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# Healthcare Provider Education: Adult Jamaicans with Type 2 Diabetes

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DNP Project

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# Acknowledgment

As I pause to reflect on this journey, I begin with being thankful to God for His infinite love, scandalous grace, and His faithfulness.

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# SECTION I: Abstract

**Problem:** Worldwide prevalence of type 2 diabetes mellitus (T2DM) among the Jamaican population is 11.9% (WHO, 2016). Jamaican patients and their families have experienced first-hand the debilitating complications of this deadly disease.

**Context:** Jamaicans with diabetes who live in the US experience these same complications. Approximately 300,000 Jamaicans live in Florida (Peart, 2020). This change of practice project was conducted with healthcare providers employed in a family medicine clinic in Florida that treat Jamaicans with T2DM.

**Intervention:** This change of practice project used an online evidence-based educational training (i.e., Jamaican culture, diet, and health beliefs and how to use a patient-centeredness and cultural humility approach to patient education) targeting healthcare providers

**Measures:** The revised Diabetes Knowledge Test (MDKT2) was used to collect baseline data. Author-developed pre and post-training questionnaires and training evaluation questionnaires were used to measure project outcomes.

**Results**: One hundred percent of participants reported the training was “useful” to “very useful” in (a) daily interaction with Jamaican patients, (b) willingness to include what they learned in their practice, and (c) in mentoring colleagues. One hundred percent of participants reported they were “comfortable” after the training to include their knowledge of Jamaican culture in planning and providing care.

**Conclusion:** Educating health care providers who treat Jamaican patients with T2DM about (a) Jamaican culture and diet and (b) how to provide patient education that is patient-centered and uses cultural humility can improve knowledge and comfort level of those providers.

*Keywords*: Diabetes, Jamaican, cardiovascular complications, positive outcomes, collaborate, adapt, educator, empowerment, patient-centered approach.

# SECTION II: INTRODUCTION

## Problem Description

Jamaican people have a high rate of diabetes. The prevalence of diabetes in Jamaica has increased by 42% over the last 17 to 18 years. One in eight Jamaicans has diabetes with a prevalence of 14.6% among females, and 9% among males. Key findings of the Jamaican Health and Lifestyle Survey III (2016-2017) indicated that Jamaicans will continue to face challenges of diabetes and its complications as approximately four out of ten Jamaicans are unaware that they have diabetes which delays receiving healthcare (The Government of Jamaica, Ministry of Health & Wellness, 2018).

Hartzler, Chen, Murphy, and Rodewald (2014) conducted a cross-sectional study and reported that Jamaicans "had poor knowledge of diabetes, particular regarding signs and symptoms of hyper/hypoglycemia, importance of foot and eye exams, fasting blood glucose levels, and long-term diabetes complications" (p.19). The authors found that Jamaican "culture and language influence patients' health beliefs, attitudes, and health literacy, which may then affect diabetes" (Hartzler et al., 2014, p. 20). Also, Jamaican patients rely heavily on healthcare providers for diabetes information and self-management recommendations.

According to Singh and Aiken (2017), limited health literacy is predominant among the diabetic Jamaican population and has been associated with negative outcomes. "Limited health literacy has been linked to adverse health outcomes, decreased use of preventive health services, poor disease-specific outcomes for certain chronic conditions, and increased risk of hospitalization and mortality" (U. S. Department of Health and Human Services, 2011, as cited in Singh and Aiken, 2017, p. 266-267).

Diabetes-related diseases are disabling, life threatening, and can lead to serious health complications such as vascular disorders, neuropathy, cardiovascular disease, limb amputations, retinopathy, blindness, renal complications, and psychological issues. These complications contribute to frequent hospital visits, re-hospitalizations, and increased healthcare costs. Additionally, complications affect diabetic patients and their families, psychologically, physiologically, and financially (WHO, 2016).

Patient-centered diabetic teaching should focus on providing education inclusive of assessing cultural preferences, physical ability, availability of healthy foods, adequacy of housing, potential impact from their environment, socio-economic status, availability of transportation, accessibility to healthcare services, and health literacy about T2DM. Assessing this information helps healthcare professionals create an education plan that facilitates shared decision-making while improving patient outcomes (Hartzler et al., 2014).

**Available Knowledge**

A patient-centered approach to nursing was introduced over 40 years ago but has not been fully adopted in many clinical settings. This approach aims to provide care that is uniquely tailored to the client and considers demographic factors such as age and educational level of patients in providing patient education. These factors are significantly associated with health literacy levels Titchener, 2014). It is also important to use cultural humility when conducting patient education with Jamaican patients as this will improve patient outcomes and increase health literacy (Titchener, 2014).

Diabetic education for Jamaicans should consider the idiosyncrasies of the culture in providing education; one example is meal planning. The Jamaican diet is a typical West Indian diet high in starchy carbohydrates, including green bananas, potatoes, and whole wheat flour

products. It is, supplemented with high fat, including butter, cheese, and eggs (Ragoobirsingh et al., 2006). Understanding the Jamaican diet can help the healthcare provider teach patients to modify their diet in managing their T2DM.

Unfortunately, education that excludes these individual and cultural complexities that influence decision-making is often used to educate patients. This teaching method is easy and time-efficient but not as effective in improving health outcomes (Titchener, 2014).

This project aims to provide an evidence-based educational workshop and toolkit for healthcare providers who provide care for clients with T2DM and education to them and their families. This evidence-based change of practice project intends to accomplish the following outcomes: a) improve health care providers knowledge of the Jamaican culture, diet, and health beliefs, and b) improve the comfort level of healthcare professionals of including this knowledge in planning and providing T2DM education to Jamaican patients and their families.

**PICOT question.** Healthcare providers who provide education for Jamaican T2DM patients and their families (P), how does attending a workshop to learn how to provide patient-centered T2DM education using cultural humility and receiving a toolkit (I) compared to a generic type of T2DM patient education (C) achieve increased diabetic knowledge and comfort level in providing education to Jamaican patients and their families (O)?

**Literature review.** A comprehensive computer-assisted search was conducted for English-language articles in five electronic databases: Cumulative Index to Nursing and Allied Health Line (CINAHL Plus), PubMed, Cochrane Database of Systematic Reviews, American College of Physicians (ACP) Journal Club, and Evidence-Based Medicine Journals. The above PICOT question guided the search using the keywords “diabetes mellitus, Type 2” AND “patient engagement” OR “shared decision” OR “health literacy.” The search was restricted to research

articles, meta-analyses, and systematic reviews published in peer-reviewed journals between 2014 and 2019. The search generated over 400 articles relating to one or more of the keywords. The search was further limited by adding the search terms “usual care,” “improved HbA1c,” “improved patient outcome and awareness,” and “Jamaican.”

The final six articles were included in this review based on the following criteria: Inclusion of content on collaborative care management and patient-centered clinical approach to diabetes care, cultural humility, and the impact of educational interventions on improving patient outcomes and awareness as well as their critical appraisal ratings. These articles were most relevant to the PICOT question and were rated as “level I to V” and either “good” or “high” quality using the John Hopkins Nursing Evidence-Based Practice Appraisal Tools (Dang, & Dearholt, 2018). A display of the summary of these articles is presented in an evaluation table (see Appendix C- Literature Review Evaluation Table).

**Results of the literature review.** A summary of the evidence found during the literature review is presented.

***Definition of diabetes.*** Diabetes is a chronic condition that occurs when there is an increase in glucose levels in the blood. As a result, the body is not producing enough insulin hormone, or the body is unable to use insulin effectively. The body’s inability to regulate blood glucose levels can result in hypoglycemia or hyperglycemia. Irregular blood glucose levels in the blood system result in diabetes-related complications (Cho et al., 2018).

***Diabetes is a global issue.*** Diabetes mellitus and its related complications are a global issue with its risk factors affecting the health and wellbeing of millions of people (The International Federation (IDF) Diabetes Atlas, 2017). IDF (2017) predicts that the prevalence of

diabetes will increase globally from 425 million to 629 million by 2045, representing an increase of 48%. The WHO (2013) reports that 90% of the people worldwide with diabetes have T2DM.

According to the IDF report, Africa is projected to have the largest increase in the number of persons being diagnosed with diabetes. The expected increase is 156% between the years 2017 to 2045 (Cho et al., 2018). The Middle East and North Africa follow this with a projected increase of 110%. North America and the Caribbean have a projected increase of 35% (Cho et al., 2018).

***Higher prevalence of T2DM in Minorities***. T2DM is prevalent in ethnic minority groups such as Blacks, Black Americans, Alaskan Natives, Native Americans, and Latinos (Menezes, Lopes, & Nogeuria, 2016). This group accounts for approximately 12-15% of the total diagnosed. Asian Americans and Caucasians account for approximately 9% of the population with diabetic-related illnesses (Menezes et al., 2016). Diabetes-related complications continue to influence the death rate for adults, especially among ethnic minorities (CDC, 2017).

***Diabetes and Jamaican patients*.** According to the Ministry of Health in Jamaica, one in eight Jamaicans has diabetes. The highest prevalence of diabetes in Jamaican is among females (14.6% of the total population) (Ministry of Health, Jamaica Health, and Lifestyle Survey, 2018).

A cross-sectional exploratory study was conducted by Hartzler et al. (2014) to evaluate Jamaican patients' knowledge of diabetes, "health beliefs, and the association between diabetes-related knowledge and health beliefs in rural Jamaica" p.19. The study used a convenience sample of 48, covering a mean age of 55.16 $\pm$ 15.08. The study was conducted during a medical mission trip to the parish of St. Elizabeth in Jamaica, and the period was February 6 –10, 2012. The participants were asked to verbally complete the 10- item Low Literacy in Diabetes Scale

(SKILLD) and the Health Belief Model-11 (HBM-11), which consists of 11 items as well as demographic questions.

