WALDEN UNIVERSITY
A higher degree. A higher purpose.

Walden University
ScholarWorks

Walden Dissertations and Doctoral Studies

Walden Dissertations and Doctoral Studies Collection

2018

# Meeting the Nutritional Needs of Very Low Income Diabetic Patients

Mary Hossley
*Walden University*

Follow this and additional works at: https://scholarworks.waldenu.edu/dissertations


Part of the Human and Clinical Nutrition Commons, and the Nursing Commons

This Dissertation is brought to you for free and open access by the Walden Dissertations and Doctoral Studies Collection at ScholarWorks. It has been accepted for inclusion in Walden Dissertations and Doctoral Studies by an authorized administrator of ScholarWorks. For more information, please contact ScholarWorks@waldenu.edu.

# Walden University

College of Health Sciences

This is to certify that the doctoral study by

Mary Hossley

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.

Review Committee
Dr. Mary Catherine Garner, Committee Chairperson, Nursing Faculty
Dr. Andrea Tatkon-Coker, Committee Member, Nursing Faculty
Dr. Eric Anderson, University Reviewer, Nursing Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

Walden University
2018

Abstract

Meeting the Nutritional Needs of Very Low Income Diabetic Patients

by

Mary Hossley

MS, Alcorn State University, 2002

BS, The University of Southern Mississippi, 1990

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

Walden University

February 2018

Abstract

Adult Type II diabetes is an increasing public health problem, particularly among very low-income minority populations. The purpose of this study was to create a nutritional guide for a diabetic specific meal plan with an accompanying food pantry nutrition packet for very low-income Type II diabetic patients at a rural Mississippi Free Clinic. The practice-focused question is: Will a nurse-prepared nutritional guide with supplemental food packets improve the glucose control in low income diabetic patients? The gap in practice is that there has been no structured nutrition education guide and no food pantry support plan for Type II adult diabetics. The theoretical framework is Cockerham's health lifestyle theory. A project goal was to prepare food packets specific to the Type II diabetic patients proved not viable due to limited donations of food resources, no regular source of fresh foods, and limited refrigeration space at the food pantry. However, education resources were developed for meal planning using the glycemic index, integration of cultural food preferences, and simple food log for the patient to chart daily meals. Recommendations include program evaluation of the use of these educational materials on patient A1c levels and weight in this population. The food pantry can offer diabetic specific meal packets with community social investment. Social change is addressing self-management of nutritional needs of very low income diabetic patients. Implication for nursing practice includes promotion of dialogue amongst different disciplines interested in the nutritional aspect of improving A1c and glucose levels.

# Meeting the Nutritional Needs of Very Low Income Diabetic Patients

by

Mary Hossley

MS, Alcorn State University, 2002

BS, The University of Southern Mississippi, 1990

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

Walden University

February 2018

# Dedication

I dedicate this project to my late mother, Mrs. Emma L. McClendon and grandmother, Mrs. Dovie Mary Brown. Also for their untiring support of me in working and completing this work, I also appreciate and dedicate this project to my husband, Mr. Kenneth Hossley, my daughter, Miss Ja'Landra Harris and my sister, Ms. Martha Nelson.

Acknowledgments

Special thanks to my family and friends for supporting me throughout this project. A special thanks to my committee chair, Dr. Catherine Garner, committee member, Dr. Andie L. Tatkon-Coker and Dr. Stoerm S. Anderson, URR for their untiring instructions and support. I would also like to thank Mr. Lawrence Jackson for the long hours of reading and editing my papers! Thank you all so very much for believing in me and supporting me during this time of accomplishment.

Table of Contents

List of Tables

List of Figures

## Section 1: Nature of the Project

Diabetes is a chronic disease process affecting the lives of millions of people worldwide. The complications from this illness can include loss of limbs, kidney disease, eye disease, cardiovascular complications, neuropathy, and other comorbidities. In the state of Mississippi, diabetes and its related complications rank eighth among causes of death (Centers for Disease Control and Prevention [CDC], 2012). Nationally, Mississippi ranks second among states in deaths attributed to diabetes and its complications, as reported by the Mississippi State Department of Health (MSDH) (MSDH, 2012). The statistics support the assertions, in that there were 3.2 diabetes related deaths reported per 100,000 persons in 2012 (MSDH, 2012). The African American morbidity rate, due to diabetes, in the state was almost 56.6 per 100,000, as compared to 20.9 deaths per 100,000 in Caucasians (MSDH, 2012). African Americans are affected most from this debilitating disease when compared to Caucasians and other nationalities. CDC noted that African American women have a high risk of developing diabetes, along with Hispanic men and women (CDC, 2015). One in four women over age 55 years are affected by diabetes (Thomas, 2016). African American women tend to develop two of the most debilitating complications of type 2 diabetes, amputations and kidney disease (U.S. Office of Minority Health, 2010).

Nutritional management of diabetes is often difficult for those under the poverty level, whose food budget or lack of access to healthy food options may not allow for adequate nutrition. Lack of understanding of diet management and health literacy issues can further compound self-management. The purpose of this quality improvement

project was to develop a nutritional guide and nutritional tracking tool and develop prepared, nonperishable, food packets for patients at a rural Mississippi Free Clinic. This project has the potential to inform diabetic patients, encouraging better nutritional self-management practices, which may ultimately improve their health outcomes.

## Background

Diabetes mellitus is a disease that is primarily driven by a deficiency of insulin production in the beta cells of the pancreatic islet, or the inability of body cells to react to insulin that is being produced (Shoback & Gardner, 2011; Sonksen & Sonksen, 2000). Symptoms of hyperglycemia, or high blood glucose levels, include increased thirst, increased hunger, and frequent urination. If the condition goes undiagnosed and untreated, complications such as diabetic ketoacidosis, hyperglycemic coma, and even death may result.

The National Diabetes Statistics Report (2014) and CDC (2015) have documented an increasing concern for the societal burden of diabetes. In a recent year, it was reported that 9.3 percent of the population, or 29.1 million individuals in the United States had been afflicted with diabetes (CDC, 2015). There were 21 million individuals who had been properly diagnosed, while the remaining 8 million persons had yet to be diagnosed at all (CDC, 2015). Absent diagnosis means corresponding absent treatment. According to CDC (2015), diabetes accounted for $245 billion in total medical costs, lost work, and wages in 2012, up from $174 billion in 2007. The effect of diabetes on the United States economy is staggering. It is estimated to cost the United States over $98 billion yearly. Care of patients with diabetes also places a heavy burden on the state of Mississippi, with

costs expected to reach an estimated $5.7 billion by the year 2025 (Gamble, Mendy, & Short, 2012).

Prediabetes is the term given to a condition of high likelihood for developing the full disease. According to a Johns Hopkins School of Public Health review, the prevalence of prediabetes, diabetes, and associated complications has doubled in the last two decades because of the worsening of obesity in the United States (John Hopkins Bloomberg School of Public Health [JHBSOPH], 2014). There are several renditions of diabetes disease. Type I diabetes known as insulin dependent diabetes mellitus (IDDM) is the term given to the disease which exists from birth, resulting from a complete lack of insulin production by the pancreas. Due to its existence throughout childhood, it is also known as juvenile diabetes, and requires a life-long treatment regimen usually starting from birth. According to the CDC, approximately 5% of all diagnosed diabetes cases are of the Type I variety (CDC, 2017). Type II diabetes, known as adult onset diabetes, is usually seen in middle–aged and older people. This diabetes type results from an inadequate use of available insulin that is being produced by the pancreas in the body. To more completely make the distinction, in Type II diabetes, the body does use the insulin being produced; however, the issue is that there is an inadequate supply of it to handle the everyday needs of the body. According to the CDC (2017), approximately 90-95% of all diagnosed diabetes cases are of the Type II variety. The result in either of these variations of the disease is that there is too much glucose floating around free in the blood and not enough being transported to tissues or organs that need it for their biochemical processes, hence the term *high blood sugar,* which usually describes the

results of diabetes disease. Treatment of diabetes can include insulin injections - administered subcutaneously or continuously by insulin pump, oral antidiabetic medications, proper diet, exercise, and monitoring and control of blood pressure and lipid levels (CDC, 2015; National Institute of Diabetes and Digestive and Kidney Disease [NIDDK], 2014). Major risk factors for development of diabetes include obesity and a sedentary lifestyle. These two factors are completely able to be controlled by diet modification and exercise.

Type II diabetes has a higher prevalence in African American, Hispanic, and Native Americans, as well as in those who have a lower socioeconomic status and those in specific geographical regions in the United States (CDC, 2015; Imperatore et al., 2012; NIDDK, 2014). Members of these ethnic and social groups suffer the most because they often lack resources and access to medical treatment and good nutritional choices. This results in a level of insulin resistance, described as when fat, muscle, and liver cells do not carry glucose into the cells to be utilized for energy (Sonksen & Sonksen, 2000; JHSPH, 2014). Therefore, more insulin is needed to assist glucose into the cells. This is a need especially after the consumption of a meal (JHBSPH, 2014; American Diabetes Association [ADA], 2004).

