungkind, & Heuser, 2008); thereby, improving outcomes and reducing complications such as peripheral neuropathy (PN), strokes, and retinopathy (Lairson et al., 2008). Lairson et al. (2008) indicated that 44% of patients developed kidney failure, heart disease, stroke and/or hypertension, along with approximately 24,000 cases of blindness every year.

According to Chow, Lemos, and Einarson (2008), the cost associated with lower extremity amputations resulting from diabetes, ranged from \$16,488 to \$66, 215 during the period of 1992 to 2000. Health education on proper foot care management along with stable blood glucose could greatly impact and lower the financial burden associated with foot care; many complications such as Diabetic ketoacidosis (DKA), hypoglycemia, LEA, neuropathy, nephropathy, and retinopathy could be minimized or delayed.

Additionally, stress due to complications could lead to psychological illness such as depression, but this situation could be minimized as a result of controlling glycemic values with the use of healthy nutrition.

### **Definitions of Terms**

*Type 2 Diabetes Mellitus* is due to abnormal insulin production or impaired insulin use; it occurs when the pancreas produces insufficient insulin to compensate for the level of glucose in the blood, in addition to the body resisting the produced insulin (MakkiAwouda, Elmukashfi, & Hag Al-Tom, 2013).

*Hypoglycemia* is referred to as low blood glucose and it is an emergency situation; therefore, immediate action is needed to prevent further complications (ADA, 2011).

*Hyperglycemia* occurs as a result of too much glucose in the blood; a blood glucose level over 250mg/dL results in hyperglycemia (Collopy, Kivlehan & Snyder, 2013).

*Diabetic ketoacidosis (DKA)* results from hyperglycemia that can be associated with trauma, surgery and infections; the combination of uncontrolled hyperglycemia, metabolic acidosis and an increase in total body ketone leads to DKA, which is a critical situation that can be fatal (Savage, 2011).

The *Glycated hemoglobin* done once before (*HgbA1c*) test is used to diagnosed T2DM; an individual with a 6.5% or higher value meets the criteria of being diagnosed with T2DM; and a 5.7% - 6.4% places patients at the pre-diabetes level (Marcason, 2010). This test gives an overview of diabetes self-management by measuring the blood

glucose value every 3 months; high levels indicate poor self-management with an increased risk for cardiovascular disease (Ok et al., 2014).

*Hypertension (HTN) and coronary artery disease (CAD)* are associated with T2DM. According to Wolever et al. (2011), stroke, diabetes and coronary heart disease remain the leading cause of death in the United States. These are modifiable risk factors that can help to decrease serious complications if patients consume healthy diets, engage in physical activity along with lowering stress levels. According to the National Diabetes Statistics Report 2014 (2014), a diagnosis of HTN is made when the blood pressure reading is above 140/90 mm Hg; 71% of adults older than 18 years of age were diagnosed with HTN and are currently using pharmacology to aid with its management.

*Lower extremity amputations (LEA)* occurs as a result of PN or peripheral arterial disease; diabetes increases the risk twofold for amputations in the lower extremities as compared to non-diabetic individuals; amputations risk increases with the increase in years of diabetes diagnosis especially for individuals who have been diagnosed for over 10 years (Malik et al., 2013).

According to Collopy et al., (2013), *Peripheral Vascular Disease (PVD)* also increases the risk for amputations in diabetic patients; PVD occurs from damage to the larger vessels as the walls becoming thick and stiff as a result of the movement of high glucose in the blood, which places the patients at increased risks for infection and non-healing wounds resulting in LEA. The incidence of LEA is 50-500 per 100,000 patient years with most of them resulting from non-healing foot ulcers as the glycemic value worsens in the diabetic patient (Leese et al., 2006).

*Diabetic neuropathy* is classified as nerve fiber dysfunction that results from diabetes due to high and irregular levels of blood glucose damaging the distal extremities; it can affect bilateral extremities or just one side; this complication impairs the patient's sensation to feel injuries in the distal extremities. Often this leads to nonhealing wounds, which can lead to amputations as circulation is extremely compromised. Patients diagnosed with diabetes are at a 25% chance to develop foot ulcers and nonhealing wounds that will result in amputations due to diabetic PN; this situation can be lessened and avoided if proper podiatry and medical care is provided (Leese et al., 2006).

*Retinopathy and nephropathy* result from poor glycemic control due to T2DM; as the glycemic value increases so does the microvascular damage in various parts of the body such as the eyes and renal system. The National Diabetes Statistics Report 2014 (2014), states that 4.2 million people or 28.5% of individuals over age 40 years have been diagnosed with retinopathy, and 665,000 or 4.4% had severe vision loss as a result of damage to small vessels in the retina. The outcome of inadequate glycemic control can also cause diabetic nephropathy (Harada, Sumida, Yamaguchi, & Akai, 2014).

### **Assumptions and Limitations**

Assumptions include that the program planners would involve the target population in the development of the program as this would help to gain their buy-in. It is also assumed that the RNs would be receptive and enthused to participate in the program as their knowledge in nutrition would increase. As well, it is presumed that the organization would be financially stable to initiate and continue with the program, and that the results would have a positive effect on patients' outcomes as glycemic values and

complications are stabilized and reduced, respectively. Thus, improving quality of care for the patients seen at the HC; additionally, expansion of the program could result in a financial benefit to the organization.

Limitations of the program development included that there may not be sufficient evidence-based research specific to every ethnic group, or that there would be too much information on certain cultures alone. Research may be limited to the North American diet rather than specific cultures from other parts of the world even though there are numerous ethnicities living in the United States. Thus, it could create challenges to customize menus and methods of preparation with calorie count for each culture when research is limited for various ethnic groups.

Limitations may include that the HC would not be able to supply adequate funding for the development of the program since the RNs would require extra training in order to conduct the educational sessions. The RNs would also need retraining if new evidence-based research is discovered; hence, additional costs to update their education to reflect the new findings. This may not be cost effective for the HC if further training for the RNs conducting the educational sessions would be required; thus, an increase in salary expense would result when coverage has to be organized for those other RNs who would be attending the updated educational training. Likewise, the added cost to employ a RD and a CDE to train the RNs could have a strain on the budget.

Furthermore, the educational instruction given to the RNs by the CDE and RD would not be sufficient for them to effectively teach the patients healthy nutrition. The amount and details of the nutrition education may overwhelm the RNs due to the limited

time of training allotted for them to fully grasp all of the information; both CDE and RD have received extensive training in this field. Therefore, transferring a vast amount of nutrition education in a limited timeframe could pose an issue for the RNs to effectively conduct nutritional education for the patients. Another limitation is that an RN may call-in sick and miss the educational session offered; they may also become disengaged and not follow the format of the program; therefore, losing its full impact, which would render them inadequate to conduct nutritional teaching to the patients.

### **Summary**

The business of health care is monitored more closely than ever in order to become efficient in the delivery of safe and effective care while streamlining profits and costs. Both private and public organizations are becoming increasingly aware of the need to implement effective programs that would improve care and outcomes for consumers. The implementation of a diabetes healthy nutritional education program was chosen as a result of patients lacking knowledge based on a needs assessment done at the HC; the program was designed to teach RNs to conduct nutritional education in order to assist patients in choosing and preparing healthy meals with both caloric values and portion control included. In doing so, T2DM patients would potentially achieve stable blood glucose values. All staffs have active roles in ensuring that quality of care is delivered with safety in mind; DNPs are better equipped to provide guidance and support to the team by conducting literature reviews, gathering and analyzing evidence-based research, and assisting with putting those findings into practice.