Data were analyzed using IBM SPSS v. 20.0 for Windows, and statistical significance was set at $p$=0.05. The participants were mostly females, and 44 had at least a primary education. The results indicated "participants had poor knowledge of diabetes, particularly regarding identifying signs and symptoms of hyper/hypoglycemia, importance of foot and eye exams, fasting blood glucose levels, and long-term diabetes complications" (Hartzler et al., 2014, p.19). Participants also expressed that adhering to diet regimes was challenging. Many participants reported that they used bush teas such as Cerasee as a cure to lower blood glucose levels (Hartzler et al., 2014).

The authors concluded that an increase in disease-related knowledge was linked to improved self-management of diabetes. The results indicated that Jamaicans are willing and eager to take steps to manage diabetes. The researchers concluded that Jamaicans should be empowered with the necessary tools to be successful in doing so (Hartzler et al., 2014).

***Patient-centered educational interventions to improve diabetic patient outcomes.*** Titchener (2014) conducted a research study to determine if specific patient-centered interventions improved the long-term reduction in HbA1c values in diabetic patients. The study was conducted using a before-and-after audit to assess 185 diabetic patients aged 18 years and older between 2008 and 2010. Patients were selected as they visited the General Practitioner with Specific Interest (GPSI) Diabetes Center.

The selected diabetes participants in Titchener's (2014) study received "a set of loosely structured diabetes-specific patient-centered approaches" (p. 195). In maximizing the reproducibility of the service offered and its outcomes, an explicit description of the proposed

care given to the participants was documented. The care comprised of six components: "(1) establishing roles and expectations, (2) a common language, (3) education, (4) 'common ground', (5) selecting management regimes, and (6) empowering for long-term self-management" (Titchener, 2014, p. 196). These six components of care were carefully explained to each participant.

At the time of referral, a baseline HbA1c was obtained. Following discharge from GPSI, laboratory databases were used to monitor their HbA1c levels at three-monthly intervals for two years. The participants were also asked to complete questionnaires at discharge and six months after discharge. These questionnaires consisted of two questions to gauge whether the patients' understanding had improved and if they felt more equipped to manage it. The data were analyzed using the Statistical Package for the Social Sciences (SPSS) (Titchener, 2014).

According to Titchener (2014), the study results indicated that the introduction of individualized patient care and education positively impacted behavioral changes, which was further reflected in an improvement in HbA1c values. The results suggest that a patient-centered approach results in a clinically significant reduction in HbA1C that is sustainable over many years. There was a manipulation of an independent variable; however, there was no control group, and the participants were not randomly selected at the center. The results were reasonably consistent, the sample size was sufficient, and the conclusion provided consistent recommendations.

***Education to improve T2DM patient outcomes*.** Menezes et al. (2016) conducted a systematic review to identify evidence where patient educational interventions reduced metabolic and vascular diabetic complications in adults with diabetes. The systematic literature review followed "Preferred Items for Systematic Reviews and Meta-Analyses" (PRISMA).

The articles reviewed were between 2004 and 2014. This period was selected based on the 2013 publication of the International Standards for Education on Diabetes by the International Diabetes Federation. The search strategy was defined using their PICO question in used the following databases: Latin American and Caribbean Literature on Health Sciences (LILACS), Spanish Bibliographic Index of Health Sciences (IBECS), Cuba Medicine (CUMED), CINAHL, and Scientific Electronic Library Online (SciELO). The articles were selected based on their titles and the quality of the abstracts and data (Menezes et al., 2016).

The review included 11 studies: five randomized controlled trials (RCTs) and six quasi-experimental studies. Of the five RCTs, three were considered good quality, and five of the six quasi-experimental studies were of good quality. The samples were heterogeneous, with the number of evaluated patients ranging from 30 to 4,872, and the mean age ranging from 55.8 $\pm$ 13.2 to 68.9 $\pm$ 9.5 years. The patient's follow-up times, after the intervention, varied between 3 months to 7.7 years (Menezes et al., 2016).

The results indicated that individualized strategies and a multidisciplinary approach to patient education are effective when a team (nurses, health care providers, nutritionists, case managers, and family members) is involved. This approach contributed to the reduction of diabetic vascular complications (Menezes et al., 2016). The sample size was sufficient for the design, and the controls were adequate. The recommendations presented in the conclusion section were consistent, based on the comprehensive literature reviews of scientific studies (Dang & Dearholt, 2018).

Fan, Huang, Tang, Han, Dong, and Wang (2016) conducted a study to examine the effect of individualized education for patients with T2DM on patient outcomes. Patients were screened for inclusion while hospitalized between October 2008 and 2010. The selection criteria included

the following: (a) diagnosed T2DM as per 1999 WHO criteria, (b) ability to participate in follow-up studies after discharge, and (c) written consent. Written informed consent was obtained from 365 hospitalized participants with T2DM. The exclusion criteria were having co-morbidities, known psychological or psychiatric disorders, and uncontrolled diabetic complications. The final sample size was 138 study participants and 138 in the control group.

Eight nurses were trained over two weeks on diabetes education and effectively administering the Eysenck Personality Questionnaire. All 276 participants were administered the Eysenck Personality Questionnaire and their personalities were assessed as either “stable or unstable extraversion” and “stable or unstable introversion”. The nurse educators, dietitians, and clinical psychologists designed and developed the patient-centered focused training tool that was used for the training sessions. The nurses who had only received general diabetic education taught the control group. During the study period, laboratory tests were taken, as needed, at each participant's follow-up visit to the hospital. At the end of the six-month study, the participants' waist circumference, body mass index, blood pressure, blood lipid profile, fasting, and post-prandial blood glucose were assessed (Fan et al., 2016).

The data were analyzed using SPSS version 13.0. The quantitative variables were presented as mean $\pm$ standard deviation. The comparison data was performed using the paired t-test. Fisher’s exact test was used for categorical data. A statistical significance was set at $p<0.05$ (Fan et al., 2016).

The results indicated that individualized diabetes education tailored to the patient’s personality was related to improvement in fasting and post-prandial blood glucose levels. There was an overall improvement in the results of the study group versus the control group. Specifically, the results for HbA1C (6.2+ 0.6% vs. 6.9 + 3.1%, p=0.03), BMI (21.5 + 2.5 vs. 23.6

+ 1.6 kg/m2, *p*=0.002) and blood pressure (BP) (130.1+8.8 vs. 135.1+8.4mmHg, *p*=0.003) were all statistically significant (Fan et al., 2016).

Improvements were observed among the intervention group in body weight index, waist circumference, systolic blood pressure, and blood cholesterols. Regular T2DM education programs were associated with improved HgbA1c and cardiovascular risk factors. However, individualized education programs that are patient-centered seemed to offer better management outcomes (Fan et al., 2016).

The participants' sample was appropriate for the Fan et al. (2016) study, and they were randomly divided into study and control groups. The recommendations were consistent and based on research findings (Dang & Dearholt, 2018).

***Shared decision-making.*** Yuan, Lai, Chan, Chow, Law, and Ying (2014) evaluated the effects of Diabetes Self-Management Education (DSME) on metabolic markers, including bodyweight and glycemic control in patients diagnosed with T2DM. The study was a randomized controlled clinical trial that evaluated the potential beneficial effect of diabetes self-management education on metabolic markers in T2DM patients. A total of 88 patients from a local Chinese non-profit organization that treats T2DM patients were recruited to participate in the study. The group was known as "Angel of Diabetic Hong Kong." The inclusion criteria for selecting participants were being Chinese and >18 and having T2DM for more than a year. The exclusion criteria were if they attended previous diabetes self-care courses, had radiotherapy of the neck, carotid endarterectomy, and or carotid stenting. The 76 participants were randomly assigned to an intervention group (n=36) or control group (n=40).

The participants in the intervention group attended a two-hour lesson weekly for eight weeks. These lessons were focused on DSME and their daily activities within the study period.

The control group did not attend any DSME classes; they received standard advice on medical nutrition. During the study, blood tests and vital signs for each participant were monitored. The continuous data were expressed as the mean ± standard deviation (SD). The Shapiro-Wilk test was used to verify the normality of the distribution. The t-test applied to data was normally distributed; otherwise, the nonparametric test was applied. A statistical significance was considered for $p<0.05$ (Yuan et al., 2014).

The results indicated that there was a significant reduction in hemoglobin HbA1C for the study group when compared to the control group (HbA1c, -0.2 ± 0.56% versus 0.08 ± 0.741%; $p < 0.05$) and body weight (-1.19 ± 1.39 kg versus -0.61 ± 2.04 kg; $p < 0.05$). Yuan et al. (2014) concluded that DSME improved HbA1c and body weight in patients with T2DM.

The sample of participants was appropriate for the study. They were randomly assigned to study and control groups (Yuan et al., 2014). The recommendations were consistent with the findings (Dang & Dearholt, 2018).

Klein, Jackson, Street, and Whitacre (2013) conducted a meta-analysis to assess the effectiveness of DSME on blood glucose levels and quality of life for T2DM patients. The search was conducted in the following databases: MEDLINE, PsycINFO, and CINAHL using the keywords: diabetes mellitus" combined with "patient education," "educational intervention," "self-management education," "psychological therapies," and "clinical trials" in journals published from 2005 through 2009. The inclusion criteria were participants completed DSME interventions, adults diagnosed with T2DM, HbA1c values available both baseline and post-intervention, and published in RCT journals. A total of 52 articles were included in the analysis (Klein et al., 2013).