Healthcare providers realize that it is important to stay ahead of this chronic illness and the complications associated with it, to ensure patients have better health outcomes and a better quality of life (Romero, 2016). Laboratory and point–of–care-testing (POCT) to check blood glucose levels (acute and over time using the hemoglobin alpha-1c [A1c] level) are ways of screening for diabetes, and play an important role,

affording significant value in the screening, monitoring, and management of these patients (Romero, 2016). Simple laboratory testing allows for determining the blood glucose level at an acute moment in time, but more important to the management of the disease, is to gain insight to the historical level of blood glucose over time, in which case a blood marker known as the Hemoglobin A1c can be used to tell average blood glucose level over a three-month period.

## Problem Statement

Lifestyle modifications including increased exercise, a healthy diet, and keeping a diabetic journal are important in maintaining adequate blood glucose levels. Adherence to medication schedules is also critical to the process of maintaining good health for patients with diabetes. Proper self-management can help maintain optimal blood glucose levels and can aid in decreasing A1C levels, adding an extra five years to an individual's life with fewer incidence of complications (Health Resources and Services Administration [HRSA], 2015).

The Free Health Clinic is in a rural south Mississippi community. Services offered there include screenings for medical care (uninsured adults only), vouchers for prescription medications (non-narcotics), mental health and depression screening, dental services (extractions and cleaning only), and a food pantry. Services are provided for uninsured and underinsured adults in southern Mississippi by licensed social workers, registered nurses, nurse practitioner, and physician volunteers making up an in-house, interdisciplinary treatment team. In order to be eligible for services, clients must meet income limits for very low-income status, defined by clinic administration as having

income less than 150% of the governmentally defined poverty level. Eligibility screening is done to check the patient's qualification status for food, medical treatment needs, dental needs, and medication needs. The licensed social worker administers the depression and mental health scale to patients as needed.

The gap in practice is that there is currently no structured nutrition education guide and no adequate food pantry support plan for meals tailored to Type II diabetic adults. There is little known about how to construct relatively simple nonperishable food packets that provide the correct nutrition for a Type II diabetic patient who does not have access to proper nutrition due to poverty, lack of education, or living in a food desert. As a result, the nutritional needs of this population of 3000 patients (1100 households) may not be met by the currently available food pantry services being provided by the free clinic.

*Healthy People 2020* is the healthy agenda for improving the health and wellness outcomes of all Americans (Office of Disease Prevention and Health Promotion [ODPHP], 2017). *Healthy People 2020* presents the objectives that are set to meet these healthy outcomes. The goals to achieve a healthy outcome for diabetes patients include reducing the impact of chronic disease, decreasing the cost associated with this disease, and improving the quality of life for individuals who have the disease and for those at risk of diabetes (ODPHP, 2017). Therefore, this doctoral project holds significance for the field of nursing practice by providing the low-income Type II diabetic patient with a resource to help develop a diabetes-specific meal plan appropriate to retard the progression of their disease.

## Purpose

The purpose of this study is to create a nurse-led intervention providing a nutritional guide for a Type II diabetes specific meal plan with an accompanying food pantry nutrition packet for very low-income Type II diabetic patients at a rural Mississippi Free Clinic. The practice-focused question is: Will a nurse-prepared nutritional guide with supplemental food packets improve the glucose control in low income Type II diabetic patients? If this program is successful, it could address the gap in self-care support for low income Type II diabetic patients and be replicated at other Free Clinics and food pantries across the state of Mississippi and the nation.

## Nature of the Doctoral Project

This evidence-based quality improvement project aims to improve Type II diabetic patient self-management as it relates to nutrition and glycemic control. This is consistent with the role of the doctor of nurse practitioner (DNP), to translate research evidence into clinical practice. The process of creating the nutrition guide began with a literature review involving a search of electronic databases, internet websites, and book chapters. The electronic databases included the Cumulative Index to Nursing and Allied Health Literature (CINAHL), Elton B. Stephens Co. (EBSCO host), Education Resources Information Center (ERIC), ProQuest, Education Research Complete, Ovid Technologies, Inc. (OVID), and Google Scholar. Internet websites included the CDC and professional associations related to nutrition and diabetes, health literacy, and nursing education. I searched the following key words and phrases on each database: agency, structure, behavior, glycemic index, diabetes mellitus, type 2 diabetes, A1c, glucose, diet,

nutrition, food diary, obesity, weight, lifestyle, food pantry, diabetes-specific food packets, meal plans, barriers, communication, financial, budget, key stakeholders, power and politics.

The literature review informed the nutrition education guide. An important first step was to seek out best practices for nutrition selection, servings per day, portion sizes, and ingestion time of day in the resources identified by review of the literature. In addition, best practices for collaboration and publishing format were gleaned from the process. Once completed and formatted, the guide was presented to key clinical stakeholders at the Free Clinic for review, input, and final consensus on use with the proposed patient population. This interprofessional involvement is important because these individuals have daily contact with the population of interest and offer insights not found in the literature.

The second step in developing the components necessary for this proposed nursing intervention was to review, with the food pantry staff, current inventory selections and operations protocols. This review was necessary so that a determination could be made regarding what is normally stocked and issued to clients, and how existing inventory and processes might translate into workable and nutritionally compliant meal offerings for adults with Type II diabetes. The food pantry staff have insight into what foods are culturally acceptable and which are not. A tentative list of the meal possibilities was developed and reviewed by the interdisciplinary treatment team. It would be optimal for patients to have choices of meal plans that can be supplemented

with their food allowance. A budget for additional items was prepared for consideration by the inter-disciplinary treatment team and clinic leadership.

Other stakeholders, including nutritionists, nurses, physical therapist, and licensed social workers were solicited to assist in planning and implementing a food-specific packet for the diabetic patient. A registered dietitian was consulted to assist with meal planning.

## Significance

This project is significant to the profession of nursing in several ways. First, the nurse researcher had an opportunity to impact the lives of patients with a real-life concern, that potentially could have a large impact on their medical treatment outcomes. Nutrition support for Type II diabetes patients can help those patients increase their quality of life, and extend their life as well. Additionally, the nurse researcher had a chance to work with several other members of the healthcare team to impact overall patient care. This interprofessional inclusion made a difference in the outcomes of this project by building relationships among disciplines, thereby creating collaboration regarding nutrition. Lastly, all stakeholders exhibit a level of investment in the treatment of the whole patient by working closely together.

## Potential contributions to Nursing Practice

This project has several potential contributions relevant to the practice of nursing. First, this project will add to the body of knowledge relating nutritional status to therapeutic outcomes. While the relationship between meals and glucose control is well known, very low-income patients on food stamps and dependent upon food banks have

not received a great deal of attention. This project is poised to open a new window into the train of thought on the subject. This will be an inter-professional collaborative project, enabling each discipline to be responsible, accountable, communicate, cooperate, and show assertiveness, autonomy and have mutual trust and respect one for the other. This type of partnership creates an interprofessional team that will foster a work base with commonality regarding goals that will improve patient care and outcomes (Kasperski, as cited in Bridges et al., 2011).

## Potential Transferability

Healthy People 2020 is the nation's agenda for improving the health and health outcome of all Americans (CDC, 2015). Healthy People 2020 tracks the objectives that are set to meet these healthy outcomes. The goal for the patient with Type II diabetes is to reduce the effects of the chronic disease, decrease the cost associated with this disease, and improve quality of life for individuals who have the disease and for those at risk of diabetes (ODPHP, 2017). The state of Mississippi ranks near the bottom of the list (third from the bottom) in having patients with diabetes attend diabetes self-management classes (CDC, 2015). More work needs to be done to improve self-management to help decrease diabetes and complications related to this chronic disease. The CDC's (2015) focus is to decrease and reverse diabetes by: (a) monitoring and tracking disease prevalence; (b) identifying, implementing, and a valuation of effective interventions; and (c) reducing the number of annual deaths related to diabetes disease. Lifestyle affects the Type II diabetic in several ways including several comorbidities and complications affecting their quality of life.

Should this meal guide with supplemental food bank meals prove successful in helping patients with nutritional control of glycemic status, it could be replicated at other free clinics and food pantries and show that cooperation among disciplines to treat low income diabetic adults could be a benefit to communities and populations.

## Implications for Positive Social Change

This project supports potential implications for positive social change by focusing on the nutritional aspect, an overlooked area of the nursing profession. The profession of nursing has a duty to assess a patient's nutritional state; however, the impact of the nurse on the intake of appropriate food for nutritional value has not been widely studied. There is the potential to change the health outcomes of patients by intervening for the benefit of nutrition. A change in the way Type II diabetes patients view their eating habits will likely positively impact their potential for an increased quality of life and perhaps a longer life-span.

## Summary

Type II diabetes is a serious disease that affects millions of people worldwide. It is a debilitating chronic disease with devastating effects and consequences. Diabetes is very costly to the local and national healthcare economy. Research has shown that there is a wide range of differences in African American who have Type II diabetes when compared with other ethnicity groups. Mississippi ranks second in the nation by population of citizens affected with diabetes related diseases. Mississippi ranks diabetes and its associated chronic illnesses as the number eight cause of death in the state, primarily due to complications which develop after diagnosis.

Health care providers are aware of patients with Type II diabetes who may also be suffering from poverty with no insurance and sometimes mental illness. These healthcare providers must be willing and ready to respond to such complications that these problems cause in this population. It is important that a nutritional program be developed in the treatment plan of the very low-income Type II diabetes patient. Section two will discuss the background and context for this quality improvement project.