In summary, the reason for this DNP project was to create a plan that could be

used to implement a dietary educational program geared toward the Hispanic-Mexican ethnic group; the program was designed to improve the RNs knowledge on healthy nutrition so that they would be able to provide educational sessions for T2DM patients. The goal was to provide dietary education to every patient with T2DM and this would be accomplished with two specific objectives, which were to conduct research on healthy nutrition to pinpoint ethnic foods that would have the potential to stabilize blood glucose values; the second objective was to conduct research on educational training methods, and to include a toolkit which would help to augment the RNs learning. This toolkit would also be used by the RNs to share their new found knowledge with T2DM patients. Data collection would include a pre- and post-test to evaluate the RNs nutritional knowledge, and a passing grade of 80% would be required on the post-test in order to ensure the RNs proficiency to teach.

## Section 2: Review of Literature and Theoretical and Conceptual Framework

### **Specific Literature**

In researching healthy nutritional dietary impact on glycemic value in patients with T2DM, online databases such as CINAHL, MEDLINE, Ovid Plus, Nursing Journals, and PubMed were utilized. The key words were *type 2 diabetes, diabetes education, health teaching, diets, nutrition, meals, consumption, food types, diabetes prevention, changes in diets, complications of diabetes, changes in diets and lifestyle, lifestyle alterations, dietary compliance, and challenges to dietary compliance* were used. The articles chosen described dietary impact on improving glycemic values, and the role of nurses, educators, and providers in empowering patients to achieve better health outcomes, and prevent complications with the use of a healthy nutritious diet. The logic model was utilized to provide guidance to assess the effects of healthy nutritional diets on glycemic value as it has been suggested to be practical in evaluating the impact of diet on blood glucose for T2DM patients (Kettner et al., 2013).

Historically there has not been much research conducted on diabetes nutritional management; however, a study performed in 1937 examined dietary intake, inactivity, nutritional deficits and high blood glucose levels, and noted a relationship between microvascular complications and elevated glycemic values (Leistikow, 2001). In the last decade more emphasis has been placed on health promotion and illness prevention, where healthy nutrition and physical activity are stressed; nutritional medical therapy has also been indicated to help prevent risk factors that could lead to vascular complications as a result of high blood glucose (Marigliano, 2013). According to Parry Strong, Lyon, Stern,

Vavasour, and Milne (2014), diabetes nutritional education has been studied for many years with evidence indicating that nurses were successful in providing 70% of dietary teaching to patients compared to other professionals; however, they lacked behavioral training, which was a major contributor for patients not achieving glycemic control.

Phillips and Phillips (2014) concluded that proper nutritional management for patients over 70 years of age was needed since other health conditions affected the treatment of T2DM; hence, resulted in serious complications.

Dietary education aimed at reducing daily caloric intake with the initiation of physical activity for patients with Body Mass Index (BMI) 25kg/m<sup>2</sup> and over helped to achieve weight reduction along with stable blood glucose values (Bussell, 2014). In attaining positive outcomes of nutritional education for patients with diabetes, the needs and preferences of meals were considered to be the most effective for adherence in the management of this chronic illness (Muchiri, Gericke & Rheeder, 2012). Type 2 Diabetes Mellitus affects several body organs and systems that could result in serious complications; thus, several organizations are involved in promoting nutritive knowledge in order to prevent the ill effects from hyperglycemia. Impaired glycemic values have an effect on wound healing; therefore, the need to maintain stable blood glucose perioperatively was highly recommended (Rocchetti & Braga, 2012). Diabetes education done by nurses has had a positive effect not only on glycemic control, changing of behaviors in making proper food choices, and increase collaboration with the physicians, but it has also led to confidence building and proficiency for the nurses providing the teaching (Sheehan et al., 2013).

According to Franz, Boucher, Green-Pastors, and Powers (2008), nutritional education programs were recommended by the ADA to achieve the best outcomes for people with T2DM. The timeframe suggested for conducting nutritional education is anywhere from 45 to 90 minutes for an initial visit along with follow-up sessions carried out by a CDE or a RD (Franz et al., 2010). Both T2DM patients and their families are the main caregivers in managing this chronic illness in the community with the knowledge they have received from their providers, CDE, RD, and nurses (Duprez, Pover, Spiegelaere, & Beeckman, 2014). Thus, the key is to provide self-management education on all aspects of maintaining stable glycemic values, which includes consuming healthy nutrition. According to Parker, Byham-Gray, Denmark, and Winkle (2014), studies such as the Diabetes Prevention Study, the Finnish Diabetes Prevention Study, and the Da Qing Impaired Glucose Tolerance and Diabetes Study have shown that lifestyle changes hinder or defer the occurrence of T2DM. Additionally, another study done by the U.S Diabetes Prevention Program stated that there was a 58% decrease in the incidence of T2DM in the lifestyle group compared to 31% of T2DM patients in the Metformin group (Parker et al., 2014). Therefore, the need to provide nutritional education could potentially have a positive effect in lowering its incidence, and avoiding the many complications by achieving stable blood glucose values from eating healthy nutritious meals.

The prevalence of diabetes has grown to 25.8 million, which was 8.3% of the population who were diagnosed with diabetes, and from 5.6 million to 20.9 million persons affected with this ailment from 1980 to 2011, respectively; (ADA, 2013; CDC,

2013). There were also 8.1 million individuals who are still undiagnosed with T2DM, in addition to another 79 million, aged 20 years and older who were diagnosed with pre-diabetes. The yearly cost to treat patients with diabetes was roughly \$245 billion with \$176 billion in direct expenses and \$69 billion in compensatory costs related to disability, work loss, and premature mortality (ADA, 2013). Healthcare expenditure for persons with diabetes was 2.3 times higher than for individuals without diabetes; 1 in 5 health care dollars was spent for the treatment of diabetes and its related complications (ADA, 2013). The cost of care goes far beyond the data presented above; it extends into the individual lives of each person, their family/caregivers, work, psychosocial needs, and quality of life. According to Holt et al. (2013), 60% of healthcare professionals suggested that patients with T2DM need to partake in self-management especially in areas such as consuming healthy nutrition, engaging in physical fitness, and managing their weight in order to live healthier lives. Mishra et al. (2013) stated that nutritional education has been linked with a decrease of health related illnesses and risks associated with the complications from T2DM.

According to Orchard et al. (2013), the Diabetes Prevention Program (DPP), found that moderate body weight loss of 5% to 7% and physical activity could lessen the risk of developing T2DM by more than 50% in children. Suggestion to start health education for grade school children was recommended; additionally, nutritional lessons with portion size and healthy diets could also result in better outcomes (Orchard et al., 2013). Echoed by Wilcox, Sharpe, Parra-Medina, Granner, and Hutto (2011), healthy nutritious diets with physical activity helped to control and prevent chronic illnesses;

therefore, stabilizing blood glucose for patients with T2DM could certainly aid in preventing complications such as retinopathy among others. Ma et al. (2008) stated that dietary intake has the most effect on blood glucose, and that poor glycemic control resulted in both microvascular and macrovascular complications. Good dietary nutrition with complex carbohydrate intake has been suggested to significantly influence blood glucose (Young et al., 2004); therefore, the need for consuming the right diet could result in stable glycemic values for patients with T2DM. Offering nutritional diabetes education to T2DM patients on dietary management has been associated with reducing risks of complications as a result of better glycemic control (Lairson et al., 2008; Shi & Stevens, 2010). In order to achieve stable glycemic values, patients are required to make alterations in lifestyle; according to Murray, Abadi, Blair, Dunk, and Sampson (2011), quality of life could greatly be improved when patients adhere to healthy behaviors such as eating nutritious meals and engaging in physical activity. Thus, the need to maintain stable blood glucose values is highly recommended.