The mean HbA1c result in the intervention group was (M=7.7.61, SD=1.34) and for the control group was (M=8.18, SD=1.43, t (146) = 3.51, $p$<0.01). The authors concluded that these results suggest the intervention of DSME programs improved patient collaboration in their care, which helped patients achieve healthy HbA1c levels. They concluded that modest gains had been made, but a lot more needs to be done (Klein et al. 2013).

The controls were adequate, and the sample size was sufficient for the meta-analysis conducted by Klein et al. (2013). The recommendations presented were consistently based on their comprehensive literature review (Dang & Dearholt, 2018).

***Cultural humility.*** Xuereb, Anderson-Johnson, Ragoobirsingh, and Morrison (2014) evaluated the impact of using the "Protocol for the Nutritional Management of Obesity, Diabetes, and Hypertension in the Caribbean" as a training tool to improve the quality of care delivered to patients with T2DM in Jamaica, Guyana, Belize, St Vincent, and the Grenadines, and Suriname. The study targeted healthcare professionals from these countries and evaluated how a change in practice would positively impact standards of care for diabetics in the Caribbean region (Xuereb et al., 2014).

The training workshops spanned two and a half days and were led by the Caribbean Food and Nutrition Institute (CFNI) along with national nutrition experts from the respective countries. Each country's respective Health Ministry chose participants for a total of 279 participants. A pre-test was done to ensure that the healthcare participants had a good knowledge of diabetes, hypertension, and obesity and were also actively managing diabetic patients in their practice (Xuereb et al., 2014).

National coordinators randomly selected 133 of the 279 participants for a medical chart audit to evaluate the training's effectiveness. A standard evaluation instrument was used for the

medical chart audit. The evaluation instrument was divided into two sections: a medico-social data and the second included a list of sixteen measurements (capillary blood glucose [fasting and/ or random], hemoglobin A1c [HbA1c], serum cholesterol, HDL, LDL, triglycerides, blood pressure, counseling on a diet and physical activity, and referral to a dietitian). The parameters included in the protocol were referenced to international standards (Xuereb et al., 2014).

Overall results indicated improvement in the recording of care given to patients in all the countries that participated in the research (Xuereb et al., 2014). According to the authors, diet and nutrition in counseling the patient according to their diagnosis improved the quality in providing care, as patients were involved in the planning of their care (Xuereb et al., 2014).

**Summary of the evidence.** The literature review results suggest that effective patient outcomes are achievable with educational interventions that are patient-centered with shared decision-making, and taught with cultural humility. These positive patient outcomes include: increased disease-related knowledge and better self-management (Hartzler et al., 2014), reduction in diabetic vascular complications (Menezes et al., 2016), decreased cardiovascular risk factors such as high blood pressure, blood cholesterol, and BMI (Fan et al., 2016), and improved HbA1c results (Klein et al., 2013; Yuan et al., 2014), improved patient health literacy (Xuereb et al., 2014), and quality of life and patient compliance in managing their care (Menezes et al., 2016).

## Rationale

The Donabedian model for improving the quality of care and King’s goal attainment theory formed a conceptual framework to provide guidance and structure to this change of practice project. This framework helped focus on an intervention that could eventually improve the quality of patient care and provide a guide for the project's process (training for healthcare

providers that are patient-centered and culturally sensitive) and outcomes (improvement in knowledge and confidence of healthcare providers).

**Donabedian model**. Donabedian (1996) developed a quality model that provides a framework for examining healthcare services being offered and evaluating the quality of care delivered (McDonald et al., 2007). The Donabedian model conceptualizes three quality of care dimensions: *structure*, *process*, and *outcome* (Donabedian, 1966).

The *structure* of care dimension in Donabedian's model refers to the "physical and organizational aspects of the care setting" (McDonald et al., 2007, p. 113). The structure for the T2DM healthcare provider education workshops will be in a clinical setting (family medical practice) where care and patient education are delivered to Jamaican T2DM patients and their families.

The *process* of care dimension in Donabedian's model refers to care delivery and care coordination. The process of care in this project is that healthcare providers were taught how to deliver T2DM education to patients and families that is patient-centered and culturally sensitive.

The *outcome* of the care dimension in Donabedian's model refers to "promoting recovery, functional restoration, survival, and even patient satisfaction" (McDonald et al., 2007, p 113). This project's short-term outcome was to increase health care providers' knowledge of the Jamaican culture, diet, and health beliefs, and comfort level in planning and providing care to Jamaican patients with T2DM and their families. Due to time constraints, the expected long-term outcomes will not be evaluated in this project. However, they could include increased knowledge among T2DM patients about diabetes, lifestyle changes based on the education they received, and improvements in their quality of life.

**Goal attainment theory**. In 1981, Imogene King's goal attainment theory was derived from a conceptual system (Frey, Sieloff, & Norris, 2002; King, 1981). King's goal attainment theory identifies the essential concepts in improving patient and family-centered care through communication, interaction, perception, transaction, self, role, stressor/stress, time, space, growth, and development (Frey et al., 2002; King, 1981). King's theory was based on four key elements: "(1) Health is attainable through appropriate nurse-patient relationship; (2) nurse and patient need to have a mutual understanding about each other; (3) the goals and functions of nurse and patient need to be in line with each other; and (4) nurse needs to use all his/her knowledge to establish a relationship and set goals" (Adib-Hajbaghery & Tahmouresi, 2018, p 141). Although the theory was introduced in 1981, there has been an adaptation over the years, and many theorists have referenced its core principles (Adib-Hajbaghery & Tahmouresi, 2018).

The conceptual framework for this project was comprised of the Donabedian model and King's theory of goal attainment. This framework was used to promote a patient-centered approach to providing health care. It considers that human beings are idiosyncratic and can only be adequately cared for if their needs are met. According to King, personal perceptions often cloud the healthcare provider's vision and affect the quality of care provided to patients (Frey et al., 2002; King, 1981). Acknowledging the way patients interact with their environment helped guide the process in teaching healthcare provides how to provide patient-centered education.

## Specific Aims

This change of practice project aimed to improve healthcare providers' knowledge and comfort level in providing patient care and education to Jamaican patients with T2DM and their families. This T2DM education encouraged a patient-centered approach, shared decision-making, and the inclusion of cultural humility. The improvements were measured by comparing

the pre, and post-intervention mean scores on two questionnaires: (a) Educating Jamaican patients with Type 2 Diabetes Pre-training Questionnaire and (b) Educating Jamaican Patients with Type 2 Diabetes Post-training Questionnaire. The specific aims of the project were to:

1. Achieve > 20 percent increase in knowledge of Jamaican culture, diet, and health beliefs among healthcare providers.
2. Achieve >90 percent of healthcare providers reporting being “comfortable” in planning and providing T2DM education to Jamaican patients and their families.

# SECTION III: METHODS

## Context

The key stakeholders of this DNP project included a medical doctor, nurse practitioners, student nurse practitioners, and the patients they treat in an outpatient clinic. The clinic is in Fort Lauderdale, Florida, and it provides care to ethnic minorities, including adult Jamaican clients with T2DM**.** The project's goal was to teach healthcare providers at this outpatient clinic how to provide patient education to T2DM patients and their families that is patient-centered, uses shared-decision making, increases diabetic literacy and knowledge, and uses cultural humility.

**Setting.** This DNP project was implemented in a private family medical practice in Fort Lauderdale, Florida, which serves a predominantly Caribbean and African American community including the local Jamaican population. This practice has approximately 400 patient visits each month and serves a large population of Jamaican patients with T2DM.

The professional healthcare providers employed in this practice include the medical doctor (who owns the practice), five nurse practitioners, and six student nurse practitioners. The non-professional health care staff includes one office manager and one administrative assistant. Only the professional healthcare providers were invited to participate in this project as they are most directly involved in patient care and education.

## Intervention

The COVID-19 pandemic demanded the need for innovation and reimagining how to deliver education/training and interact with participants. This DNP project was implemented as an online training session to accommodate busy healthcare providers during the pandemic, allowing them to participate whenever it was convenient for them.

An online interactive training workshop was designed for healthcare providers with an average estimated interaction time of fifty-five minutes. The T2DM healthcare provider training

aims to provide the necessary knowledge on Jamaican culture, diet, and health beliefs needed to plan and provide patient-centered education with cultural humility to Jamaicans with T2DM. See Appendix D for a list of the content that was included in the online workshop. Healthcare providers who participated received an evidence-based toolkit that includes information on Jamaican culture and resources that support the importance of providing patient-centered care to T2DM patients and their families.

**Gap analysis**. Five major gaps were identified in the project: (a) Gap in T2DM Statistics such as, a lack of statistics on the percentage of Jamaican people who have T2DM and the associated mortality rates; (b) Gap in evidence-based training programs - There is no developed evidence-based curriculum to provide patient-centered T2DM education to Jamaican patients and their families. The lack of culturally sensitive training programs specifically about Jamaica patients for healthcare providers impacts the provider-patient relationship, as it affects the quality of the patient education that is provided and the outcomes that are achieved; (c) Gap in access to care - There are no identified healthcare clinics that only serve the Jamaican population in the USA with T2DM; (d) Gap in patient knowledge – Jamaicans have a misconception of T2DM treatments and their belief in herbal cures, that lack scientific evidence, affects compliance and health outcomes; (e) Gap in the healthcare provider knowledge within the organization - There is no known expert, and there were no previous workshops provided to healthcare professionals at these clinics on issues related to the care of T2DM Jamaican patients and their families using cultural humility. See Appendix E for the Gap Analysis for this project.