Section 2: Background and Context

## Introduction

The Healthy People 2020 goal for diabetes is to reduce the impact of chronic disease, decrease the cost associated with this disease, and improve quality of life for individuals who have the disease and for those at risk of diabetes (ODPHP, 2017). Therefore, this doctoral project holds significance for the field of nursing practice by providing a method to ensure a diabetes specific meal plan for low income Type II diabetic patients. The purpose of this doctoral project was to develop an educational and nutritional tracking tool, and a kit of prepared, nonperishable food packets for patients at a rural Mississippi Free Clinic. The practice-focused question is: Will a nurse-prepared nutritional guide with supplemental food packets improve the glucose control in low income Type II diabetic patients? This project has the potential to assist very low-income Type II diabetic patients with nutritional self-management and improve their health outcomes.

## Background and Context

The purpose of diabetes care management is to improve blood glucose levels. Controlling blood glucose levels improves the development and progression of complications associated with diabetes (Thomas & Elliott, 2009). Factors concerning nutrition and how it affects blood glucose levels are not currently viewed as an optimal dietary treatment for diabetes (Thomas & Elliott, 2009). The use of the Glycemic Index (GI) in meal planning is in question (Thomas & Elliott, 2009). However, better control of the blood glucose level improvement and minimal use of medication can result in

lessened complications, an improved quality life, and an increased life span of the diabetic patient (Thomas & Elliott, 2009).

The practice problem is focused on the lack of knowledge regarding the Type II diabetic patient and corresponding nutritional needs for those who are poverty-stricken, have no insurance, and live in a food desert at a Free Clinic. There is a need to develop a food packet specific for the diabetic patient who seeks assistance at this Free Clinic. This doctoral project also focused on developing plans for constructing non-perishable meals, which will provide the correct nutrition for very low-income diabetic patients dependent upon food stamps and food banks for daily meals. Many existing patients diagnosed with Type II diabetes at the Free Clinic are known to not adhere to medication therapy regimens, dietary guidelines, or self-care routines (such as blood glucose logs and exercise treatment regimens), despite receiving counseling.

The client population served by the Free Clinic also has environmental barriers to a healthy lifestyle. Clinic patients are typically low-income, have some aspect of mental illness, and live in high crime neighborhoods, without the benefit of safe walking trails or healthy food stores. The Free Clinic bridges some of the gaps. The food pantry helps them meet nutritional needs, without which a deficit in nutritional self-management would certainly result.

## Concepts, Models, and Theories

The theoretical framework that underpins this study is Cockerham's health lifestyle theory. This theory explains connections between structure, agency, and behavior (Cockerham, 2013). Cockerham's theory of ideas of agency and structure

demonstrate that in this modern day not all people have the equal opportunity to access a healthy lifestyle. He refers to agency as an individual's way of choosing a behavior (Cockerham, 2016), but points out that there must also be alternatives that the individual does not choose. Structure is defined as sets of schemes and resources that empower or constrain social action (Cockerham, 2016). Agency and structural influences lead to decisions, habits, and actions that one makes, this can reinforce the structure that caused the behavior in the first place (Cockerham, 2016).

The structure of this project is modeled after Donebedian's quality improvement model of structure, process, and outcome as applied by Moore et al. (2015). This framework consists of improving quality of care in three fundamental areas of healthcare. Structure is the physical and organizational characteristics and where healthcare occurs (Donebedian, as cited by Moore, 2015). The structure is the Free Clinic and the addition of a supportive education and nutrition program for diabetics. Donebedian, as cited by Moore (2015) identifies the process as including all the treatment and services the patient will receive during the nurse-led education process, such as a GI guide, diabetic-specific food packet, monitoring tools, and dietary support from the food pantry. Further, Donebedian, as cited by Moore (2015) considers the outcome as the result of care on the health status of the participants. The desired outcome is a lower A1c level after four weeks. It may also show improvement in participant's knowledge of a GI guide or the impacts on participant behavior and the degree of patient's satisfaction with the GI tool.

The glycemic index (GI) is a numeric value to identify how fast the human body can change carbohydrates in food into glucose (American Diabetes Association, 2016).

The smaller the number, the less impact the food has on blood glucose. A patient may read food labels to check the GI value. An important consideration is that the GI number as stated could change based upon preparation of foods, ripeness of foods, and other foods eaten at the same time. Other methods for finding GI values include conducting an internet search or consulting with a dietitian or nutritionist.

Small and Brand-Miller (2009) concurred that even amid controversy around its use, the glycemic index (GI) is a concept in the science of nutrition that may be used along with carbohydrate counting to manage blood glucose levels. Its application has been currently validated as a useful tool for clinicians to deploy in the management of diabetes (Small & Brand-Miller, 2009).

Vermewen, and Turnbull (2000) sampled 21 professionals treating diabetics (expert population) and 18 individuals with diabetes (lay population) by invitation. A GI guide was created and participants were instructed in its use. A questionnaire consisting of 10 questions was issued to participants and scored based on appropriate responses out of 10. The first six questions tested existing knowledge about the GI values of different foods and whether a diet for diabetes should be based on low or high GI foods. Question 7 was based on whether information on GI and knowledge of inclusion of sucrose in the diet of the diabetic makes a difference or changes an individuals' opinion of the same. Question 8 and 9 sought to see if providing information on the GI would change healthy eating beliefs. Question 10 was included to see whether participants grasped the importance of basing their meals on low GI foods (Vermewen & Turnbull, 2000). This questionnaire was administered before and directly after a meeting and discussion related

to the GI tool, and sought to assess patient knowledge and feasibility of the use of the GI tool in practice (Vermewen & Turnbull, 2000). The questionnaire provided information on the participants' knowledge of GI before and after the discussion regarding the tool. In addition, it allowed study facilitators to gain insight to the opinions of the participants regarding the GI guidelines.

The study results indicated that knowledge of GI and its impact on glucose levels changed significantly from pre- to post- exposure and use of the GI guide. However, there was no change in the participants' opinions about healthy eating guidelines (Vermewen & Turnbull, 2000). The conclusion of the study was that the GI guide was an effective tool to increase knowledge, awareness, and interest about the use of the GI in the effort to manage blood glucose levels (Vermewen & Turnbull, 2000).

Overall, use of the tool proved valuable to assess participant knowledge and opinion of the GI guidelines and the effects it may have on their glucose level. However, there were some pitfalls noted that should be addressed by future evaluators, to include keeping information in the GI guide basic and simple to limit confusion, and the need for adequate training of study facilitators to be knowledgeable of the tool themselves (Vermewen & Turnbull, 2000).

Vermewen and Turnbull (2000) revealed high significance among both populations involved, and the study design was effective in increasing knowledge and raising awareness about use of GI in practice. This study serves as the model for the proposed intervention described within this document, which will seek to utilize a similar

concept and determine if it will increase knowledge of the participants, regarding the GI guidelines, and spark interest in selecting better food choices in Type II diabetic patients.

## Relevance to Nursing Practice

Nutrition plays a large role in management of acute and chronic illness (such as diabetes). Each healthcare discipline, including nursing, must reevaluate their own competencies prior to inclusion of other interprofessional dialogue related to nutrition (DiMaria-Ghalili et al., 2014). Due to increased obesity and the prevalence of diabetes, there is a need for interprofessional nutrition education (DiMaria-Ghalili et al., 2014). DiMaria-Ghalili et al. (2014) explained that there is a gap methodology in nutrition education and training within individual health professions (such as nursing, pharmacy, dentistry, and dietetics) that can build on further nutritional basics and applied nutrition education for each discipline (DiMaria-Ghalili et al., 2014).

A meeting held by the National Heart, Lung, and Blood Institute, Division of Cardiovascular Sciences, and cosponsored by the National Institutes of Health (NIH), Office of Disease Prevention and Division of Nutrition Research Coordination (2012) recommended strategies for implementing nutrition education, research, and training across all disciplines in healthcare. This gathering engaged leaders, educators, clinicians, researchers, and key stakeholders, in fostering a belief that there be continuing discussions and efforts to implement nutrition based practices across the field of healthcare professional education, training, and research.

This doctoral project advances nursing practice in educating nursing and other professionals regarding nutrition education and meal planning for very low-income diabetics in the management of chronic diseases.

## Local Background and Context

In the state of Mississippi, diabetes ranks number eight in deaths related to complications from diabetes (CDC, 2012). The state comes in second nationally in deaths due to diabetes and diabetic complications according to the Mississippi State Department of Health (MSDH, 2012). There were 3.2 deaths reported out of 100,000 persons in 2012 (MSDH, 2012). The African-American mortality rate in the state was almost 56.6 per 100,000 as compared to 20.9 deaths per 100,000 in Caucasians (MSDH, 2012). African-Americans are affected most from this debilitating disease when compared to Caucasians and other nationalities. It is also noted by the Center for Disease Control and Prevention (CDC) (2015) that African-American women have a high risk of having diabetes along with Hispanic men and women. One in four women over age 55 are affected by diabetes (Thomas, 2016). African American women experience a disproportionate share of two of the most debilitating complications because of Type II diabetes - amputations and kidney disease respectively (U.S. Office of Minority Health, 2010). The effect of Diabetes on the United States' economy is significant. It is estimated to cost the U. S. over $98 billion dollars yearly. It also places a heavy burden on the state of Mississippi with costs escalating to an estimated $5.7 billion dollars by year 2025 (Gamble, Mendy, & Short, 2012).