### **Conceptual Models, Theoretical Frameworks**

The logic model would be utilized to provide guidance for the development of a plan to evaluate the impact of healthy nutrition on blood glucose in patients who are diagnosed with T2DM. This model was built on the philosophy related to the systems theory, which is a valuable feature in connecting theory to the planning process; it provided a series of activities that are matched with the resources needed to initiate a particular event (Kettner et al., 2013). Additionally, it utilized an easy step-by-step approach to guide program planners with carrying out activities from the beginning of the

program to end of the evaluation process (Allmark, Baxter, Goyder, Guillaume, & Crofton-Martin, 2013); it offered directions with respect to placing the events in an order (Logic Model Development Guide, 2004). This model supplied insight to help make assumptions about the usefulness of the program in evaluating dietary impact on blood glucose reduction in patients with T2DM. It examined and provided a visual guidance of the order of how the events are to take place so that RNs could follow its sequence of the program's activities in order to help their patients achieve and maintain stable glycemic values (Hodges & Videto, 2011). Furthermore, this model presented strategies and activities that explained the program to the project staff, stakeholders, and members of the target population (Hodges & Videto, 2011), regarding the need for education on choosing healthy foods. The framework for design utilized the basic concepts associated with the systems theory, which allowed practitioners to link theory to the planning process of the program (Hodges & Videto, 2011). The design encompassed the inputs, process, outputs, outcomes, and ended with the impact; respectively these are the resources, activities, measurements, benefits, and the changes in the glycemic values as a result of healthy nutritional dietary impact (Kettner et al., 2013). The logic model provided a short summary of the purpose of the program with the activities included so that the target population and the stakeholders could understand (Hodges & Videto, 2011). According to Savaya and Waysman (2005), the logic model was utilized to help Family Aid Centers in Israel by improving services in an effective manner to meet the needs of the individuals by arranging and processing data in a logical sequence.

A recent study conducted by the United States Department of Agriculture (USDA) utilized the logic model to emphasize the benefits and needs for community involvement and nutritional education to promote healthy food choices; the community nutrition education logic model (USDA, 2015), examined dietary attributes, food safety, security, and resource management in order to advise stakeholders, guide program planners, concentrate on evaluation, and examined inquiries to improve its program.

### **Literature Related to Dietary Educational Programs**

Dyson et al. (2011) stated dietary educational programs that encompass ethnic inclinations, attitudes, lifestyle and readiness to make alterations in diets were more successful in achieving stable glycemic values in the self-management of T2DM. When cultural food preferences were taken into consideration, that is, making ethnic foods healthier during preparation, the patients were more inclined to stick with the changes; as well, communication and understanding were enhanced when the educators provided health teaching such as choosing healthy foods and cooking instructions in the patient's language (Shultz, Corbett, & Allen, 2009). Vaughan (2005) also suggested that dietary ideologies should be utilized in a culturally sensitive manner, and to make sure that the sociocultural meaning of foods is maintained; religious beliefs and practices should also be considered as these would facilitate adherence to healthy diets in order to enhance blood glucose values for patients with T2DM. According to Ley, Hamdy, Mohan, and Hu (2014), 382 million adults were diagnosed with T2DM worldwide, and this number is expected to increase to 592 million by 2035 as a result of poor dietary intake; thus,

programs geared toward promoting healthy nutritional education are required to help reduce glycemic values.

Our plan was to create a package for the entire nutritional education program, which included manpower, syllabus, resources, times, place, and education for the RNs who would be responsible to teach the patients healthy meal choices and preparation methods. According to Hodges and Videto (2011), the logic model provides a picture of the program and how it is expected to take place; the main inputs for the program were to develop the plan to teach the RNs, and to create a list of program directives with specific instructions for them to teach the patients.

The program's activities included conducting nutritional training sessions for the RNs, with an expected outcome of the RNs being proficient to teach T2DM patients. The medical director would be responsible to ensure that the program is being carried out according to its plan. In order to maximize the teaching sessions and obtain the best outcomes, Duncan et al. (2013) stated that it is important to incorporate all facets of literacy such as reading, writing, speaking, numeracy, and listening skills in the planning of an educational program. This would help to enhance learning for all especially those with English as their second language. Nurse educators should receive training for at least one day on the teaching techniques before performing the educational sessions (Duncan et al., 2013).

Another area of planning would include the need to establish relationships between the educators, dieticians, and nutritionists along with those individuals who prepare the meals (Volpe et al., 2013); this would ensure that everyone is collaborating to

reach the same goal, which is to promote healthy nutrition in order to reduce glycemic values. Song et al. (2010) recommended that nutritional education planning should include culturally pertinent foods utilizing cultural instruments to aid with comprehension. According to Nichol, Retallack, and Panagiotopoulos (2008), educational programs that included support from families and significant others were more effective for patients since adherence to self-care behaviors tend to be greater. Thus, a diabetes educational program that involves the family has a greater impact in lowering glycemic values.

### **Summary**

In summary, this section provided specific literature on the planning aspect of a diabetes nutritional education program and its impact on glycemic values; online databases were utilized with specific words to help find evidence-based articles on the topic. The logic model was identified as a useful tool to guide in the development of the healthy nutrition program; this aided in the assessment of nutritional impact on glycemic values as it provided directions for planning with respect to the activities, and the assets that are necessary to begin and evaluate the program (Allmark et al., 2013). According to Hodges and Videto (2011), the framework served as a guide for practitioners to link theory with the planning process of the program; it began with the input process and ended with the outcome, which is dietary impact on glycemic values. Evidence-based research was also presented on the planning aspect of a diabetes educational program, which took into account areas such as cultural norms, literacy level, and family support.

### Section 3: Methodology

#### **Approach**

To reiterate, the purpose of this DNP project was to create a plan that could be utilized to implement a dietary educational program tailored toward specific ethnic groups, in order to increase knowledge in making healthy food choices that would potentially achieve stable blood glucose for patients with T2DM. This section addresses the program's design/methods, the patient population, the project team members and their roles, both primary and secondary products, the evaluation plan, ethical implications, and concludes with a summary. This would take place at a HC in Las Vegas, Nevada where a needs assessment was conducted and found that patients lack knowledge on healthy nutritional dietary education, which places them at increased risk for complications resulting from unstable glycemic values.