**Gantt chart.** A Gantt chart for the project outlines the five phases of the project. These phases were: (1) Initiation, (2) Planning, (3) Execution, (4) Control, and (5) Closeout. The Initiation phase began in September 2019, during which the evidence-based literature review was

conducted on the effectiveness of T2DM patient education that is patient-centered, and includes shared decision-making and cultural humility. The information obtained was used to develop the DNP Statement of Non-Research Determination.

The second phase took place between September and December 2019. During this phase, the DNP student wrote a project prospectus and refined it with input from her DNP Committee. The DNP student also began developing teaching materials for the workshop to be reviewed by her DNP Chairperson.

The third and fourth phases spanned from December 2019 to July 2020 and included implementing the training sessions and the data collection process. The final phase commenced in July 2020, and it included data analysis, report preparation, and project presentation. See Appendix F for the Gantt chart for this project.

**Work breakdown structure (WBS).** The WBS was used to communicate the project work processes, project schedule, resource requirements, and costs to implement the T2DM training project to stakeholders and DNP Committee members. The WBS was divided into five phases: (1) *Initiation*, (2) *Planning*, (3) *Execution*, (4) *Control*, and (5) *Closeout*.

During phase one, the *initiation phase*, an evidence-based literature review, and statistical data about the incidence of T2DM among Jamaicans both within and outside the US were presented to the DNP Chairperson. This information outlined the need for healthcare providers to be equipped to provide patient-centered education to improve the knowledge that includes shared decision-making and cultural humility to patients and their families. During this phase, the DNP student, along with her DNP Committee, evaluated the evidence presented, made recommendations as necessary, and finalized the *DNP Statement of Non-Research Determination***.** At the end of this phase, a *DNP Statement of Non-Research Determination* was

approved. See Appendix A for the signed *Statement of the Non-Research Determination* Form. A signed Letter of Support was then obtained from the MD who owns the clinic where the project would be conducted. See Appendix B for the Letter of Support.

During phase two, the *planning phase*, an aim statement was developed and included in the project prospectus. The DNP student wrote the project prospectus, the DNP Committee reviewed, requested clarification as needed, and made recommendations for improvement. Once the prospectus was approved, all training materials required for the intervention (i.e., to train the healthcare providers) were designed and developed.

During phase three, the *execution phase*, the intervention was implemented and evaluated. This phase included sending training and evaluation materials by email to potential participants. It also included analyzing the data to determine if outcomes improved post-intervention.

The following were covered under phase four, the *control phase* of the WBS: project management, project status meetings, risk management, and an updated project management plan that accounted for necessary changes during the pandemic.

The fifth and final phase of the WBS, the *closeout phase,* included the documentation of the DNP project by writing this report that included a review of lessons learned during the implementation and execution of the project. See Appendix G for the WBS for this project.

**Communication matrix.** The communication plan was designed and managed by the DNP student under the leadership of her DNP Chair. There were several project meetings between the DNP student and the clinic administrators to ensure that the project remained within the target, scope, and budget and to obtain feedback for improvement along the project cycle. See Appendix H for a copy of the Communication Matrix.

**SWOT analysis.** The SWOT analysis identified *strengths*, *weaknesses*, *opportunities*, and *threats* of the project.

One *strength* of the project was that its lead (DNP student) has a strong knowledge of the Jamaican culture. A second strength is that the project had support from a family medical clinic that provided care to Jamaican clients with T2DM. A third strength was the project had the support of the President of the Jamaican Diabetic Association, and the Ministry of Health in Jamaica who provided current data to support the need for the project.

*Challenges* were the cost to implement the project and the inability to obtain a scholarship or grant to offset some of the budgeted costs. Another challenge was obtaining approval to conduct the project at a site that provided care to Jamaican T2DM patients. The last challenge was the sudden requirement to revise the intervention to meet the needs of participants during COVID-19.

The *opportunities* for implementing the project included improving the knowledge and comfort level of the healthcare professionals who provide T2DM care to Jamaican patients and their families. Another opportunity was to develop a relationship with the administrators of a family medical clinic that treats Jamaican patients with T2DM and learn from them about how to successfully implement the project.

*Threats* include the inability to control the dates and time to meet with the healthcare administrators to plan the project and other challenges faced during the COVIN-19 pandemic. See Appendix I for a copy of the SWOT Analysis.

**Budget.** The cost to implement the project was $12,950.00 (See Appendix J for Budget and Expected Revenue). A large portion of these costs were for the time the DNP student spent preparing educational materials, designing an online version of the intervention's

implementation, and analyzing the outcome data. Costs associated with participants' salaries that participated in the project were also estimated in the budget.

Costs/Expenses were computed as follows:

1. The facilitator's total hours (232) for preparing the online training workshops times her salary rate per hour of $50 (total=$11,600.).
2. Estimated expenses for each staff to complete the online training (including one medical doctor, five nurse practitioners, and six students nurse practitioners) for 55 minutes multiplied by their respective salary rate per hour is $475.
3. Incidentals of $400 for logo preparation and lunch for participants.

See Appendix J for Proposed Budget and Expected Revenue.

**Cost/benefit analysis.** The costs associated with this change of practice project totaled $12,950.00. The author absorbed the cost of designing and developing the online training workshops, management of the DNP project, and preparing the toolkit. Participants volunteered their time in the T2DM healthcare provider online training. The project's costs also included materials for the toolkit, design of the DNP project logo, and lunch for participants.

Although a monetary value cannot be easily placed on the proposed benefits of the investment, the value on the investment (VOI) is apparent. The VOIs expected with this change of practice are:

1. Improved T2DM outcomes due to patients actively managing their disease
2. Improved diabetic literacy and shared decision-making
3. A reduction in the time spent re-educating patients in managing complications of their T2DM

4. A reduction in the time spent arranging referrals to specialists' follow-ups and hospitalizations
5. A reduction in average patient contact time per visit.

These improved patient outcomes will result in more patient-to-patient referrals. As such, it is projected that there will be an increase of at least two additional patients to the clinic daily.

**Return on investment**. The return on investment (ROI) is the net income divided by the cost of investment. The ROI for this T2DM provider education is computed using the expected net revenue of $80,160.00 divided by the cost of $12,950.00 to implement the project resulting in 6.19 percent.

**Revenue**. Six months after the project's implementation, it is estimated that there will be improved T2DM outcomes. During these months, more time will be spent providing T2DM education that is culturally sensitive to Jamaican patients. However, in the next year, less time will be required to re-educate patients, manage complications of their T2DM, and arrange referrals to specialists' follow-ups and hospitalizations. These improvements will result in reduced average patient contact time per visit and an expected increase in patient-to-patient referrals.

With a reduced average contact time and additional referrals, this allows the clinic to provide care to two additional patients per day. The two patients are estimated to generate $334/day (Reimbursement for Diabetic Education Code 99204) (Medtronic, 2020).
The annual revenue is calculated using 240 working days (360 days, excluding holidays, vacations, and non-workdays equals 240 days) times the additional daily revenue. The additional projected gross revenue will be $80,160 in the year after project implementation. See Appendix J for Proposed Budget and Expected Revenue.

## Study of the Intervention

Jamaican culture is a mixture of diverse ethnic backgrounds. However diverse, these cultures share similarities in how they perceive illness such as T2DM and the application of cultural modalities to manage related health issues. The project intervention was to create and improve cultural awareness among healthcare providers who provide education to Jamaicans with T2DM. The training introduced the Jamaican culture, diet, and health beliefs, patient-centeredness, shared decision-making, and cultural humility in providing healthcare and patient education.

The Revised Diabetes Knowledge Test (DKT2) was administered to healthcare provider participants as a baseline measure. Pre- and Post-Training Questionnaires were administered to evaluate the impact of T2DM training on the knowledge of the Jamaican culture, diet, and health beliefs. The Training Evaluation Form assessed the usefulness of the training and comfort level of the health care providers.

## Outcome Measures

The following instruments were used to measure the outcomes for this change of practice project. Each of these measures is described below.

**Revised Diabetes Knowledge Test (DKT2)**. This instrument was developed by the Michigan Diabetes Research and Training Center to assess patient knowledge but was later adapted for use among healthcare providers (Haugstvedt, Aarflot, Igland, Landbakk & Graue, 2016). The DKT2 questionnaire includes 23 items divided into two subscales, the general diabetes subscale with 14 items, and the insulin-use subscale with nine items (Haugstyedt et al., 2016). Fitzgerald, Funnell, Hess, Barr, Anderson, Hiss, and Davis (1998) reported the general

test (first 14 items), and the insulin-use subscale (last nine items) were both reliable with a coefficient alpha > or = 0.70.

Haughstyed et al. (2016) used the DKT2 to test the level of diabetes knowledge among healthcare providers, in nursing homes and home-based care services and concluded the instrument was appropriate for identifying the distinct need for diabetes education among nursing personnel. Fitzgerald, Funnell, Anderson, Nwankwo, Stansfield, and Piatt, (2016) used the DKT2 to assess the general knowledge of diabetes and diabetes self-care management among health care providers. See Appendix K for a copy of the DKT2.

**Pre and Post-Training Questionnaires**. The purpose of these author-developed pre- and post-training questionnaires were to assess changes in knowledge of the Jamaican culture, diet, and health beliefs of healthcare providers. These questionnaires were designed using input from Jamaican healthcare providers, educators, diagnosed Jamaican T2DM patients, and knowledge obtained from the literature review.