The Free Health Clinic is in south Mississippi. Services offered here include screenings for medical care (uninsured adults only), prescription medicine (nonnarcotic), mental health and depression screening, dental referrals (extractions and cleaning only), and a food pantry. Services are offered for uninsured and underinsured adults in southern Mississippi. Services are provided by licensed social workers, registered nurses, physicians, and nurse practitioner-prepared volunteers. The licensed social worker administers the depression and mental health scale to patients as needed. Eligibility screening is done to check each patient's qualification status for food, medical needs, dental needs, and medication needs.

A systematic literature review was done on the type 2 diabetic patient, focusing on those who are low income or lack access to healthy food. The literature was researched and key stakeholders consulted. The stakeholders requested a plan be developed to meet the nutritional needs of patients at the Free Health Clinic.

## Role of the DNP Student

I have been doing my practicum experience at the Free Clinic, having worked there as a volunteer. My observation about the nutritional difficulties of the diabetic patients led to a dialogue with key stakeholders at the clinic. I developed a nutrition guide, a meal planner, and a plan for the food pantry to stock ready-made diabetic meals.

In my work as a clinical instructor, and I assisted my students daily to write care plans and perform assessments on patients with chronic illnesses, such as diabetes and its related complications. Living in southern Mississippi, I witness a large population with this illness due to obesity and sedentary lifestyles. Maintaining a proper diet and

properly preparing foods are a continuing challenge. I feel it is our duty as nurses to continue to research and address the impact of nutrition on health outcomes, in effort to bridge any gaps between theory and practice for the nursing profession.

I am a Type II diabetic and know firsthand what it means to be adherent to the correct diet, exercise, medication, and keeping a diabetic journal. There are potential areas of bias in this project. However, I am motivated to not allow my true feelings to interfere with the planning, implementation and outcome of this needed project for a less fortunate population living without insurance, in a state of poverty, and who often are also stricken with mental illness. A positive outlook on the future treatment of diabetes, and a personally optimistic view of the impacts of this disease on my life, influences me to do my best to avoid any biases during this project.

## Summary

There is a gap in nutrition education and training within individual health professions (such as nursing, pharmacy, dentistry, and dietetics) that can build on further nutritional basics and applied nutrition education for each discipline in the healthcare and medical field (DiMaria-Ghalili et al., 2014). A systematic review was done to research literature on nutritional concerns and nutritional programs related to the needs of the diabetic patient who lives in poverty, has no insurance, and has poor access to healthy foods. The plan was to develop a project to include proper nutritional meals or meal packets from the food pantry at the Free Clinic. Key stakeholders were consulted to aid with this project.

Section 3: Collection and Analysis of Evidence

## Introduction

Supporting the maintenance of adequate blood glucose levels is important for patients diagnosed with Type II diabetes. Lifestyle changes such as exercising, diet, and keeping a diabetic journal are the keys to success in controlling blood sugar levels. Equally as important is adherence to the complete treatment regimen, as quality of life and well-being cannot be possible if self-care is lacking. Optimal blood glucose levels can add an extra five years to the individual's life with fewer occurrences of complications (HRSA, 2015).

The purpose of this study was to create a nutritional guide for a diabetic specific meal plan, with an accompanying food pantry nutrition packet, for low income diabetic patients at a rural Mississippi Free Clinic. Better control of blood glucose levels leads to improvement in the use of medication, lessened complications, an improved quality life, and an increased life span of the diabetic patient (Thomas & Elliott, 2009).

The practice problem was focused on the poor nutritional management of clients with Type II diabetes served by the Free Clinic and its food pantry for basic nutritional needs. Due to several factors, the food pantry was not specifically stocked for the diabetic patient. Clinic management requested the development of a comprehensive nutritional strategy to serve the needs of clients. This project provided the first steps to improve nutritional knowledge of clients seeking assistance at the Free Clinic. The practice-focused question of this project is: Will a nurse-prepared nutritional guide with supplemental food packets improve the glucose control in low income diabetic patients?

The operational definitions of key aspects of the doctoral project include: (a) agency, (b) structure, (c) behavior, and (d) glycemic index(GI). The term agency is defined as an individual's way of choosing a behavior, but there must also be alternatives that the individual does not choose. Structure defined as sets of schemes and resources that empower or constrain social action. Behavior is the impact of agency and structural influences that lead to decisions, habits, and actions that one makes. This can reinforce the structure that caused the behavior in the first place (Cockerham, 2016). The GI is a measure of glucose that is used as a guide when counting carbohydrates. The GI guide is validated to be helpful in diabetes management (Small & Brand-Miller, 2009).

## Sources of Evidence

### Published Outcomes and Research

Databases and search engines were utilized to find related outcomes and research on "nutrition support and Type II diabetes." Resources for research included systematic reviews, Cochran Collaboration, peer reviewed sources, evidence-based practice guides @ Walden library, CINAHL, EBSCO host, ERIC, ProQuest, Education Research Complete, OVID, and Google Scholar. Internet websites included the CDC, professional associations related to nutrition and diabetes, health literacy, and nursing education. The search dated back 5-7 years covering the proposed topic.

The following key words and/or phrases were employed with each database search: agency, structure, behavior, glycemic index, diabetes mellitus, type 2 diabetes, type II diabetes, A1c, glucose, diet, nutrition, food diary, obesity, weight, lifestyle, food

pantry, diabetes-specific food packets, meal plans, barriers, communication, financial, budget, key stakeholders, power and politics.

The intent was to complete an exhaustive and comprehensive systematic review of the literature. Development of plans for a food packet were coordinated with the staff of the food pantry.

## Protections

Methods taken to protect data, consent process and safeguarding of privacy included the signing of a confidentiality form from the Free Clinic and obtaining Institutional Review Board (IRB) approval from Walden University and the Doctor of Nurse Practitioner (DNP) Project Committee. The identification of the organization and participants were masked.

## Analysis and Synthesis

The analysis and synthesis of the literature resulted in the creation of a specific education program with additional, culturally specific, educational materials and a food log for use by the Clinic Nurses. A suggested inventory of diabetic specific meals was developed for the food pantry.

## Summary

The role of the nurse practitioner is to promote health and wellness for patients in medically high-risk populations. Patients with Type II diabetes fall into the category of high risk due to the complexities of their disease process. The purpose of diabetes self-management is to improve blood glucose levels. Controlling blood glucose levels lessens the development and progression of complications associated with diabetes (Thomas, &

Elliott, 2009). A systematic review of evidence-based literature was performed to support the development of this project. Input was sought from the Free Clinic director, registered nurse(RN), social worker and physician to explore the relationship between A1c levels, glucose, weight, and nutrition, using a food diary/journal.

## Section 4: Findings and Recommendations

The gap in practice is that there has been no structured nutrition education guide and no adequate food pantry support plan for meals tailored to Type II diabetic adults. There is little known about how to construct relatively simple, non-perishable food packets that provide the correct nutrition for a Type II diabetic patient who does not have access to proper nutrition due to poverty, lack of education, or living in a food desert.

The purpose of this study was to create a nutritional guide for a diabetic specific meal plan, a simple food log, and an accompanying food pantry nutrition packet for low income diabetic patients at a rural Mississippi Free Clinic. Better control of blood glucose levels leads to improvement in the use of medication, lessened complications, an improved quality life, and an increased life span of the diabetic patient (Thomas & Elliott, 2009).

### Findings and Implications

#### Nutritional Guide

The nutritional guide for the diabetic specific meal plan was developed and is now included in educational classes, directed by the social worker and clinic nurse, once a month and as needed (Appendix A). This nutritional guide was also included in the food pantry packets. The nutritional guide includes foods to choose from such as fresh, frozen, canned and dried foods. The guide can be used to make better nutritional food choices that are culturally acceptable and available to the low-income patient. It can also be used to make better food choices based on the GI food guide. The GI guide is used

along with the nutritional food guide to rank foods based on how quickly they are digested and get into the bloodstream to render effects on blood sugar levels.

There are several resources that were assembled for the education of the patient with Type II diabetes (Appendix B). According to the Canadian Diabetes Association (2017), basic guidelines and recommendations for healthy eating and lifestyle adjustments can aid people with diabetes in enjoying their favorite cultural foods, achieve target blood glucose levels and reduce the risk of complications. Other resources for diabetes services are available in multicultural languages from the National Diabetes Services Scheme (NDSS), funded by the Australian Government to support people living with diabetes (NDSS, 2017).

**Food Log**

A daily food journal and diabetic logs (Appendix C) were designed to be supplied at the beginning of the Free Clinic admission and used throughout the program. The food log includes meals eaten during breakfast, lunch and dinner. Snacks and beverages are also to be charted on the log daily, particularly those high in sugar content such as sodas. The participants' weight and glucose levels should also be documented on the daily log and turned in to the RN when reporting to the clinic monthly.