#### **Project Design/Methods**

After speaking with the HC's medical director, the plan to design a dietary program was agreed upon to help patients manage this chronic illness and prospectively achieve stable blood glucose values, thereby, avoiding the numerous complications from T2DM. The plan was to provide a nutritional education program for RNs to teach patients healthy nutrition and portion size to help stabilize their blood glucose values; the program would be conducted by a CDE and a RD, utilizing current evidence-based literature on healthy nutrition tailored toward specific ethnic groups in the management of T2DM. At the completion of the training provided to the RNs, they (the RNs) will in turn conduct educational group sessions for T2DM patients in employing caloric intake and portions

size with food preparation methods included. Food groups would be researched to ascertain the correct quantities of nutrients that are needed to satisfy healthy nutrition while complying with ADA guidelines for T2DM management. According to Medeiros et al. (2005), the need for nutritional education is necessary to help address issues such as T2DM, and other complications that result from poor dietary intake; many organizations such as the Food and Nutrition Service and the USDA have utilized the logic model to aid with program implementation to encourage the consumption of healthy foods across the nation. This framework has been used in a number of settings and cultures to impact nutrition education because it helped with both planning and developing the strategies for program implementation and evaluation (Medeiros et al., 2005).

Three-one hour educational sessions would be conducted to instruct the RNs who would be implementing the program on healthy nutritional intake; the education sessions would follow ADA guidelines for healthy eating tailored toward ethnic food preferences. Data collection would compose of a pre and post program test of the RNs' nutritional knowledge on healthy eating; post the training offered by the dietician and diabetes educator, it is expected that the nurses would be competent in offering healthy nutritional education to T2DM patients. To clarify, data collection would only be required for the implementation and evaluation of the RNs' abilities to teach the patients healthy eating; thus, the Institutional Review Board (IRB) approval was required. My role for this program was only to design the nutritional education plan for the education of RNs but not to implement or evaluate it.

**Patient Population**

The majority of the populations served at the HC are socioeconomic compromised with various levels of education; the HC's staff includes the administrative leadership team, the medical team, and support staff along with the accounting and finance staff. The HC cares for all types of patients from pediatrics to geriatrics, treating patients across the lifespan; referrals are made to other sources for those patients whom they cannot treat. Recently the HC expanded to contract with other providers such as the podiatrist and the kidney center as the need for foot care and dialysis are increasing rapidly. The HC operates by booking appointments but will see walk-in patients for urgent matters.

**The Project Team and Roles**

The team utilized for this project is a DNP student (myself), who has planned the dietary program that is intended to assist patients with T2DM to achieve stable blood glucose values. The DNP student's role for this program was to develop and plan the dietary project but will not be participating in its implementation or evaluation. Responsibilities of the DNP student would include creating the program with details on how its implementation should take place by preparing a PowerPoint presentation included as part of the educational Toolkit. The team includes the medical director, RNs, and support staff from the HC. The teachings will take place at the HC in the boardroom once per week for three weeks, and will be conducted by the CDE and RD. At the completion of the RNs training with a passing grade of 80% on the post test, they can in turn lead their own group of T2DM patients by offering nutritional education based on

the Hispanic-Mexican diet. The medical director would serve as the team leader who will facilitate and provide guidance and support to the RNs or assist if needed. The project requires a team effort for it to be successful; therefore, a transformational leadership approach is best employed to achieve the greatest impact on outcomes for the patients and the organization (Grossman & Valiga, 2009).

### **Primary Products and Secondary Products**

The primary product of this project included the instructions for initiating the development of a nutritional dietary program to reduce glycemic values in patients with T2DM, and concluded with the directions for the implementation and evaluation stages. Instructions and a toolkit would be given to the CDE and RD to utilize during the teaching sessions with the RNs to help them understand the importance in achieving stable blood glucose. The directives would also include directions for nurses to conduct patient education on healthy nutrition with preparation methods for meals included. The DNP student was responsible for the planning of the dietary program with instructions for implementation and evaluation; however, the implementation and evaluation will be done by others. Additional resources would include the clinic's conference and meeting rooms where the educational teaching would take place, laptop computers with a projector, and a photocopier. The secondary product for this program would be the RNs ability to pass on their nutritional knowledge to T2DM patients in hopes to impact their glycemic values, and prevent complications from unstable blood glucose.

### **Project Evaluation Plan**

The evaluation plan would utilize both formative and summative evaluation methods to ascertain if the activities were well suited for the nutritional education program, and if it accomplished its goals (Hodges & Videto, 2011). The activities that would be involved in creating the evaluation plan for testing the RNs knowledge would include conducting evidence-based research on healthy nutrition specific to the Hispanic-Mexican diet, and its impact on blood glucose. It would utilize the ADA standards and other resources such as IHS's website for recommendations on choosing healthy foods, calorie counting and portion control, and preparation methods for the development of the evaluation plan. A pre and post test would be designed by the CDE and RD to evaluate the RNs nutritional knowledge.

White and Dudley-Brown (2012) stated that outcomes result from interventions or treatments conducted. To reiterate, data would be collected from the pre and post program tests that the RNs will complete in order to evaluate their ability to teach. Because this program is intended to educate RNs on how to teach T2DM patients proper nutrition, there would be no patients' involvement in the planning phase. The activities for the development of the evaluation plan are to test the RNs knowledge on healthy nutrition prior to and after the education sessions are completed; this would then provide an assessment of their proficiency to conduct healthy nutrition classes. After the implementation and the completion of the nutritional education provided to T2DM patients by the qualified RNs, it would be left up to the discretions of the physicians, who recommended the patients for the educational program to compare, and evaluate if

healthy nutrition has had an impact on glycemic values. If the results are favorable, the organization will continue the program.

### **Ethical Implications**

There are no potential concerns for ethical implications for this T2DM dietary program because the RNs' knowledge would be evaluated based their final test scores, which would comprise of only A, B, C and D, or True and False answers, and would be graded by both the CDE and the RD with the RN present. Therefore, the IRB authorization was only required for tests scores for the RNs, which has been granted. This program could also be used by any organization to teach RNs how to carry out nutritional education for patients with T2DM.

### **Summary**

In conclusion, this dietary health education program is expected to stabilize and lower blood glucose in patients with T2DM so that they can better manage and cope with their illness. The goal is to stabilize blood glucose with the use of healthy nutrition; thereby, preventing complications via health teaching. Instructions on what topics to include in the educational sessions were identified for the CDE and the RD to teach to the RNs. The new learning from the nutrition sessions would be used by the RNs to pass on to T2DM patients to help them understand why proper nutrition, and healthy eating **are** necessary to achieve stable blood glucose values; as well, to give directions on preparation methods for dishes based on the Hispanic-Mexican diet. As T2DM continues to increase to a worldwide forecasted number of 592 million by 2035 (Ley et al., 2014), the need to implement a healthy dietary program that would aid in reducing glycemic

values is of immense importance because it would prevent further complications, and reduce healthcare costs associated with its treatments. To reiterate, my role as a DNP student was to plan the program but not to implement or evaluate it as this would be done by others, and at no time would I be collecting any data, implementing the program, or evaluating the results of the health teachings.

## Section 4: Findings, Discussion, and Implications

### **Introduction**

As T2DM increases, the need to educate nurses to teach patients healthy nutritional choices is necessary to help reduce the complications from hyperglycemia, and unstable blood glucose values. The purpose of the project was to develop a nutritional education program for nurses to utilize when teaching T2DM patients; it includes a toolkit. The nutritional education toolkit was designed to teach RNs proper nutrition so that they are able to extend their new knowledge on healthy eating, portion control, and preparation methods to patients. The goal is intended to improve dietary habits using the patients' own ethnic foods to achieve stable glycemic values, which could then result in avoiding the numerous complications that are associated with hyperglycemia. By tailoring the patient's specific cultural foods and making the cuisine healthier, it is hoped that compliance and adherence to the changes in preparation methods would result in the choice and consumption of healthier meals. Thus, leading to improved glycemic values and reduced complications from T2DM.