Both pre and post-training questionnaires included the same 14 items, but four demographic items were added to the end of the pre-training questionnaire making it 18 items. Items 1-10 provide four multiple-choice responses. Items 11-14 allowed only yes or no responses. Items 15-18 on the pre-training questionnaire only were demographic items that collected data about gender, age, professional, and length of time in this profession.

The pre and post-training questionnaires targeted the following information:

- Knowledge of beliefs about diabetes commonly held by Jamaican people
- Knowledge about cultural remedies for diabetes commonly held by Jamaican people
- Knowledge about T2DM (e.g., definition, symptoms, complications, treatment including diet)

- Knowledge of the Jamaican diet and how it can be modified for patients with T2DM
- Awareness of the country's dialect

See Appendix L for the Pre-Test Training Questionnaire and Appendix M for the Post-Training Questionnaire.

**Training Evaluation Form**. This 8-item form was developed by the author to evaluate the effectiveness of T2DM healthcare providers' training. The questions were grouped into five sections. The first section included item one which was a demographic item that asked the participant's primary job position. The second section included item two which was a question asking the participants to list at least three most important things they learned for the training. Section three included items three to five that were multiple-choice and asked participants to rate the training in terms of its *usefulness* to: (1) their daily interaction with Jamaican patients, (2) increasing their willingness to include what they have learned in their practice, (3) mentoring colleagues in adopting this change in practice in providing care to Jamaicans with T2DM. Possible responses ranged from one "not useful" to four "very useful". Section four included questions six to seven that were multiple-choice and asked participants to rate how *comfortable* they were after the training to include the knowledge of the culture in (1) planning and (2) providing care to Jamaican patients. Possible responses ranged from one "not comfortable" to four "very comfortable". Section five included question 8 asking participants to give one example of how your practice will change as a result of the training? See Appendix N for Training Evaluation Form.

**Analysis**

Project data were analyzed using Microsoft Excel, version 16.37. Data analysis for each instrument is described below.

**Revised Diabetes Knowledge Test (DKT2)**. There was no post-test completed for this instrument to prevent respondent fatigue. Baseline data from the DKT2 were analyzed by computing the percentage of participants who correctly answered each item. See Appendix P for the Revised Diabetes Knowledge Test Results (DKT2).

**Pre and Post-Training Questionnaires.** Data from the pre and post-training questionnaires were compared to determine whether there was an improvement in participant knowledge of Jamaican culture, diet, and health beliefs. Data analysis was done by computing group means for each item on the pre and post-training questionnaires and displaying the data in bar graphs.

**Training Evaluation Form**. Section one consisted of one demographic item and required calculating the frequency of responses for each choice. Section two required analyzing open-ended responses for themes about the three most important things they learned from the training. Data from section three (items 3-5) were analyzed to evaluate the usefulness of the training and section four was on the comfort level of healthcare providers after the training. This was done by computing group means scores and bar graphs. Section five consisted of an open-ended item about how participant's practice will change as a result of the training and was analyzed by looking for themes.

## Ethical Considerations

Over the years, T2DM patient education has often been generic and has not considered the culture, health beliefs, and demographics of the intended audience. Many times, this type of patient education is convenient, as it is quick to implement. We must consider this an ineffective method of providing education to our T2DM patients and their families. Evidence has indicated that a patient-centered approach to care is crucial as it improves patient outcomes (Yuan et al.,

2014).

This project targeted healthcare providers employed in a private family medical practice that provides patient education to Jamaican T2DM patients and their families. One of the risks of this project was the loss of privacy to the health care providers who participated. In protecting the healthcare professionals' privacy, there were no names or ID numbers on any of the questionnaires or training evaluation form. The clinic administrators were not given the individual data, and the final report and presentations will not report any individual data. The MD who owns the practice permitted the letter of support to allow the DNP student to use the name of the clinic in this DNP Project and future presentations and publications.

**Jesuit values**. The Jesuits founded the University of San Francisco in October, 1855 (Ziajka, 2018). The core values guiding the Doctor of Nursing Program include social justice, global influence, leadership, patient-centered care, advocacy, compassion for humanity, inclusion of moral and spiritual compasses, and the use of Ignatian Pedagogy for educational experience (Writ, 2020).

**ANA code of ethics**. The American Nurses Association (ANA) code of ethics has nine provisions that guide the ethical framework for the nurse's profession (ANA, 2016). Three of these provisions specifically guided this DNP project. Provision one refers to “respect for the inherent dignity, worth, and unique attributes of every person” (ANA, 2016, p. 8). Provision two reminds us that “the nurse’s primary commitment is to the patient, whether an individual, family, group, community, or population” (ANA, 2016, p. 8). Provision three outlines that “the nurse promotes, advocates for, and protect the rights health, and safety of the patient” (ANA, 2016, p. 8).

# SECTION IV: RESULTS

## Results

The participants in this DNP project included an MD (who is the owner of the clinic), five nurse practitioners employed at the clinic, and six student nurse practitioners (who were in the process of completing their clinical hours at the clinic). The data did not allow separating nurse practitioners from student nurse practitioners, as including the students was not anticipated, and the questionnaire had already been distributed. It was considered an unanticipated benefit to include the student nurse practitioners as this intervention could empower these future providers to provide better care to Jamaicans with T2DM.

**Demographic data.** The total participants (n=12) were a mixture of males (8%) and females (92%). The participants' age ranged from 31 to over 50 years. Forty-two percent (42%) of the participants were over 50 years old, while the remaining age groups of 41 to 50 and 31 to 40 represented 42% and 16 %, respectively. The participants' years of experience working in their profession were: one to three years (33%), three to six years (9%) over seven years (58%). See Appendix O for the Demographic Data Survey Results.

**Revised Diabetes Knowledge Test (DKT2).** Twelve participants completed the 23 item-DKT2 at baseline. The scores for the general knowledge subscale (first 14 items) indicated that 100% of the respondents got items six and items ten to 14 correct. Eighty percent (83%) answered items one, two, three, five, and nine correctly. Seventy-five percent (75%) of the respondents answered item seven correctly, and 67% answered both items four and eight correctly. For correct responses below 83%, it was observed that respondents had more difficulty with the following questions:

1. Question four – Which of the following is a "free food?"
2. Question seven – What effect does unsweetened fruit have on blood glucose?

3. Question eight – Which should not be used to treat a low blood glucose?

Scores for the insulin use subscale (last nine questions) indicated that 100% of the respondents answered items 16, 19, 21, and 22 correctly. Ninety-two percent (92%) answered items 18 and 20, and 83% answered item 23 correctly. The remaining scores were correct responses ranged from 75% and 58% for items 17 and 15, respectively. The respondents had problems with the following:

1. Question 15 – Signs of ketoacidosis (DKA).

2. Question 17 – If you have taken rapid-acting insulin, you are most likely to have low blood glucose reaction in?

Although the DKT2 was not redesigned specifically for the Jamaican population, it provided an opportunity for the health care providers to rethink how they plan and provide patient care and education to diabetic patients and their families. See Appendix P for the Revised Diabetes Knowledge Test (DKT2) results.

**Pre and Post-Training Questionnaires.** Twelve participants completed the pre-training questionnaire, while only 11 participants completed the post-training questionnaire. Both questionnaires had the same questions 1-14, while the pre-test questionnaire included four additional questions to capture participants' demographic and work experience information.

Comparing healthcare provider pre and post-intervention mean scores indicated improvement in 5/14 items (36%) after the training. These five items included:

Item two: What race are Jamaicans?

Item four: What makes up Jamaican diet?

Item six: How do Jamaicans view the treatment of diabetes?

Item seven: What are the local remedies for diabetes?

Item nine: What is a typical Jamaican lunch?

See Appendix Q for the results of both the Pre and Post-Training Questionnaires.

No change was found in pre and post-training questionnaire scores (items 1, 3, 5, 8, and 10-14). This may have been because participants were already familiar with the Jamaican culture. Nine of the participants were Jamaican, and all of the participants were Floridians working in a family practice clinic serving Jamaican people.

The Pre and Post-Training Questionnaire mean scores indicated that all of the participants knew that Jamaica is geographically in the Caribbean and that the dialect was patois. Also, both sets of responses showed similar mean scores for the term often used by Jamaicans to describe diabetes as having sugar in the body.

On the Pre-Training Questionnaire, some participants thought that Jamaicans were predominantly black; however, after the training, they had a different view. Jamaicans are a mixture of all ethnicities. The mixed ethnicity is symbolic of the country's motto, out of many one people. The post-test results demonstrated improvement in the participants' knowledge of how Jamaican view the treatment of diabetes, and what makes up a typical Jamaican diet.

**Training Evaluation Form.** All 12 participants completed the Training Evaluation Form. This form is divided into five parts: (1) demographic item, (2) most important things learned from the training session, (3) usefulness of training (4) comfort level, and (5) how the practice will change as a result of this training. The results for each of the five areas are discussed below. The results for all five parts are displayed in Appendix R Training Evaluation Form Results.

***1. Demographic item***. This was a duplicate item with a similar question on the Pre-Training Questionnaire, so it was not analyzed.

2. ***Most important things learned***: Participants were asked to, *List the three most important things you learned during the training session*. Participants' responses were grouped into the following themes:

1. How Jamaicans view diabetes.
2. The need for cultural humility in providing care and a reminder not to make assumptions about a population.
3. The importance of including cultural humility in provide healthcare.
4. Jamaican's are a multi-ethnic group of people with an intertwined culture.
5. Cultural beliefs impact compliance and how Jamaicans perceive health.