**Food Pantry Packets**

One of the goals of the project was to prepare food packets that were specific to the needs of Type II diabetic patients, as a support for the control of blood sugars. A nutritional guide for a diabetic specific meal plan, with an accompanying food pantry nutritional packet, was assembled and given to the food pantry manager for future use in

disbursement of patient food packets. This part of the program proved not viable for some of the following reasons:

1. Many patients only visit the clinic once per month for medical services. The patients pick up food once a month. Many patients do not have adequate transportation back and forth to the clinic. In some cases, patients had to arrange a ride with others, which usually results in time limitations and constraints. The food may last 3-5 days and is meant to be a supplement to other programs that provide resources. The food packets include: 3 canned vegetables, 1 soup, 1 rice, 1 fruit, 1 bread, 1 meat and 2 miscellaneous food items such as beans, taco shells, cake mix, oatmeal, multigrain nutrition bars, cereal bowls and soy milk. Other foods also included items such as fresh frozen chicken, canned chicken, concentrated juices, low fat milk, apple sauce, corn, peanut butter, and boxed crackers.
2. The food bank is dependent on donated food, generally comprised of non-perishable staples such as white bread, white rice, sugar drinks, and snacks high in carbohydrates, such as breakfast bars. These foods are generally not recommended for consumption in the diet of persons with diabetes.
3. The pantry's access to fruits and vegetables is extremely limited and dependent on over-stock of area groceries, limited cultivation of an on-site garden, and donations from others. There was no regular source for fresh food, and the lack of refrigeration space provided limitations on what could be secured from outside the clinic proper.

4. Packaging of food is often done for an entire family. Removing items normally restricted with a diabetic diet would have affected the nutrition of other family members.
5. Patients still needed to supplement the food bank basics with other low-cost food items, which has been shown to be difficult for low income Americans in a food desert (United States Department of Agriculture Economic Research Service, 2009). Thus, while the idea of being able to provide diabetic meals prepackaged for patients is conceptual sound, it proved impractical in this specific practice setting.

**Pilot Intervention**

Due to the limitation of food packets and other family members having to utilize the foods in the food packets, the diabetic-specific food packets were not distributed to the individual Type II diabetic patients selected for this intervention. In the alternative, the social worker and nurses used the education packet and the food log with 93 patients who had A1c levels ranging from 7.2-14.7%. Thirty-four (34) were male (24 African American, 10 Caucasians), 59 were female (38 African American, 20 Caucasian, and 1 Hispanic). At the end of four weeks, blinded data were obtained from 10 of these patients who returned for visits and provided to the DNP researcher for analysis.

The IBM SPSS statistical software was utilized to plot the relationship between A1c levels before and after the education intervention. Descriptive statistics showed a relationship between the A1c levels and meal plan education within the 4-week period.

Based on $N = 10$, the Mean for week 1 was 8.81($SD = 3.16$) and for week 4 the Mean was 8.47 ($SD = 2.78$). Table 1 represents scores for each of the 10 participants.

Table 1

*A1c Levels at 1 and 4 Weeks for the Type II Diabetic*

| Type 2 diabetic | A1c Week 1 | A1c Week 4 |
|---|---|---|
| 1 | 10.3 | 9.60 |
| 2 | 7.5 | 9.50 |
| 3 | 13.20 | 7.80 |
| 4 | 8.10 | 9.40 |
| 5 | 5.90 | 5.90 |
| 6 | 5.00 | 5.50 |
| 7 | 9.30 | 9.60 |
| 8 | 14.40 | 14.70 |
| 9 | 5.40 | 5.30 |
| 10 | 9.00 | 7.40 |

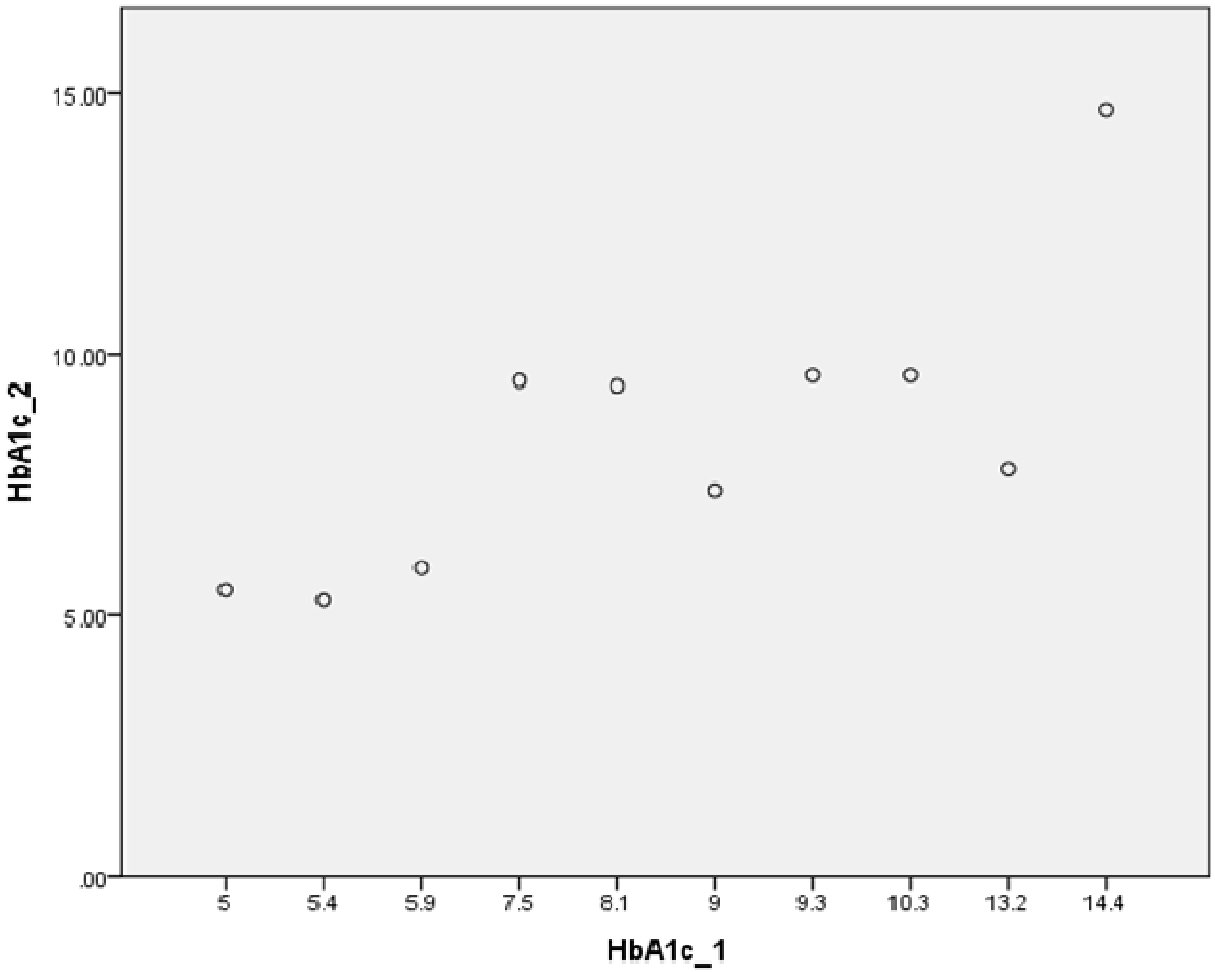


*Figure 1.* Scatter Plot between A1c in week 1 and A1c in week 4

There were data also on the weight of the Type II diabetic patient during the same time. Table 2 and Figure 2 (Scatter Plot) represents scores for $N = 10$ individuals. A Bootstrap test was run to test the significance of correlations and is based on 1000 Bootstrap samples, on the weights data and the A1c data respectfully. Based on a 95% confidence interval, the significance of the A1c data was .01, showing that there is a 99% chance of the data being true or beneficial to the study. The data of the weight levels

showed a significance of .001. It also can suggest that more research needs to be done for further information and testing on a larger sample.

Table 2

*Weight of the Type II Diabetic for Week 1 and Week 4*

| Type 2 diabetic | Weight Week 1 | Weight Week 4 |
|---|---|---|
| 1 | 193 | 194 |
| 2 | 189 | 188 |
| 3 | 281 | 310 |
| 4 | 235.8 | 238 |
| 5 | 173 | 159 |
| 6 | 186 | 200 |
| 7 | 155 | 158.2 |
| 8 | 200 | 203 |
| 9 | 304 | 300 |
| 10 | 294 | 301.8 |