### **Discussion of Findings**

This chronic illness is the seventh leading cause of death in the United States with 29.1 million people affected (National Diabetes Statistics Report 2014, 2014), and is also a worldwide issue with a forecasted 552 million people who would be diagnosed by 2030 (Malik, Tesfaye, & Ziegler, 2013). The focus for this project was to create a nutritional education program with a toolkit to help RNs understand the need to make healthy food choices utilizing nutritious ethnic cuisine. It is based on the Hispanic-Mexican diet with

dishes to help lower or stabilize glycemic values for patients diagnosed with T2DM. Its aim is to provide nutritional knowledge to RNs so that they could in turn conduct health teachings to their patients. According to Griffis, Morrison, Beauvais, and Bellefontaine (2007), nurses lacked knowledge on nutrition, rendering them unable to provide diabetes health teaching to their patients. This led to discussions to provide nutritional training for the RNs, so that they could conduct educational sessions with a focus on lowering or stabilizing glycemic values. This project was decided upon after a needs assessment was conducted that indicated the necessity for diabetes nutritional education, along with umpteen requests from patients asking for advice on nutrition. The idea of utilizing a toolkit for the educational sessions was decided upon after collaboration and discussions with my preceptor, the HC's director, and the nurses along with suggestions from my classmates during the discussion postings. With the RNs providing this education, many patients would be impacted leaving more time for the physicians to focus on other patients' issues. One of the several benefits from this program is that it allows other disciplines such as the CDE or the RD to center their attention on special cases that require advanced knowledge in diabetes management with respect to nutrition. Pre and posttests would evaluate the RNs' knowledge on healthy nutrition, and confirm their ability to teach the educational program, which should have a positive effect on social change by avoiding the many complications from T2DM.

The HC has a diverse group of patients with the majority of them being of Mexican descent who are diagnosed with T2DM and unstable glycemic values; thus, the focus of this educational program was developed for this specific population.

Approval from the Walden University Review Board (IRB) was granted prior to proceeding with the designing of the toolkit for the nutritional education program based on a Hispanic-Mexican diet. The toolkit contains the materials needed to teach the RNs healthy food choices with preparation methods, and portion size included so that they can pass on this knowledge to their patients via structured education sessions. The Nutritional Diabetes Education Toolkit outline has four appendixes, which includes Appendix A that utilized the logic model to develop the dietary education program for T2DM patients; Appendix B, which addressed the Welcome and Overview, Program's Objectives and Goals, and the instructions to prepare the pretest for assessing the RNs nutritional knowledge on Hispanic-Mexican diet (to be prepared and evaluated by the CDE and the RD). Appendix C consists of four sections in addition to a PowerPoint presentation to be used as a guide to conduct the sessions. Section I of Appendix C would speak of food groups and caloric values, Section II would address grocery shopping at the supermarket for healthy foods versus what foods to avoid, Section III would focus the Preparation methods, and Section IV would concentrate on Portion control utilizing the *Healthy Plate* to ensure a balanced diet while consuming authentic Hispanic-Mexican dishes. Appendix D would address the Evaluation of the program, the designing of the post test, and specific contents such as audio or other visual aide that could help to facilitate learning would be included here. The evaluation would be done by the CDE and RD.

To restate, I was not involved in the designing of the pre- and posttests, the specific materials addressed to suit the PowerPoint slides, nor the evaluation of the program. The responsibility for the DNP student was to create the program for others to

implement and evaluate. This program has been designed to increase compliance by patients consuming their own ethnic foods. In making the preparation methods healthier with portion control included, the end result of lowering or stabilizing blood glucose values would be achieved as patients are more inclined to stick with their own native dishes. The medical director at the HC would be responsible to ensure that the program is being managed effectively; collaboration between the providers and the RNs would be continuous to discuss progress, issues, and any recommendations that may be required.

As I was developing the toolkit, I was overwhelmed with vast amount of research on the benefits of healthy eating, and its effect on glycemic value. However, it was challenging to obtain research that provided detailed instructions with preparation methods, and portion control for Hispanic-Mexican meals geared toward improving blood glucose values for patients with T2DM. Several evidence-based studies pointed out the positive effects of healthy nutrition on the prevention of complications from illnesses such as T2DM, as well as the ill effects from consuming unhealthy meals. Of the many benefits from eating healthier foods with portion control, reducing and stabilizing blood glucose values leads to lowering healthcare costs associated with complications such as amputations and retinopathy from unstable blood glucose values (Gosse, 2014).

### **Project Strengths and Limitations**

One of the strengths of this program is that it allows for increasing the number of patients receiving the nutritional education as RNs would be educated on the topic by the CDE and RD. This would eliminate the long waiting times for consultations with the diabetes educator and dietician, and would be more convenient for the patients because it

would be offered at the HC. Effective and timely communication would be achieved among the interdisciplinary team regarding a patient's status because everyone who is involved in their care is either working at or has scheduled times to see patients at the HC. Thus, once patients are referred to the service by the physician, they would be able to register for upcoming available nutritional classes. Additionally, offering the sessions at HC could aid with increased patients comfort rendering them more susceptible to attend the educational classes. Another strength of this nutritional education program is that it utilized the logic model, which offered guidance on developing the plan for the program (Kettner et al., 2013), and it provides directions with placing the events in an organized manner at each stage (Logic Model Development Guide, 2004). It also presented a summation of the inputs, process, outputs, and outcomes along with its impact of the activities to enhance comprehension for the target population and stakeholders; it supplied an explanation of the relationships between the activities and resources with its final impact by granting an evaluation at each step, with suggestions to make alterations if needed (Hodges & Videto, 2011). The program would continually be monitored, and would be tweaked accordingly to maximize its effectiveness.

Limitations included that there may not be ample available evidence on various ethnic groups and their foods, which could compromise the RNs ability to provide health teaching on preparation methods of specific cultural dishes with calories, and substitution for some of the Hispanic-Mexican meals. Additionally, funding could pose a problem as the HC has to provide coverage for the RNs who are attending the nutritional classes, and pay for the CDE and RD services. With healthcare budgets already being scrutinized, this

limitation could be experienced and cause a delay in the program. If the limitations were eliminated, stable glycemic values could be achieved for T2DM patients with the nutritional education provided by the RNs.

### **Recommendations for Remediation of Limitations**

In an attempt to address the limitations of this project, the first action would be to ask the target population to bring with them recipes of authentic Hispanic-Mexican dishes at the beginning of the educational sessions so that the nurses could alter, and substitute the contents without making drastic changes in the taste. Being cost effective is necessary to sustain this project to ensure that the educational sessions continue for the patients with T2DM. Adhering to the program's schedule with respect to the RNs who would receive the initial training at the HC, and being able to use the same RNs to become coaches, and mentors for other RNs who may also be interested in learning about healthy nutrition and its effect on glycemic value would result in cost savings to the center.

### **Implications**

Registered nurses are at an advantage to disseminate nutritional health education to their patients by providing guidance and support on choosing healthy foods. Their nutritional knowledge would help patients to achieve stable blood glucose values, and prevent complications from this chronic illness, which is forecasted to increase to a worldwide number of 592 million by 2035 (Ley et al., 2014). This program would help to meet the numerous requests from patients asking for advice on healthy eating (Carney, Stein, & Quinlan, 2013), as the RNs would be able to deliver nutritional education to the patients in a timely manner.