***3. Usefulness of training***. Participants were asked if the training was useful in (1) daily interaction with Jamaican patients, (2) increasing your willingness to include what you have learned in your practice with Jamaican patients, and (3) increasing your ability to mentor other colleagues in adopting this change in practice in planning patient care for Jamaican patients. Eighty-three percent (83%) of the participants reported that they found the training very useful in their daily interaction with Jamaican patients. They reported that they are willing to include what they have learned in their practice. The remaining 17% stated that they found the training useful. Ninety-two percent (92%) of the participants reported the training they received was very useful in increasing their ability to mentor other colleagues in adopting a more culturally sensitive approach in planning patient care for Jamaican patients and their families. The remaining eight percent found the training useful. See table Usefulness of Training in Appendix R for Training Evaluation Data.

***4. Comfort level after training***. Participants were asked how comfortable they were after the training to include the knowledge of the culture in (a) planning care, and (b) providing care.

One hundred percent of participants (n=12) reported they were comfortable, including knowledge about the culture in planning and providing care for Jamaicans with T2DM. See table Comfort Level in Appendix R Training Evaluation Data.

Some of the participants were either Jamaicans, were related to Jamaicans, or had previous interactions with Jamaicans, and so they were familiar with the culture. However, training enforces the importance of being culturally sensitive in providing healthcare services.

**5.** ***How practice will change after training***. The participants' response to how their practice will change after participating in the training included the following themes:

1. Including cultural humility in providing care
2. Becoming an active listener
3. Including evidence-based data in educating Jamaicans about diabetes
4. Being consistent in incorporating cultural humility in providing care to patients and their families.

# SECTION V: DISCUSSION

## Summary

The COVID-19 pandemic provided challenges to the implementation of this DNP project. Participation depended on participants' availability, which was limited during the pandemic. The decision was made to conduct both online training and evaluation of the training as it was not safe to convene the 12 healthcare providers for in-person training. The in-person training materials and data collection tools had to be redesigned to online training and data collection. The participants included nurse practitioner students who directly interface and provide care to Jamaican T2DM patients and their families. They were included at the request of the clinic administrator.

The project aims for this DNP Project were met. Each aim and the data to support it are described.

***Aim one: Achieve > 20 increase in knowledge of Jamaican culture, diet, and health beliefs among healthcare providers.*** Comparing the data from the pre and post-training questionnaires indicated an increase in overall knowledge (5 of 14 or 36% items showed improvement) among the healthcare providers.

***Aim two*: *Achieve >90 percent of healthcare providers reporting being "comfortable" in planning and providing T2DM education to Jamaican patients and their families.*** One hundred percent of participants reported they were "comfortable" after the training to include their knowledge of Jamaican culture in planning and providing care.

The project encouraged a patient-centered approach, shared decision-making, and cultural humility in providing care to Jamaican patients. The project's success can be partially attributed to the unfailing support of the clinical staff and the support of my DNP chair.

**Interpretation**

Jamaicans are willing to take steps to manage their diabetes, especially when empowered with the necessary tools. Compliance and improved health outcomes for Jamaicans with diabetes are related to health education that reflects and includes individualized culture and health beliefs (Hartzler et al., 2014).

Jamaicans need education from their healthcare providers to have the necessary tools to manage their diabetes. Unfortunately, some healthcare providers know very little about Jamaican culture, diet, and health beliefs. So, the first step needs to be the education of healthcare providers.

The results of this project indicate that training provides education about Jamaican culture, diet, and health beliefs, along with promoting a patient-centered approach with cultural humility can improve knowledge and comfort levels of health care providers in providing care and education to Jamaican patients with T2DM.

**Limitations**

The implementation of the project was delayed and directly impacted by the COVID-19 pandemic. The CDC and government agencies emphasized that the best way to avoid the illness is to avoid being exposed to the virus and protect our loved ones by staying home (CDC, 2020). With this mandate, the project implementation and evaluation plans had to be revised to allow for the online delivery of the training and evaluation of outcome measures.

Online delivery required converting the PowerPoint educational presentation to a YouTube presentation and converting the outcome measures to Google questionnaires. This change to online delivery required that participants have access to computers and that the training be done on their own time rather than during group training at the clinic.

Another change had to be made in data collection to decrease responder fatigue with multiple questionnaires. Participants were asked to complete the MDKT as a pre-training assessment rather than both pre and post-training as had been planned. This move was designed to increase participation and prevent responder fatigue in an already overburdened group of healthcare providers.

**Conclusions**

Healthcare providers are relied on for knowledge and accuracy in diagnosing and treating diabetic patients in a rapidly changing environment. The COVID-19 pandemic brought to the forefront the challenges among ethnicities with comorbidities such as diabetes that have been affected the most.

Evidence-based literature supports that effective patient outcomes are achievable with patient-centered T2DM education. A patient-centered type of T2DM education incorporates demographics, socio-economic status, the literacy level of the patient, and shared decision-making delivered with cultural humility (Menezes et al., 2016). It is important that time spent during patient contact be informative and unique to the patient. This kind of patient-centered care is achievable by all healthcare providers. As indicated in the summary of the evidence above, a more patient-centered approach to care improves the quality of patient outcomes, such as lower HbA1c scores (Yuan et al., 2014). According to the research conducted by Klein et al. (2013), more needs to be done to educate T2DM patients and their families and equip them to manage their disease will ultimately improve the quality of their life.

This DNP Project sought to educate healthcare providers on the uniqueness of the Jamaican culture and diet and how health beliefs affect patient compliance and health outcomes. Although the training was online and not and in-person, the participants reported they found it

useful in their daily interactions with the Jamaican patient. It increased their willingness to include what they learned in their practice and to mentor other colleagues. This positive result was significant as this clinical site serves a large population of Jamaicans. Some of the participants were familiar with Jamaicans either by birth or as patients, as observed in the results. However, the post-training results demonstrated improvement in the knowledge of Jamaican culture and health beliefs.

The training provided in this DNP Project was supported by an evidence-based literature review that proposed that an intervention that includes a patient-centered approach to providing patient education with shared decision-making and cultural humility improves T2DM knowledge can improve the quality of the patient outcomes. Health care providers were encouraged to embrace and place value on the quality of patient education and patient outcomes. Future research is needed to evaluate the impact of training healthcare providers on actual patient outcomes for Jamaican patients with T2DM.

# SECTION VI: OTHER INFORMATION

## Funding

The DNP student and the clinic where the project was implemented funded all of the costs associated with this DNP project. No additional funding was received.

## SECTION VII: REFERENCES

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## SECTION VIII: APPENDICES

### Appendix A

***Statement of Non-Research Determination Form***

UNIVERSITY OF SAN FRANCISCO | School of Nursing and Health Professions

## DNP Statement of Non-Research Determination Form

## Student Name: Patricia Anderson

**Title of Project:**

Education for Jamaican Healthcare Providers Caring for Type 2 Diabetes Mellitus Patients

**Brief Description of Project:**

Type 2 diabetes mellitus (T2DM) complications constitute a significant challenge for both patients and their families. The prevalence of diabetes is 11.9% among Jamaicans (World Health Organization (WHO), 2016). The proportional mortality among Jamaicans for all ages was 11% for diabetes (WHO, 2016). According to a study done by Hartzler et al. (2014), Jamaicans had poor knowledge of diabetes, in particular, identifying signs and symptoms of hyper/hypoglycemia, the importance of foot and eye exams, fasting blood glucose levels, and long-term diabetes complications. It was observed that Jamaican patients rely on healthcare providers for diabetes information and self-management recommendations. Also, that Jamaican culture and language influence the patients' health beliefs, attitudes, and health literacy affects diabetes management.

According to a study conducted by Singh and Aiken (2017), limited health literacy is predominant among the diabetic population in Jamaica, and it affects health outcomes. The diabetic teaching for Jamaicans should take into consideration the idiosyncrasy of the culture in meal planning, the demographic factors, age, and educational level as they are significantly associated with health literacy levels. Positive outcomes can only be achieved through cultural sensitivity.

Rather than the clinician functioning as a decision-maker for clients, more positive outcomes are attained when clinicians collaborate with the client and adopt the role of an educator and facilitator (Mendezes et al., 2016). This position of partnering with clients will empower them to take control of the debilitating effects of the disease.

Introducing a patient-centered clinical approach to caring for people with diabetics is cost-effective and geared to improving the quality of health outcomes for those with T2DM. In addressing this concern, the goal of this project is to design, implement, and evaluate evidenced-based workshops for healthcare professionals employed at a community clinic in Jamaica. These workshops will utilize an evidence-based, culturally relevant, patient-centered, shared decision-making, health literacy approach to care to improve education for Jamaican healthcare providers caring for patients with T2DM.

***The implementation will involve:***

a). Determine a profile of healthcare providers competences in T2DM health literacy by:

- Administering to Jamaican healthcare professionals a pre and post-survey measuring their knowledge and comfort level in providing evidence-based, culturally relevant, patient-centered education to Jamaican T2DM patients and their families.

b). Plan and implement training on T2DM health literacy for healthcare professionals in clinical settings by:

- Providing to Jamaican healthcare professionals educational workshops that will provide training on how to provide education that is evidence-based, culturally relevant, and patient-centered to Jamaican T2DM patients and their families.

Developing visual aids that can be used at the educational workshops for Jamaican healthcare professionals.

c). Develop supporting materials for implementing diabetes health literacy in the clinical setting by:

- Developing A toolkit that will be given out during the workshops for Jamaican healthcare professionals that will include educational handouts that can be given to Jamaican T2DM patients and their families.

d). Evaluate training effectiveness by administering an evaluation form at the end of the training.