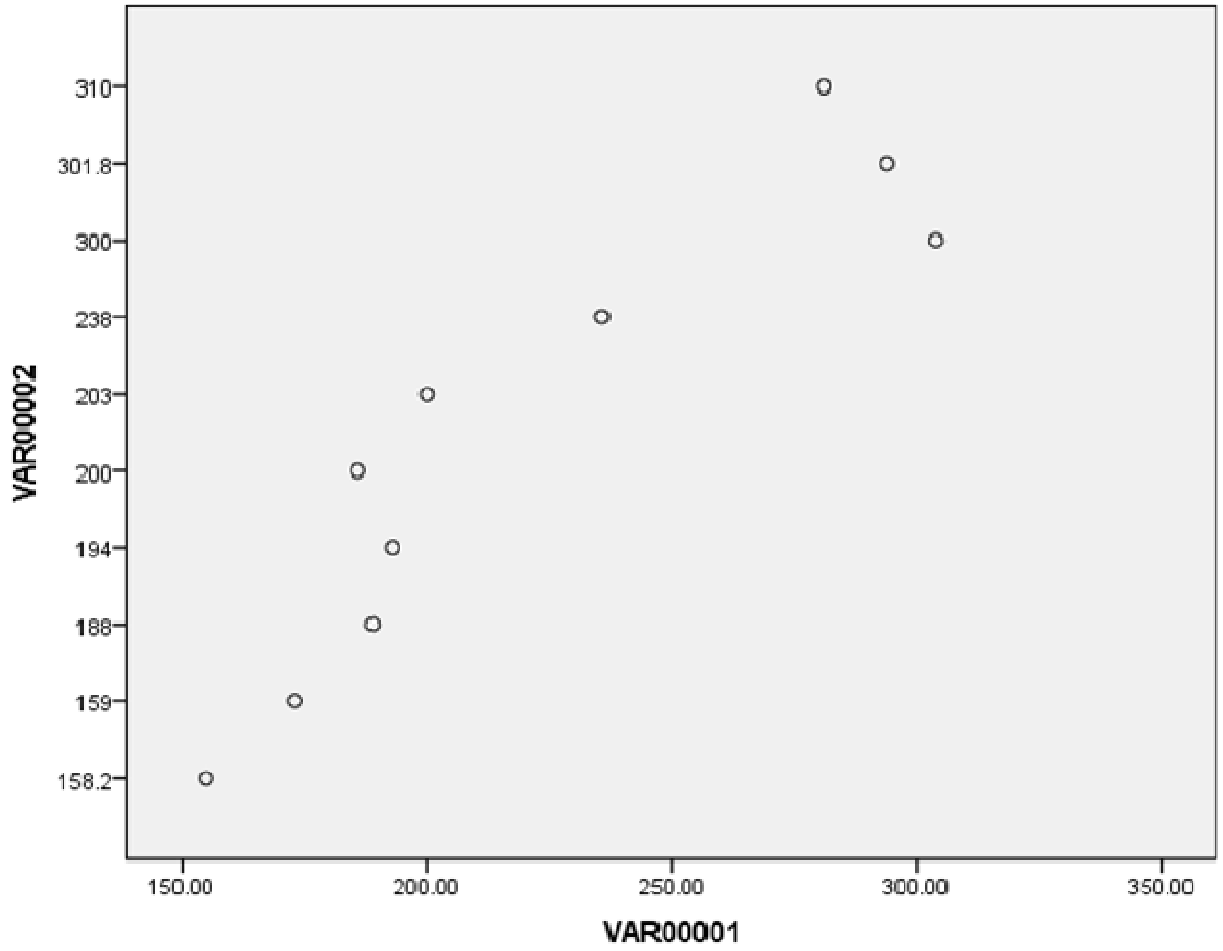


*Figure 2.* Scatter Plot between Weight in Week 1 and Weight in Week 4

## Recommendations

The very small patient group that did receive the detailed information on food choices and the use of a food log did show improvements in A1c levels and experienced weight loss over a four-week period. The use of individualized education alone may offer support for self-management and needs to be tested further with a larger population. A caveat for success was the impact of peer support, in that those participants that rode together to the Free Clinic and received food pantry services, showed that the

collaboration and support of the other person encouraged them to stay with the program and keep up with the glucose log and diabetic-specific meal planning. As a result, these partners experienced lower weight and A1c levels. Timely monitoring of weekly glucose levels and A1c levels at least every 3 months, could also serve to monitor the impact of the diabetes-specific meal plan and guidelines on the Type II diabetic patient's health and well-being rather than the 4 weeks used in the pilot.

While the food pantry idea did not work for this study, the Free Clinic administrators did show interest in pursuing this option. Since the pantry is not the main source of food, a structured meal plan would require more frequent visits or a new service for the diabetic patient which would plan a month's worth of meals. Partnerships for diabetic meal prep with organizations such as Meals on Wheels, other food pantries, and other donors can benefit the diabetic patient. Family education and classes for the family cook would benefit the diabetic patient and family members. Partnership with other community organizations, churches, and farmer's groups to provide a source of healthy fruits and vegetables to the Free Clinic or other sites, such as a farmer's market, for a special market day would also benefit the diabetic patient.

Audiences and venues that could also utilize this type of project with their patient populations are other free food pantries via workshops and seminars held at community centers, churches, and family health clinics throughout the community and nation. Social media such as Facebook, Twitter, Pinterest and Instagram may be used to get information out to consumers. Digitally, websites and blog posts may be utilized. Mass Media for

large-scale public health campaigns may be used via radio, TV, newspapers and news websites (ChooseMyPlate.Gov, 2018).

## Limitations

This study is limited to one Free Clinic in a southern rural community in Mississippi. However, the observations about the difficulty in providing prepackaged meal packets for the very low-income population, dependent upon food stamps and food banks, is relevant to other similar populations, particularly in rural areas or urban food deserts. Another limitation is due to the high drop-out number of participants at Week 1, $N = 93$ led to a smaller sample at Week 4, $N = 10$. This can be a limitation to these findings.

## Implications

Implications of this project support social change by proposing alternative options for the self-management of Type II, very low-income, diabetic patients who utilize a food pantry to supplement their dietary needs. Collaborative dialogue amongst the different disciplines across the healthcare domains, have proven to benefit the profession of nursing, the patients, and other stakeholders who are interested in the nutritional aspect of this project and the improvement of patients' A1c and blood glucose levels. The change of dietary life-style, coupled with educational intervention supports, can lengthen and positively impact the quality of life of the affected patient. This project can also change the outlook of the community and all stakeholders concerning the well-being of the diabetic population. Implications for the nursing profession primarily focus on the fact that nutrition, as an area for diabetes self-management, is often over looked in nursing

education. DiMaria-Ghalili et al. (2014), explained that there is a gap methodology in nutrition education and training within individual health professions (such as nursing, pharmacy, dentistry, and dietetics) that can build on further nutritional basics and applied nutrition education for each discipline (DiMaria-Ghalili et al., 2014). A nurse-led process using nutrition education with a GI guide, diabetic-specific meal plan, diabetes-specific food packet, monitoring tools and dietary support from a food pantry can be beneficial in the management of diabetes.

## Recommended Solutions

There are several recommendations which, if implemented, could positively impact the treatment response of patients at the Free Clinic. These include an ongoing evaluation and updating of the current inventory selections and operations protocols with the food pantry director and staff. The development and offering of a diabetic-specific meal packet, per Type II diabetes specific food guidelines, could include coupons for sugar-free Jell-O/puddings and other free food items donated from the local stores that serve this community. Other ideas include placing a poster demonstrating diabetes-specific meal planning in the food pantry lobby, using Choosemyplate.gov for inspiration, and providing handouts for the distribution door. Well written educational materials could be useful in educating patients, staff, volunteers, nurse and nutrition students who visit the Free Clinic, to teach the importance of good nutrition in managing the health of diabetic patients. A system of color-coded diabetic-specific food packet bags could be utilized to more easily tell which diabetic-specific food packet goes to the diabetic patient and assist the food pantry staff in keeping things in order. Taking any of

these steps could help the Free Clinic improve the care of a key demographic in their existing patient services base.

## Contribution of the Doctoral Project Team

Working with the Free Clinic team was enlightening for all involved. The clinic social worker and nurses were very interested and receptive. They implemented the pilot program as an addendum to this DNP project to further the research on the impact of this type of program on the diabetic population. The clinic administrative team was, and remains, open to all suggestions and is interested in working on alternatives with the food pantry.

It is hoped that the diabetic-specific diet poster, guide, and color-coded food packet bags for the diabetic will be implemented and continued as part of the patient's own wellness regimen, and that it will serve as a reminder to keep dialog open regarding the Type II diabetic and nutritional concerns for all stakeholders involved in the care of this population. The program may also be utilized at other free food pantries via workshops, seminars, community centers, churches, and family health clinics throughout the community and nation. Social media such as Facebook, Twitter, Pinterest and Instagram may be used to get information out to consumers. Digitally, websites and blog posts may be utilized. Mass Media for large-scale public health campaigns may be used via radio, TV, newspapers and news websites (ChooseMyPlate.Gov, 2018).

## Strength and Limitations of the Project

Although the pilot involved a small sample size, the results offer support for the use of education using the glycemic index (GI) and food log for very low income diabetic patients.

## Section 5: Dissemination Plan

Plans to disseminate this project to the institution include a poster presentation for the lobby of the food pantry and handouts that will be placed on the food pantry distribution door, for the volunteers and staff to view as they are distributing the food packets. The handouts will also serve to educate the patients as they pick up the food packets. Audiences and venues that could also utilize this project with their patient populations are other free food pantries via workshops, seminars held at community centers, churches, and family health clinics throughout the community and nation. Social media such as Facebook, Twitter, Pinterest and Instagram may be used to get information out to consumers. Digitally, websites and blog posts may be utilized. Mass Media for large-scale public health campaigns may be used via radio, TV, newspapers and news websites (ChooseMyPlate.Gov, 2018).

I would like to present this project at a meeting of local community groups to raise awareness of the needs of local food pantry providers. I also plan to develop a poster presentation for possible presentation at the National Association of Free and Charitable Clinics. I do plan to continue the research into the implications for nutrition education at free clinics once I obtain my doctorate.