**Practice**

After successful completion of the nutritional education conducted by a RD and a CDE, the RNs would deliver health teaching to T2DM patients on choosing and preparing healthy meals with portion sizes included. A study conducted by Hirst et al. (2009), indicated that by changing the amount and content in foods, dietary education plays an important role to reduce glycemic values and prevent complications, resulting in lower cost associated with treating the complications from T2DM. This study also concluded that tasting different foods, and providing dietary education for staff to teach patients healthy eating were also effective in reducing the glycemic value (Hirst et al., 2009). Currently, there are no diabetes nutritional education programs offered at the HC; thus, this program would serve to empower RNs to provide health teaching to T2DM patients on preparing, and consuming healthy meals tailored toward the Hispanic-Mexican diet.

According to Peyrot et al. (2013), the DAWN study suggested that a partnership between the government, the diabetes team, and patients is essential to reduce the ill effects and the high financial costs that results from this chronic illness; hence, the need to alter preparation methods, and maintain taste of the Hispanic-Mexican dishes is necessary to aid with compliance in consuming healthy nutritious foods. This should lead to achieving and maintaining stable glymeic values for T2DM patients. The logic model would be utilized to provide guidance for the program at each stage (Kettner et al., 2013). Another research conducted by Sheehan et al. (2013), stated that diabetes education

offered by RNs resulted in better glycemic control along with behavioral changes for patients with respect to choosing and consuming healthier meals.

### **Research**

Parry et al. (2014) stated that 70% of dietary teaching was conducted by nurses compared to other professionals; thus, the need for this program. Phillips and Phillips (2014) indicated that nutritional education is needed for patients who are over 70 years of age, and because this population may also be suffering from other co-morbidities, their chances are increased for life-threatening complications such as DKA. As indicated by Muchiri, Gericke, and Rheeder (2012), success is seen in the management of T2DM when the patients' food preferences are tailored to meet their cultural needs, and because they are already accustomed to its taste, making their ethnic foods healthier should result in adherence and better glycemic control. Thus, achieving a positive impact on stabilizing blood glucose values would lead to better outcomes and healthier lives for the patients.

### **Social Change**

The effect on social change would not only be evident in positive outcomes for the patients as they are able to cope with and better manage their illness, but favorable results would also be seen in a reduction of healthcare expenditures used to treat the devastating complications that are consequences from unstable glycemic values. According to the ADA (2013), the cost for treating individuals with T2DM is over twice the cost than for those patients who are not affected with this chronic illness. The domino effect from consuming healthy Hispanic-Mexican meals would leave more time for other disciplines to focus on critical problems; thus, having a positive effect for all involved as

the interdisciplinary team works collaboratively toward achieving optimal health for their patients. With this type of education, the population in general could benefit starting from school aged children to geriatric patients in the community as well as the in-patients in acute care hospitals.

### **Analysis of Self**

#### **As Scholar**

In starting this project, I gained a tremendous amount of knowledge on the management of T2DM with respect to nutrition, and its impact on blood glucose. The designing of this DNP project posed many tough challenges that I had to endure, and often felt like giving up but the memory of being a caregiver to my deceased mother, who was affected with this ailment kept me focused and forced me to persist. As I continue to conduct evidence-based research and received feedback from my chairperson and peers, I was able to overcome the hurdles in hopes to make a difference in patients who are suffering from this chronic illness by preventing complications such as amputations, and kidney disease. Even though I will not be implementing this project, I still feel empowered as the effects from my new found knowledge would be shared with my colleagues, patients, and the general population. As stated by the DNP Essential III (AACN, 2006), the application and translation of research into practice along with sharing new knowledge with colleagues, stakeholders, and the larger community is one of the key activities of DNP graduates. I am hopeful that the benefits from current evidence-based studies will enrich the lives of T2DM patients, and prevent the several

complications that result from uncontrolled blood glucose as an effect from consuming unhealthy meals.

### **As Practitioner**

As a practitioner, I have learned to assess risks, collaborate with team members, stakeholders, and evaluate care and costs while providing leadership to enhance practice and outcomes for patients. Additionally, I am able to advocate for patients especially those who are socioeconomic compromised with limited knowledge to care for themselves; these are linked to DNP Essentials II and V (AACN, 2006). Throughout this project, I have learned the importance of conducting evidence-based research and translating the findings into safe practice with the use of effective communication. As well, I contacted agencies such the ADA, AADE, and the local political office to obtain information on nutrition, and complimentary diabetes educational services in the community to share with the patients at the HC, especially those who cannot afford to pay for the sessions offered elsewhere.

### **Future Professional Development**

There are several phases in project development starting with a needs assessment, meeting with the stakeholders, examining budgets with respect to financial and human resources, and time allotted to conduct the educational sessions, establishing program goals and objectives along with the activities at each stage of the project, and the responsibilities of the team members (Hodges & Videto, 2011). According to Kettner, Moroney, and Martin (2013), program evaluation is an essential component in the project development process; each phase of the project should be assessed with

recommendations and alterations made to reduce or eliminate barriers that hinders program success. Selecting the appropriate strategies to meet the needs of the target population requires a methodical understanding of the target group, their learning ability, and style so that the activities and objectives would be met with ease. The designing of this project would not have been possible without the joint partnership among the team members, stakeholders, and target population. The preparation with endless communication, and interprofessional collaboration, along with the use of current evidence-based research has led to this stage; this truly connects with DNP Essentials VI (AACN, 2006) as it took a collaborate effort to develop this project.

Expansion and learning from this program would lead to a creation of additional nutritional education programs that would help to make other cultures' foods healthy by examining the commonalties and differences, and being able to make substitutions while still maintaining its ethnic taste. Some of the main principals would still apply such as eliminating saturated fats, lowering the sodium intake, using whole wheat flour, and brown or wild rice in place of white flour and rice. It would become easier for the RNs to alter and make the cultural changes in foods especially for those cultures, and patients who are from similar geographic areas such Asia or the West Indies. Another advantage would be if the RNs were also from various cultural backgrounds; they would be able to recognize dishes that are unhealthy and provide support and guidance to improve the nutritional value by making it healthier. Patients comfort level and trust could also be enhanced when the RNs are from the same or similar cultures since they may be able to better relate to the patients cultural needs.

## Summary

With the increase in rate of T2DM both nationally and worldwide, nutritional education is seen as an immediate need to prevent further serious complications that result from unstable glycemic values. Thus, providing RNs with increased understanding on healthy nutrition with respect to choosing, preparing, and consuming healthy foods based on cultural preferences, they can in turn disseminate their knowledge by offering educational sessions to the patients. They would have added insights on tailoring the Hispanic-Mexican dishes so that the patients could consume healthier meals that have the potential to lower, and stabilize blood glucose values. The idea of improving dietary practices can be achieved by patients eating their own cultural foods as they are more likely to comply with the foods and taste they enjoy, and are familiar with. The design of the educational toolkit could help to improve outcomes for patients as the RNs would offer sessions on choosing and preparing healthy Hispanic-Mexican dishes, and utilizing portion control.