***Scope of the Project:***

The purpose of this project is to determine if the intervention can impact:

a) T2DM health literacy of Jamaican healthcare professionals.
b) Knowledge and comfort level of Jamaican healthcare professionals in providing evidence-based, culturally relevant, patient-centered education to Jamaican patients with T2DM and their families.

**A) Aim Statement:**

The aim of this project is to design, implement, and evaluate the effectiveness of evidence-based, culturally relevant, patient-centered T2DM workshops, and a toolkit for Jamaican healthcare providers by May 2020. Which may lead to:

a) improve the knowledge of healthcare professionals providing T2DM education to Jamaican patients and their families.
b) improve the comfort level of healthcare professionals providing T2DM education to Jamaican patients and their families.

**B) Description of Intervention:**

The intervention will include:

A) Workshops that will provide education on the health belief of the culture, and its effect on the management of T2DM. These workshops will include interactive role-plays in providing T2DM teachings to patients by health care professionals and provide visual aids to enforce the teachings in the workshops.

B) A toolkit will be provided to workshop attendees that encourage T2DM patient education that is culturally sensitive for Jamaicans.

**C) How will this intervention change practice?**

The implementation of the project will educate healthcare professionals to provide evidence-based, culturally relevant, and patient-centered discharge education for T2DM patients. According to Singh and Aiken (2017), healthcare providers should be empowered with the knowledge, beliefs regarding health literacy, and practice to facilitate the development of optimal health promotional activities of diabetic patients.

**D) Outcome measurements:**

1) The "Diabetes Knowledge Test," a tool designed by Michigan Diabetes Research Center (reference), will be administered pre and post-intervention to Jamaican healthcare professionals to evaluate the effectiveness of the workshops in improving their T2DM health literacy.

2) Author-developed survey to be administered pre and post-intervention to Jamaican healthcare providers to assess changes after attendance at the workshop in knowledge and comfort level in providing education to Jamaican T2DM patients and their families.

To qualify as an Evidence-based Change in Practice Project, rather than a Research Project, the criteria outlined in federal guidelines will be used:
(http://answers.hhs.gov/ohrp/categories/1569)

☐ This project meets the guidelines for an evidence-based Change in Practice Project as outlined in the Project Checklist (attached). The student may proceed with implementation.

☐ This project involves research with human subjects and must be submitted for IRB approval before project activity can commence.

Comments:

## EVIDENCE-BASED CHANGE OF PRACTICE PROJECT CHECKLIST *

**Instructions: Answer YES or NO to each of the following statements:**

| **Project Title:** | **YES** | **NO** |
|---|---|---|
| The aim of the project is to improve the process or delivery of care with established/ accepted standards or to implement evidence-based change. There is no intention of using the data for research purposes. | **X** | |
| The specific aim is to improve performance on a specific service or program and **is a part of usual care**. ALL participants will receive standard of care. | **X** | |
| The project is **NOT** designed to follow a research design, e.g., hypothesis testing or group comparison, randomization, control groups, prospective comparison groups, cross-sectional, case-control). The project does **NOT** follow a protocol that overrides clinical decision-making. | **X** | |
| The project involves the implementation of established and tested quality standards and/or systematic monitoring, assessment, or evaluation of the organization to ensure that existing quality standards are being met. The project does **NOT** develop paradigms or untested methods or new untested standards. | **X** | |
| The project involves the implementation of care practices and interventions that are consensus-based or evidence-based. The project does **NOT** seek to test an intervention that is beyond current science and experience. | **X** | |
| The project is conducted by staff where the project will take place and involves staff who are working at an agency that has an agreement with USF SONHP. | **X** | |
| The project has **NO** funding from federal agencies or research-focused organizations and is not receiving funding for implementation research. | **X** | |
| The agency or clinical practice unit agrees that this is a project that will be implemented to improve the process or delivery of care, i.e., **not** a personal research project that is dependent upon the voluntary participation of colleagues, students, and/ or patients. | **X** | |
| If there is an intent to, or the possibility of publishing your work, you and supervising faculty and the agency oversight committee are comfortable with the following statement in your methods section: *"This project was undertaken as an Evidence-based change of practice project at X hospital or agency and as such was not formally supervised by the Institutional Review Board."* | **X** | |

**ANSWER KEY:** If the answer to **ALL** of these items is yes, the project can be considered an Evidence-based activity that does NOT meet the definition of research. **IRB review is not required. Keep a copy of this checklist in your files.** If the answer to ANY of these questions is **NO**, you must submit for IRB approval.

*Adapted with permission of Elizabeth L. Hohmann, MD, Director and Chair, Partners Human Research Committee, Partners Health System, Boston, MA.

**STUDENT NAME (Please print): Patricia Anderson**

**Signature of Student:**
**_Partricia_Anderson_____DATE__5/10/2019____**

**SUPERVISING FACULTY MEMBER (CHAIR) NAME (Please print):**
**Dr. Robin Buccheri**

**Signature of Supervising Faculty Member (Chair):**

*Robin Buccheri* **DATE**
**5/10/19**

## Appendix B

### *Letter of Support from Organization*

**Dr. Wayne J. M. Fraser M.D.**
Diplomate American Board of Family Practice

2331 North State Road 7, Suite 202
Lauderdale, Florida 33313
Telephone: (954) 581-0028
Fax: (954) 581-1924

November 21, 2019

To Whom It May Concern:

Re: Patricia Anderson

Dear Sir/Madam,

This is a letter of support for Patricia Anderson to implement her DNP project "Staff Education on Jamaican Diabetic Management" at Wayne Fraser, MD, PA. I have given her permission to utilize the name of my medical practice in her DNP Comprehensive Project Report, future presentations and publications.

Sincerely,

Wayne J. M. Fraser, M. D. PA

## Appendix C

***Literature Review Evaluation Table***

| Citation | Conceptual Framework | Design/ Method | Sample/ Setting | Major Variables studied | Measurement | Data Analysis | Findings | Appraisal Worth to practice |
|---|---|---|---|---|---|---|---|---|
| Fan et al., 2016 | King's conceptual framework | Randomized clinical trial | 280 participants randomly selected in a hospital setting | Body mass index; waist circumference; fasting blood glucose; systolic blood pressure; triglyceride; low-density lipoprotein | SPSS v 13.0 was used for statistical analysis. Fisher's exact test was used for the comparison of categorical data. P< 0.05 was considered statistically significant. | Comparison of numerical data using a paired student t test. Fisher's exact test was also used for the comparison of categorical data. | Individualized education which includes personality show improved blood glucose levels, cardiovascular issues such as BMI, and blood pressure. Result: HbA1 (6.2± 0.6% vs 6.9 ± 3.1%, P=0.03), BMI (21.5 ± 2.5 vs 23.6 ± 1.6 kg/m2, P=0.002), BP(130.1±8.8 vs 135.1±8.4mmHg, P=0.003) | **Strengths:** The sample of participants was appropriate for the study, and they were randomly divided into study and control groups. The recommendations were consistent and included scientific references. **Limitations:** Medication adherence was not captured in the project to observe its influence on the patient's outcome. **Critical Appraisal Tool & Rating:** John Hopkins Nursing Evidence-Based Practice Appraisal Tools Level I, Grade A, Quality High |

| Citation | Conceptual Framework | Design/ Method | Sample/ Setting | Major Variables studied | Measurement | Data Analysis | Findings | Appraisal Worth to Practice |
|---|---|---|---|---|---|---|---|---|
| Klein et al., 2013 | None | Randomized clinical trials | 52 studies with a total of 9,631 participants included in the analysis | Participants who completed DSME interventions; adults diagnosed with T2DM; HBA1c values available both baseline and post-intervention. | The titles and abstracts were assessed for relevance. The criteria for inclusion: participants who completed DSME; diagnosed with T2DM by NIH; HBA1c available pre and post-intervention; RCTs journals. | The Fisher's Least Significant Difference (LSD) test | The intervention group showed overall reductions in HBA1c from baseline to post-intervention. Results: Mean HgbA1c in the intervention group (M=7.7.61, SD=1.34) < control (M=8.18, SD=1.43, t(146) = 3.51, P<0.01 | **Strengths:** The controls were adequate, and the sample size was sufficient for the design. The recommendations that were presented was consistent, based on the comprehensive literature reviews that included scientific references. **Limitations:** Some studies had high attrition rates and may be biased as the authors may be less likely to submit null findings. **Critical Appraisal Tool & Rating:** John Hopkins Nursing Evidence-Based Practice Appraisal Tools Level II, Grade B, Quality High |