## Analysis of Self

I have grown personally and professionally as I have worked through this degree plan and project. My nursing knowledge base has expanded and will aide in ensuring my peers and students become better equipped and well-prepared nurses in providing better quality care for their patients. I have experienced the process of development and

evaluation of new practice approaches based on nursing theories, and theories from other disciplines, as I studied this project while working with other professional disciplines. Collaboration opportunities with other professional disciplines during the project have been rewarding. I have been able to communicate with other stakeholders as we discuss the need of dialogue regarding nutrition and the Type II diabetic patient. I have grown in the leadership and mentoring roles, as I addressed the importance of patient and healthcare outcomes. I have been able to promote safety and excellence in practice through the work I have done while here at Walden.

## Project Completion

The completion of this project has been challenging, yet rewarding. The evaluation phase of what is already in place at the Free Clinic regarding its food pantry has been an eye opener. To assess and evaluate the A1c levels at the beginning of the project through the end of it has been astounding. The A1c levels were based on the program that was currently in place. Due to the patients visiting the clinic once a month, it was difficult to get a glucose check weekly for four weeks.

The food packets that are currently being given to patients are limited in the foods distributed. Therefore, it was not conducive to remove foods from the packets for this would not only affect the diabetic patient but also affect the family members who depend on these foods for nutritional needs. In addition to the food packets that are already given out, sugar-free food coupons, diabetic-specific guides, with discussions on the patient's need for consuming food in moderation could be included in the packets.

Color-coded food packets/bags can be designed, along with diabetic-specific guides to distribute to the Type II diabetic, and as requested by any patient. A poster presentation was placed in the lobby of the food pantry area, along with diabetic-specific guides located on the door where the food packets are distributed to the patient.

## Summary

Diabetes is a debilitating disease. According to the American Diabetes Association, the disease affects more than 29 million Americans (ADA, 2015). Every 23 seconds, another person is diagnosed with this disease (ADA, 2015). According to Hass et al. (2013), there is a connection between diabetes and nutrition. The foods that are consumed affect blood glucose levels and body weight (Hass et al., 2013). Dialogue needs to continue between professional disciplines regarding the effect that nutrition has on glucose control, self-management and other comorbidities. Inter-professionals need to take an interest in how they address this debilitating disease, the foods that are consumed, and the effects of the foods on A1c and glucose levels. Food pantry volunteers and all stakeholders across the nation need to have a heightened awareness of the effects of diabetes-specific foods and the effect that these types of foods have on a patient's A1c and glucose levels.

# References

American Association of Diabetes Educators. (2012). Healthy eating: Incorporating nutritional management into lifestyle (2012). *The Diabetes Educator*, 38(1), 124-128. doi:10.1177/0145721711426070

American Diabetes Association. (2004). Diagnosis and classification of diabetes mellitus. Diabetes Care, 27(1), s5-s10.

American Diabetes Association. (2015). *American Diabetes Association releases 2016 standards of medical care in diabetes.*

Bridges, D. R., Davidson, R. A., Odegard, P. S., Maki, I. V., & Tomkowiak, J. (2011). Interprofessional collaboration: three best practice models of interprofessional education. *Medical Education Online, 16*. doi:10.3402/meo.v16i0.6035.

Canadian Diabetes Association. (2017). Multiculture resources. Retrieved from www.diabetes.ca.

Centers for Disease Control and Prevention. (2012). *Diabetes Report Card*. Atlanta, GA U. S. Department of Health and Human Services

Centers for Disease Control and Prevention. (2015). *Basics: diabetes.* Retrieved from http://www.cdc.gov/diabetes/basics/index.html.

Centers for Disease Control and Prevention. (2015). *National diabetes statistics report, 2014.* Retrieved from: http://www.cdc.gov/diabetes/data/statistics/2014Statistics Report.html.

Centers for Disease Control and Prevention. (2017). *CDC 24/7: saving lives, protecting people.* Retrieved from https://www.cdc.gov/diabetes/basics/diabetes.html on May 17, 2017.

Cockerham, W. C. (2013). Bourdieu & an update of health lifestyle theory. In Cockerham,W. C. (ed.) *Medical sociology on the move: New directions in theory.* Heidolberg, New York, NY: Springer.

Cockerham, W. C. (2016). Health lifestyle theory and the convergence of agency and structure. *Journal of Health and Social Behavior, 46*(1), 51-67. doi: 10.1177/002214650504600105.

DiMaria-Ghalili, R. A., Mirtallo, J. M., Tobir, B. W., Hark, L., Van Horn, L., & Palmer, C. A. (2014). Challenges and opportunities for nutrition education and training in the health care profession: Intraprofessional and interprofessional call to action. *American Journal of Clinical Nutrition, 99*(5), 1184s-1193s.

Gamble, A., Mendy, V., & Short, V. L. (2012). *Mississippi chronic disease indicators report.* Mississippi State Department of Health Website: Retrieved from msdh.ms.gov.

Haas, Linda, PHC, RN, CDE; Maryniuk, Melinda, MED, RD, CDE; Beck, Joni, PHARMD, CDE, BC-ADM; Cox, Carla E, PHD, RD, CDE, CSSD; Duker, Paulina, MPH, RN, BC-ADM, CDE; et al. National standards for diabetes self-management education and support. *Diabetes Care*, suppl. Clinical Practice Recommendations**,** Vol. 36, (Jan 2013): S100-8.

Health Resources and Services Administration. (2015). *Diabetes HbA1c (Poor control).* Retrieved from https://www.hrsa.gov.

Imperatore, G., Boyle, J., &Thompson, T. J. (2012). Projections of type 1 and type 2 diabetes burden in the U. S. population aged <20 years through 2050. *Diabetes Care, 27*(Suppl1), s5-s10.

John Hopkins Bloomberg School of Public Health. (2014). *Pre-diabetes and diabetes nearly double over the past decades.* Retrieved from http://www.jhsph.edu/news/news-releases/2014/pre-diabetes-and-diabetes-nearly-double-over-the-past-two-decades.html.

Kasperski, M. (2000). *Implementation strategies: Collaboration in primary care-family doctors and nurse practitioners delivering shared care.* Retrieved from http://www.cfpc.ca./English/CFPC/CLFM/bibnursig/default.asp?s=1.

Mississippi State Department of Health. (2012). Mississippi ranks second in nation in diagnosed adult diabetes cases. *Mississippi State Department of Health - Home.* Retrieved from: http://www.msdh.state.ms.us/msdhsite/_static/23,11764,341,557.html.

Moore. L., Lavoie, A., Bourgeois, G., & Lapointe, J. (2015). Donebedian's structure process outcome quality of care model: Validation in an integrated trauma system. *Journal of Trauma and Acute Care Surgery, 78*(6), 1168-1175.

National Diabetes Services Scheme, 2014. What is the NDSS? Retrieved from Multiculturalportal.ndss.com.

National Heart, Lung, and Blood Institute Division of Cardiovascular Sciences. (2012). Executive summary: Working Group on Future Directions for Implementing Nutrition across the Continuum of Medical and Health Professions Education and Training, and Research. Retrieved from: http://www.nhlbi.nih.gov/meetings/workshops/nutrition.htm.

National Institute of Diabetes and Digestive and Kidney Diseases. (2014). *Your guide to diabetes: Type 1 and 2.* Retrieved from: http:/www.niddk.nih.gov/health-information/health-topics/Diabetes/your-guide-diabetes/Pages/index.aspx.

Office of Disease Prevention and Health Promotion (ODPHP). (2017). *Healthy People 2020.* Retrieved from United States Department of Health and Human Services Website: https://www.healthypeople.gov/.

Romero, L. F. (2016). The current state of affairs from a population management view. *Medical Laboratory Observer, 48*(8), 12-20.

Shoback, D., & Gardner, D. G. (EDS.). (2011*).* Chapter 17. *Greenspan's basic and clinical endocrinology (9th ed.).* New York: McGraw-Hill Medical.

Small, P., & Brand-Miller, J. (2009). From complex carbohydrates to glycemic index: Tracing the controversy. Nutrition Today, 44(6), 236-245.

Sonksen, P., & Sonksen, J. (2000). Insulin: understanding its action in health and disease. *British Journal of Anaesthesia, 85*(1), 69-79.

Thomas, D., Elliott, E. J. (2009). Low glycemic index, or low glycemic load, diets for diabetes mellitus. *Cochrane Database of Systematic Review, 1*: Doi:10.1002/14651858.CD006296.pub2.

Thomas, N. (2016). Interesting facts about the health of minority women. Retrieved from Minority Nurse Website: minoritynurse.com.

United States Department of Agriculture (USDA). (2009). *Access to affordable and nutritious food: Measuring and understanding food deserts and their consequences.* United States Department of Agriculture Economic Research Service. Retrieved from https://www.ers.usda.gov/webdocs/publications/42711/12716_ap036_ 1_pdf?v=41055.

United States Department of Agriculture (USDA). ChooseMyPlate.gov Website. Washington, DC. Health professionals resources. www.choosemyplate.gov/ healthprofessionals#myplateresources. Accessed February 7, 2018.

U. S. Office of Minority Health. (2010). *Diabetes and African Americans*. Retrieved from U. S. Department of Health and Human Services Website: http://minorityhealth.hhs.gov.

Vermeulen, A., & Turnbull, W., H. (2000). Feasibility of the G. I. guide to increase knowledge about the glycaemic index in practice. *Journal of Human Nutrition and Dietetics, 13*(6), 397-405.

Appendix A: Type 2 Diabetes Glycemic Index (GI) and Food Plan

*What is the Glycemic Index (GI): The Glycemic Index ranks foods based on how quickly they are digested and get into the bloodstream*.