## Section 5: Scholarly Product

### **Project Summary and Evaluation Report**

Based on current evidence-based literature both nationally and worldwide, T2DM is a major issue that is rising to pandemic levels as it continues to affect people from all ethnicities, but with proper nutrition, knowledge, and support, the numerous complications can be reduced or be prevented (International Diabetes Federation, 2010). As glycemic values become stable, the ill effects from poorly controlled blood glucose are minimized, resulting in healthier lives as complications are avoided. Working collaboratively with other disciplines, DNP nurses are at an advantage to disseminate findings and provide education to colleagues who could then offer their new found knowledge on nutrition to impact care, and enhance outcomes for patients diagnosed with diabetes.

### **Background, Purpose and Nature of Project**

As T2DM increases in the U.S and in the world, it is imperative to offer education on nutrition that can help to prevent or delay complications that are direct results from hyperglycemia; a reduction in healthcare spending would also be evident as the costs associated with its treatments would be reduced. The billions of dollars spent on treating patients with complications from diabetes could have been used to provide education on dietary management, which would've prevented the many crises such blindness, kidney disease, and mood disorders that are linked to this illness (Healthy People 2020, 2013). Because unstable glycemic values affects several body organs and systems, the need to offer this program could reduce vascular complications in the lower extremities and in

other parts of the body (Berthold et al., 2011).

With the increase in rate both nationally and worldwide, the urgency to address this health problem is critical to all including private insurances companies, the government, healthcare providers, the society, and the patients themselves as the complications are costly in every way (Peyrot et al., 2013). Research continues to support the impact of healthy eating on the glycemic index as it prevents or delays complications associated with hyperglycemia (Waller & Tzeng, 2011); this would be accomplished by choosing nutritious ethnic foods with portion control and changing the methods of preparation (Siminerio, 2007). According to the National Diabetes Statistics Report 2014 (2014), T2DM continues to escalate for all age groups with a marked percentage in the 20 years and older population group, and is suggested to be more prevalent in some ethnic groups compared to others (National Diabetes Statistics Report 2014, 2014). With such a vast number of cultural groups living in the United States, the need to educate patients on choosing and preparing their ethnic foods healthier while preserving its taste could result in stabilizing their glycemic values.

The intent for this program was geared toward increasing the RNs nutritional knowledge so that they can in turn teach T2DM patients healthy food choices with preparation methods and portion control included; the outcome is to reduce or stabilize their blood glucose and prevent complications from hyperglycemia. Educational sessions would be offered to the RNs by a CDE and a RD in utilizing a toolkit that includes the required elements to impact blood glucose via healthy eating; this would then have a positive effect on social change as patients' lives are healthier.

## **Evaluation**

I collaborated with my preceptor at the HC to decide on the evaluation of the nutritional education program, and the decision was made to have the CDE and RD design the pre and post tests to evaluate the RNs knowledge on nutrition. They (RNs) will be expected to successfully obtain a passing grade of 80% on the post test to be qualified to teach T2DM patients healthy nutrition based on the Hispanic-Mexican diet. There will be continuous collaboration amongst the team at HC with guidance and support provided by the medical director. The exact time and schedule to implement the program has not yet been determined due to several factors with the main concern being funding. This nutritional program has the potential to positively impact the lives of patients suffering from T2DM and its devastating complications just by having the RNs provide dietary education to T2DM patients on making healthy food choices, and by simply altering the preparations methods with portion control.

Both formative and summative evaluation methods would be exploited to evaluate this project; the formative evaluation would be used during the implementation of the program to assess its progression with respect to the willingness of the RNs to participate, the providers' abilities to conduct the sessions and to make alterations as needed, and the summative evaluation (Appendix C), would be utilized at the conclusion to assess if the goals were achieved (Hodges & Videto, 2011). The CDE and RD would both be responsible to implement and evaluate this project as I will not be involved in these areas.

## **Conclusion**

By advancing the RNs knowledge on healthy nutritional intake based the Hispanic-Mexican diet, it is anticipated that blood glucose values will be reduced or stabilized in patients diagnosed with T2DM. As this chronic illness becomes a national and a worldwide challenge to combat, the need to improve RNs knowledge in this area is vital to educate their patients on proper nutrition. Providing basic and detailed instructions on healthy eating with supporting documents would serve as guide to help the RNs in delivering the nutritional education to their patients. The learning from this program can lead to the creation of other nutritional education programs for various cultures.

Some of the obstacles that I faced during the researching and planning stages of the project were not being able to find evidence-based research that specifically addresses the Hispanic-Mexican diet with respect to altering, substituting, and preparing Hispanic-Mexican dishes in a healthier manner while still maintaining its taste and texture. On several occasions, I contacted Walden's library for assistance with locating evidence-based research as well as other organizations such as the ADA and AADE. The feedback from my Chairperson and Committee member at the end of the Oral presentation was invaluable in assisting me to proceed with this project.

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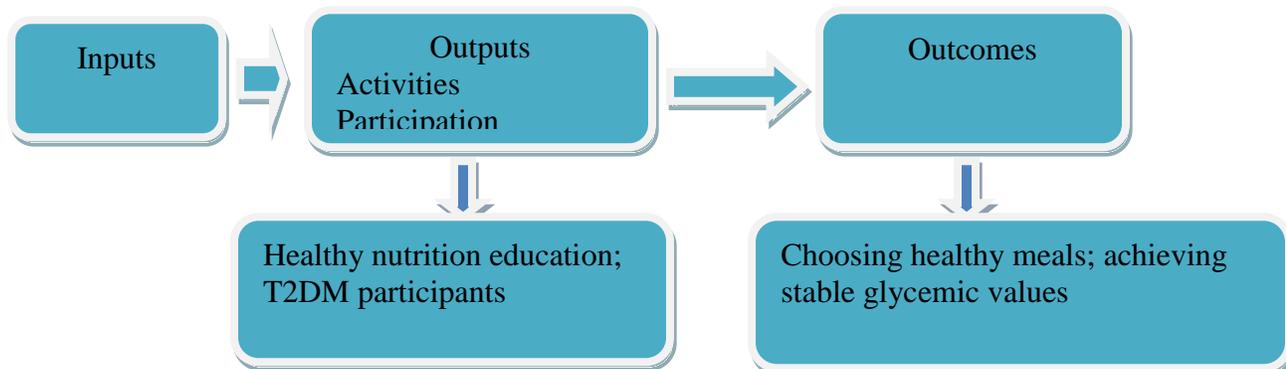
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## Appendix A: Logic Model Developed for Dietary Education for T2DM Patients



A logic model framework for community nutrition education (Medeiros et al., 2005)

copyright by Soy Ramsameer with modification (2014).

## Appendix B: Welcome and Overview

The purpose of this project is to develop a nutritional education program that RNs will use with T2DM patients via the use of a toolkit. The nutritional education toolkit is designed to teach RNs proper nutrition so that they are able to extend their new knowledge on healthy eating, portion control, and preparation methods to patients.

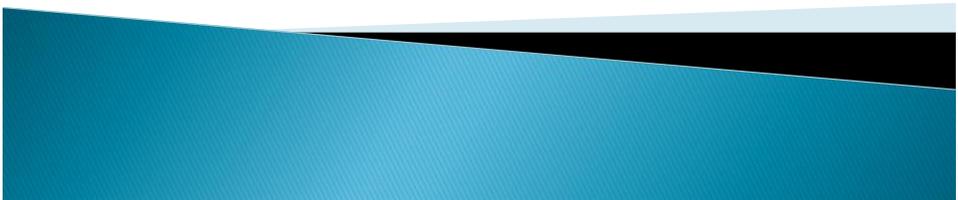
### **Program's Objectives and Goals**

There are two specific objectives that are related to the goal of providing dietary education to every patient with T2DM. The first objective is to conduct a literature review on utilizing diets and healthy nutrition to identify which ethnic tailored foods have the potential to control and stabilize blood glucose values; the second objective is to conduct research on educational training methods, and to create a toolkit to instruct nurses on educational methods to teach T2DM patients healthy nutrition and proper food choices. The goal is intended to improve dietary practices in an effort to stabilize blood glucose; thereby, preventing complications related to hyperglycemia using the patients' own ethnic foods. By tailoring the patient's specific cultural foods and making the cuisine healthier, it is hoped that compliance and adherence to the changes in preparation methods will result in the choice and consumption of healthier meals. Thus, leading to improved glycemic values, and reduced complications from T2DM.

**Pretest of RNs Nutritional Knowledge on Hispanic-Mexican Diets** (to be prepared and evaluated by CDE and RD).

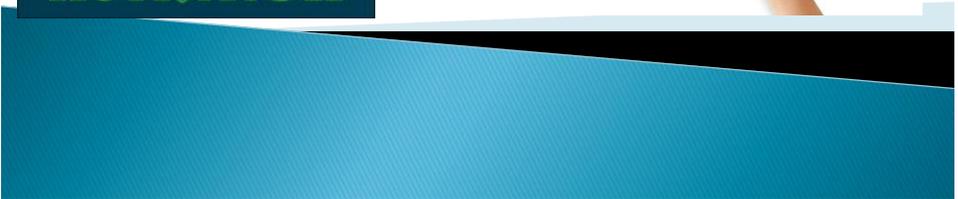
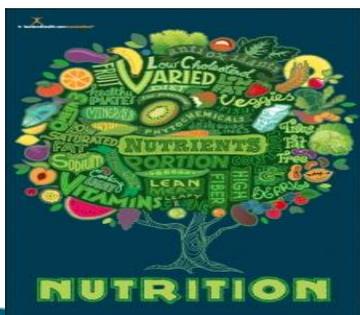
# Nutritional Diabetes Education Toolkit tailored to Hispanic-Mexican diet

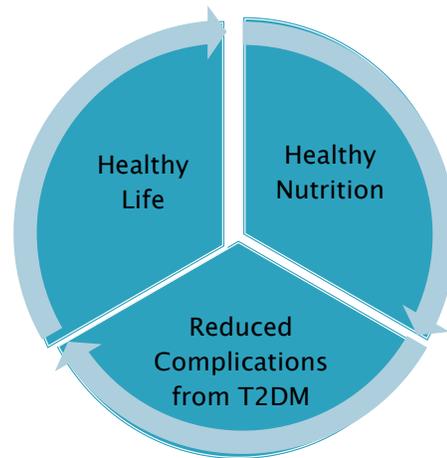
Soy Ramsumeer, RN, MSN, CDE  
Walden University



## Nutritional Education

Healthy nutrition → Reduced complications → Healthy life





## **Weeks 2 and 3**

Section I - Food groups and calories

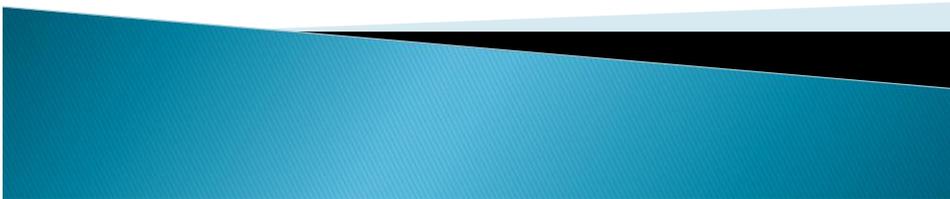
Section II - Grocery shopping

Section III – Preparation methods

Section IV – Portion control

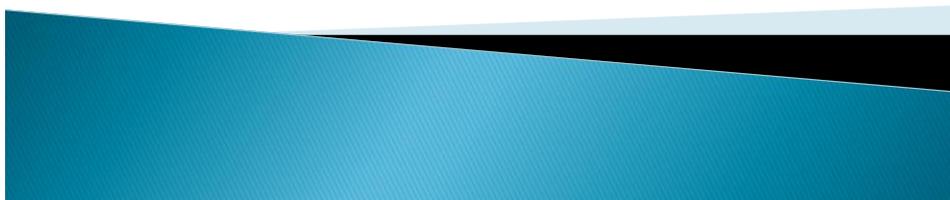
## Section I

- Description of food groups and caloric values



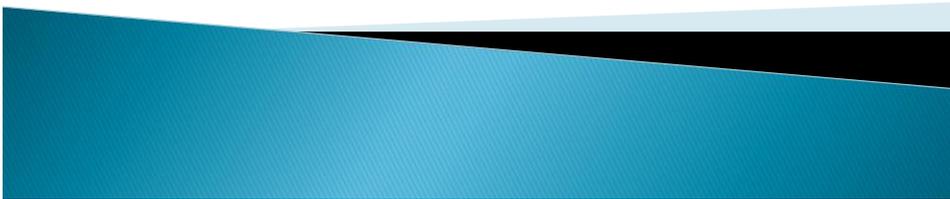
## Section II

- Shopping for healthy nutritious foods
- Foods to avoid



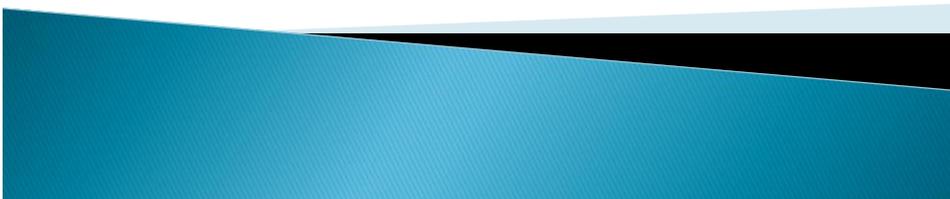
## **Section III**

- Meal preparation methods



## **Section IV**

- Portion control
- Utilizing the Healthy Plate
- Focus on the Hispanic-Mexican dishes



## Appendix D: Posttest, and Program Evaluation

### **Program Evaluation**

The following questions are to be asked at the completion of the program:

1. Was the program implemented according to the design
2. Were the instructors knowledgeable on the topics presented
3. Was the time sufficient to conduct the learning of each topic
4. Did the nurses nutritional knowledge increased
5. Were alterations and revisions needed during the implementation and what were they

### **Posttest**

Posttest of RNs nutritional knowledge on Hispanic-Mexican diet (same as pre-test to be compared and evaluated by CDE and RD).

Additional specific contents such as audio or other visual aide that could help to improve knowledge would be included here. Food replicas that are designed for educational teaching with portion size such as a piece of grilled chicken breast without the skin/fat would aid to enhance learning. The Healthy Plate that includes all the food groups with the correct portions for a healthy balanced meal would be used in the sessions. Complex carbohydrates such whole wheat tortillas and enchiladas, dairy, deserts/fruits, protein, and vegetables among others would be exhibited and passed around to help augment education. Emphasis would be placed on the Hispanic-Mexican dishes to include refried beans, Spanish rice, tacos, and tamales among others.