**Low glycemic food index load (10):**
Kidney, pinto and soybeans
Fiber rich foods (fruit & vegetables) carrots, apples, grapefruit, & watermelon.
Cereals made with 100% bran
Lentils
Cashews, peanuts, whole-wheat tortillas, tomato juice and milk

**Medium glycemic food index load (11-19):**
Whole wheat pasta and some breads
Oatmeal
Rice cakes
Fruit juices without extra sugar
Brown rice, sweet potatoes, Graham crackers

**High Glycemic food index load (20 or more):**
Candy, sweet fruit juices, white rice, French fries, bake potatoes, cereals with sugar, mac and cheese, pizza, raisin and dates.

**How to calculate the Glycemic Index Load:**
**GI=GI X Carbohydrate/100**

You will need to know the amount of carbohydrates in the food that you wish to eat. You will also need to refer to a GI table of GI foods (noted below) that will be already calculated for the food you wish to eat.

**Examples of GI Index Values (values may go up to 100):**

| | | | |
|---|---|---|---|
| Rice cakes (82) | Sweet corn (60) | Whole wheat bread (69) | Grapes (43) |
| Cheese pizza (60) | Bagel (72) | Potato chips, plain (51) | Mac & cheese (64) |
| Cake doughnut (76) | Pound corn (54) | Carrots (47) | |

## Basic Food Guide and Sample Meal Plan

Tips on healthy eating and meal planning. You can live a long and healthy life by keeping your blood glucose (sugar) levels in the target range set by you and your health-care provider. You can do this by:

- Eating healthy meals and snacks
- Enjoying regular physical activity. Exercise at least thirty minutes most days of the week. Check with your health care provider before beginning an exercise program.
- Monitoring your blood glucose (sugar) using a home blood glucose meter. Have your HbA1c checked at least every 6 months. Your HbA1c is a measure of your blood glucose control over the past 2–3 months. For most people, the target is to not exceed 7% or 53 mmol/mol ((Diabetes Australia). Discuss with your health-care provider how often you should measure your blood glucose (sugar) level. Be sure to write your sugar levels down on a log daily.
- Aiming for a healthy body weight.
- Taking diabetes medications including insulin and other medications, if prescribed by your doctor. Visit your doctor regularly for diabetes check. Have your blood pressure checked every 3 months, blood cholesterol checked every year, eyes checked every 2 years or yearly if you have complications with your eyes. Check feet daily for cuts, blisters and redness. Have your feet checked by a foot doctor (podiatrist) or diabetes educator every 6-12 months (Diabetes Canada).
- Managing stress effectively. If you drink alcohol, limit it to no more than 2 standard drinks a day (limit days of the week you drink), and don't smoke, if you smoke try to quit or contact support from your health care provider.

Your healthcare provider will work with you to develop a personalized healthy-eating plan that takes into account your lifestyle, food preferences, and any foods that may be a part of your culture or religion. The American Diabetes Association's latest guidelines on nutrition say that there is no "one-size-fits-all" healthy-eating plan for everyone with diabetes. Examples of healthy-eating plans that your healthcare provider may discuss with you such as Vegan diet (include fruit, veggies, grain, nuts, beans, and no food from animals). Mediterranean diet (fruits and veggies) eating style for people from Spain, Italy and Mediterranean countries, Vegetarian diet (same as Vegan except eggs and dairy foods are permitted) dietary approaches are alternative diets (National Diabetes Education Initiative).


## The Plate Method for Diabetic Meal Planning

The plate method doesn't require adding up carbohydrates. You will need to know which foods belong in which food group. See the list of foods below to choose from when meal planning. It is also important to read food labels for carbohydrate counts per serving.

1. Using a standard dinner-sized plate (such as the one above), for breakfast, make half of the plate starch, and the other half fruit & lean protein.

2. For lunch and dinner, make half the plate non-starchy vegetables, and the other half starchy foods and lean proteins. Also add a non-fat milk, low-fat milk, or another starch plus one serving of fruit.

**Starchy Foods (1 starch is ½ cup cooked cereal, grain, starchy veggies; 1/3 cup cooked rice or pasta; 1 ounce or 1 slice of bread; ¾ to 1 ounce snack foods, some may have extra fat.**

- bread
- tortillas or pita bread
- English muffin or bagel
- hamburger or hotdog buns
- rice or pasta
- oatmeal or unsweetened dry cereal

- crackers
- baked or mashed white or sweet potato
- winter squash
- peas, corn or baked beans

**Fruit - (For Lunch & Dinner - 1 piece or 1/2 cup)**

- apple
- banana
- grapes
- oranges
- peaches
- pears
- pineapples
- strawberries, blueberries or raspberries
- watermelon, cantaloupe or honeydew melon
- unsweetened fruit juice

**Non-Fat or Low-Fat Milk - (For Lunch & Dinner - 1 cup)**

- fat-free or 1% milk
- fat-free plain or low-fat fruited yogurt
- fat-free or low-fat soy milk

**Non-Starchy Vegetables (½ cup cooked veggies or vegetable juice or 1 cup raw veggies)**

- asparagus
- green beans
- broccoli
- Brussels sprouts
- cabbage
- carrots
- cauliflower
- celery

- cucumber
- eggplant, summer squash or zucchini
- salad greens
- mushrooms
- peppers
- tomatoes

**Lean Protein Food 1 ounce**

- chicken or turkey with the skin removed

- Lean beef such as round, sirloin, flank steak, tenderloin or ground round
- lean pork such as ham, Canadian bacon, tenderloin, or center loin chops
- fresh or frozen cod, flounder, haddock, halibut, trout, tuna, or tuna canned in water, or salmon
- fat-free or low-fat cottage cheese
- low-fat deli meats like turkey
- low-fat cheeses
- egg substitute or egg whites
- low-fat sausage or hotdogs
- low-fat peanut butter

## Sample Diabetic Meal Plan

**Breakfast**

- 2 slices of whole-wheat toast with fat-free butter spray
- 1 fried egg, cooked in a non-stick skillet with fat-free cooking spray and fresh black pepper
- 1 medium fresh peach
- 1 cup of coffee with fat-free half & half and sugar substitute

**Snack**

- 10 Crackers-nut and rice
- 1 extra small banana 4 inches long (4 ounces)

**Lunch**

- 1 cup salad greens topped with 1 cup carrots, cucumbers, and tomatoes
- 2 Tablespoons fat-free Italian salad dressing
- 1 sliced & grilled skinless chicken breast
- 1 wheat roll
- 1 cup skim milk
- 1 crisp fresh apple

**Snack**

- 3 cups popcorn no fat added
- ½ cup apple juice

**Dinner**

- 1 cup of green beans sautéed with fat-free olive oil flavored cooking spray and fresh black pepper
- 2/3 cup cooked brown rice mixed cooked with chopped red bell pepper and low-sodium chicken broth
- 1 grilled chicken thigh seasoned with black pepper and lemon juice
- 1 cup of skim milk
- 1 cup of sliced strawberries
- 2 Tablespoons of light or fat-free whipped topping

**Snack**

- 1 tablespoon nuts (peanuts)
- ½ cup ice cream no sugar added

# Appendix B: List of Diabetes Education Resources

Other resources that can be used to locate educational materials are listed below:

Multicultural Resources Diabetes Canada: www.diabetes.ca

Multicultural Diabetes Portal: Multiculturalportal.ndss.com.ca

Diabetes Patient Education Materials: www.ndei.org

American Diabetes Association

International Diabetes Federation

National Diabetes Education Program

American Association of Diabetes Educators

Nutrition.gov

National Diabetes Information Clearinghouse (NDIC)

Hispanic/Latinos and Diabetes @ DHHS.NIH

Clinical Tools, Patient Education, and Outreach @ National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)

# Appendix C: Basic Food and Blood Glucose Log

1. Write down blood glucose value at the time you eat.
2. Soon after you eat, write down all food and drinks and the amount you eat and drink.
3. You may also write down grams of carbohydrates eaten at snacks and meal time.
4. Note your blood glucose level

| DATE | Breakfast Food/Amount | Snack Food/Amount | Lunch Food/Amount | Snack Food/Amount | Dinner Food/Amount | Snack Food/Amount |
|---|---|---|---|---|---|---|
| | Time: BG: | Time: | Time: BG: | Time: | Time: BG: | Time |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

**Exercise/Comments:**

_____

# Alternative Self Checks of Blood Sugar Log

## How to use this card.

This card has three sections. Each section tells you when to check your blood sugar: before each meal, 1 to 2 hours after each meal, and at bedtime. Each time you check your blood sugar, write down the date, time, and results. Take this card with you on your health care visits. Show it to your health care team. Talk about your goals and how you are doing.

| | Date | Time | Result/Food Eaten |
|---|---|---|---|
| My blood sugar before meals:<br>Usual goal 80 to 130<br>My goal: _____ | | | |
| My blood sugar 1-2 hours after meals:<br>Usual goal below 180<br>My goal: _____ | | | |
| My blood sugar at bedtime:<br>Usual goal 110 to 150<br>My goal: _____ | | | |

**(Niddk.nih.gov., 2016)**

# Appendix D: Institutional Review Board (IRB) Approval

Walden University's Institutional Review Board has approved this effort and has assigned the following identification number:

IRB Approval Number: 08-04-17-0372233