| Citation | Conceptual Framework | Design/ Method | Sample/ Setting | Major Variables studied | Measurement | Data Analysis | Findings | Appraisal Worth to practice |
|---|---|---|---|---|---|---|---|---|
| Menezes et al., 2016 | None | A systematic review using PRISMA | Eleven studies (five randomized clinical trials and six quasi-experimental) | Authors; year and country of publication; study design, sample/population size; mean age of participants; meantime evolution of DM; educational intervention performed; results, and conclusions. | Data quality was assessed using JADAD scale and the Downs & Black's criteria | Descriptive statistics | The reviews indicate that patient-centered care and the shared decision may positively influence the patient's quality of life. Results: 58% of 98 patients developed no new feet ulcers, recurrence off neuropathic lesion: 16.7 vs 83.3, p=0.119, blood glucose level 128.8±41.0 vs 174.4±50.1, p<0.001. | **Strengths:** The sample size was sufficient for the design and the controls were adequate. The recommendations that were presented in the conclusion was consistent, based on the comprehensive literature reviews that included scientific references. **Limitations:** There was no similarity in the designs of educational interventions. **Critical Appraisal Tool & Rating:** John Hopkins Nursing Evidence-Based Practice Appraisal Tools Level II, Grade B, Quality High |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Citation** | **Conceptual Framework** | **Design/ Method** | **Sample/ Setting** | **Major Variables studied** | **Measurement** | **Data Analysis** | **Findings** | **Appraisal Worth to practice** |
| Titchener, 2014 | None | Quantitative Research | 185 patients were referred to as a patient-centered intervention for diabetes management. | HBA1c was the major primary clinical outcome that was measured in the study. | Before and after assessment audits | The data were analyzed using paired t-tests (SPSS Version 17.0.2; 2009; IBM SPSS Inc., Chicago, IL, USA) | The results indicated that the introduction of individualized patient care and education positively impacts behavioral changes which are further reflected in the improvement in HgbA1c values. | **Strengths:** The results were fairly consistent, the sample size was sufficient, and the conclusion provided consistent recommendations. **Limitation:** There was no control group, and the participants were not randomly selected. **Critical Appraisal Tool & Rating:** John Hopkins Nursing Evidence-Based Practice Appraisal Tools Level II, Grade A, Quality Good |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Citation** | **Conceptual Framework** | **Study design** | **Sample/ Setting** | **Major Variables studied** | **Measurement** | **Data Analysis** | **Findings** | **Appraisal Worth to practice** |
| Yuan, 2014 | None | Blocked randomization | 76 patients with T2DM | Blood pressure, body weight, lipid profile, blood glucose, HBA1c, and carotid arterial stiffness. | Results after intervention versus no intervention | The Shapiro-Wilk test was to check for normality of the data distribution. If the data was normally distributed the *t*-test was used, otherwise, the nonparametric test was applied. Significance P< 0.05. | The results indicated a significant decrease in the HbA1c level and body weight in the intervention group when compared to the control group. Results: reduction in hemoglobin A1c (HbA1c, -0.2 ± 0.56% versus 0.08 ± 0.741%; P < 0.05) and body weight (-1.19 ± 1.39 kg versus -0.61 ± 2.04 kg; P < 0.05). DSME can improve HbA1c and body weight in patients with type 2 diabetes. | **Strengths:** The sample of participants was appropriate for the study, and they were randomly divided into study and control groups. The recommendations were consistent with scientific references. **Limitations:** The timeline for baseline and follow-up assessment was short, other metabolic markers associated with DSME was not included, and the long-term effect of low-intensity education was not fully evaluated **Critical Appraisal Tool & Rating:** John Hopkins Nursing Evidence-Based Practice Appraisal Tools |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Level I, Grade A, Quality High |
| **Citation** | **Conceptual Framework** | **Study design** | **Sample/ Setting** | **Major Variables studied** | **Measurement** | **Data Analysis** | **Findings** | **Appraisal Worth to practice** |
| Xuereb et al., 2014 | None | Randomization was used in the study | 133 healthcare professionals | Height, weight, body mass index, waist measurement, hip measurement, capillary blood glucose, HBA1c, cholesterol panel, blood pressure, diet, and physical activity. | Medical chart audits were analyzed | The McNemar test was used to establish statistical significance in the change. Confidence Interval 95%. | The results indicated an overall improvement in documenting the care provided and the inclusions of medico-social data, nutrition, and the importance of physical activity in counseling and providing patient care. | **Strengths:** The sample of participants was appropriate and was randomly selected. The recommendations were consistent with scientific references. **Limitations:** The lack of human resources and medical equipment affected compliance in some countries. The research did not include how the impact of the program improved the patient's outcome. **Critical Appraisal Tool & Rating:** John Hopkins Nursing Evidence-Based Practice Appraisal Tools Non-research - Level IV, Quality High |

**Appendix D**

***List of Content for T2DM Staff Education on Jamaican Diabetic Provider Training***

## CONTENT OF THE STAFF EDUCATION ON JAMAICAN DIABETIC PROVIDER TRAINING

### PowerPoint Presentation

Areas to be covered:

- Statistics on diabetes among Jamaicans
- Introduction to the Jamaican culture including beliefs about diabetes and typical diet
- Introduction to the DNP project
- Why is the project important?
- Present and apply evidence-based literature supporting the DNP project for T2DM patients and their families:
    - Patient-centered care
    - Shared decision-making
    - Health literacy about T2DM and its treatment
    - Cultural humility

-Present evidenced-based toolkit for T2DM patients and their families

- Q & A

## Appendix E

### *Gap Analysis*

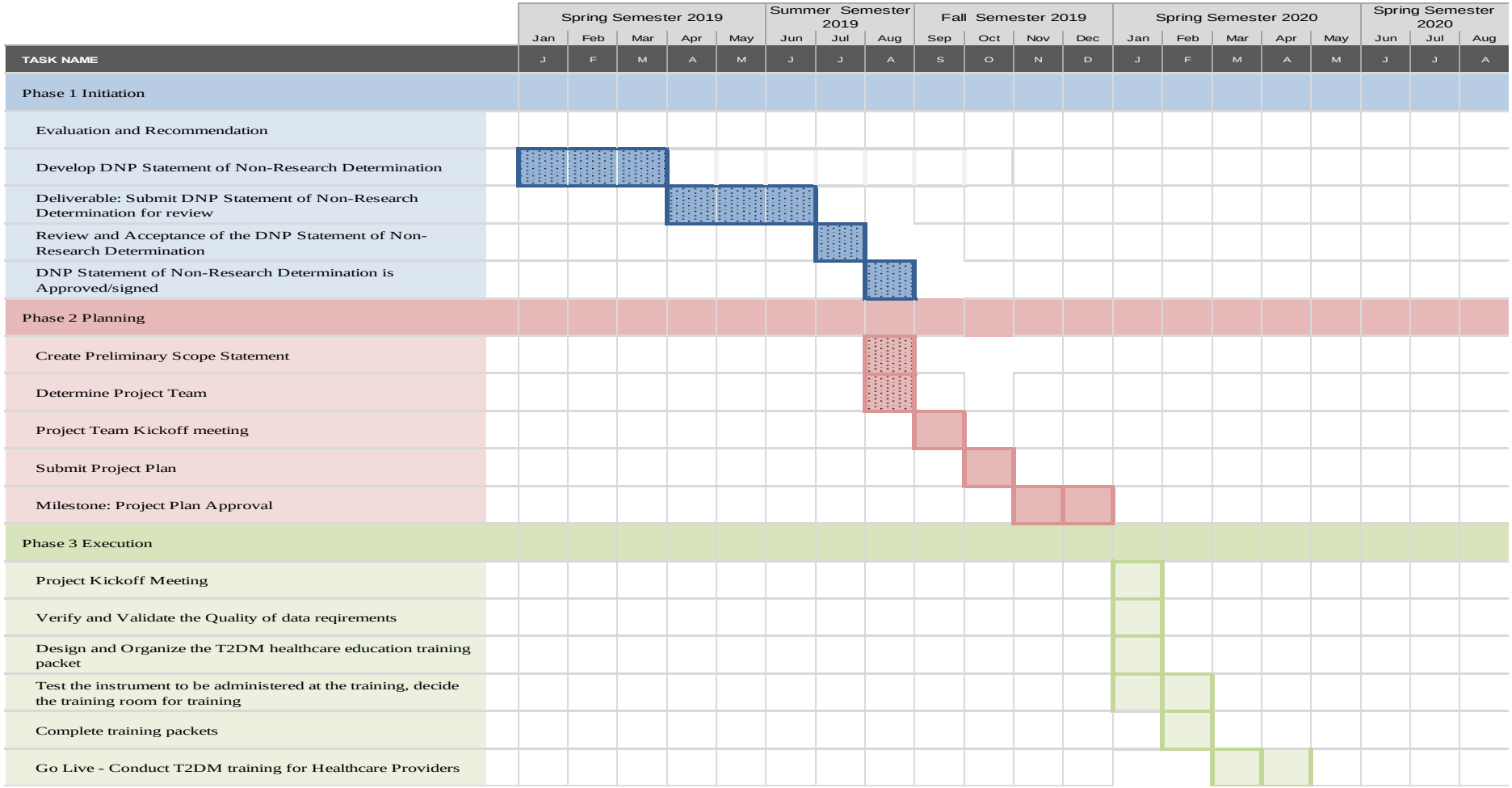
| | |
|---|---|
| 1. | Gap in T2DM statistics<br>1. There is a lack of statistics associated with T2DM related to the percentage of Jamaican people who have T2DM and also mortality rates among Jamaicans with T2DM. |
| 2. | Gap in evidence-based training programs<br>1. There is no developed curriculum to provide patient-centered T2DM education to Jamaican patients and their families.<br>2. Currently, there are no evidence-based T2DM culturally sensitive training programs specifically about Jamaican patients for healthcare providers. |
| 3.. | Gap in access to care<br>1. There are no identified healthcare clinics that only serve a Jamaican population in the USA with T2DM. |
| 4. | Gap in patient knowledge:<br>1. Jamaican clients and their families' misconception of T2DM treatments which affects compliance and health outcomes.<br>2. Patient non-adherence to medication and T2DM teachings as it lacks cultural humility.<br>3. Patient's belief in herbal cures that lack scientific evidence. |
| 5. | Gap in healthcare provider knowledge within the organization<br>1. There is no known member of staff at these locations who is an expert on Jamaican culture or the patient care of Jamaican patients with T2DM.<br>2. There have been no previous health workshops provided to healthcare professionals at these clinics on issues related to the care of T2DM Jamaican patients and their families using cultural humility. |

# Appendix F

## *Gantt Chart*

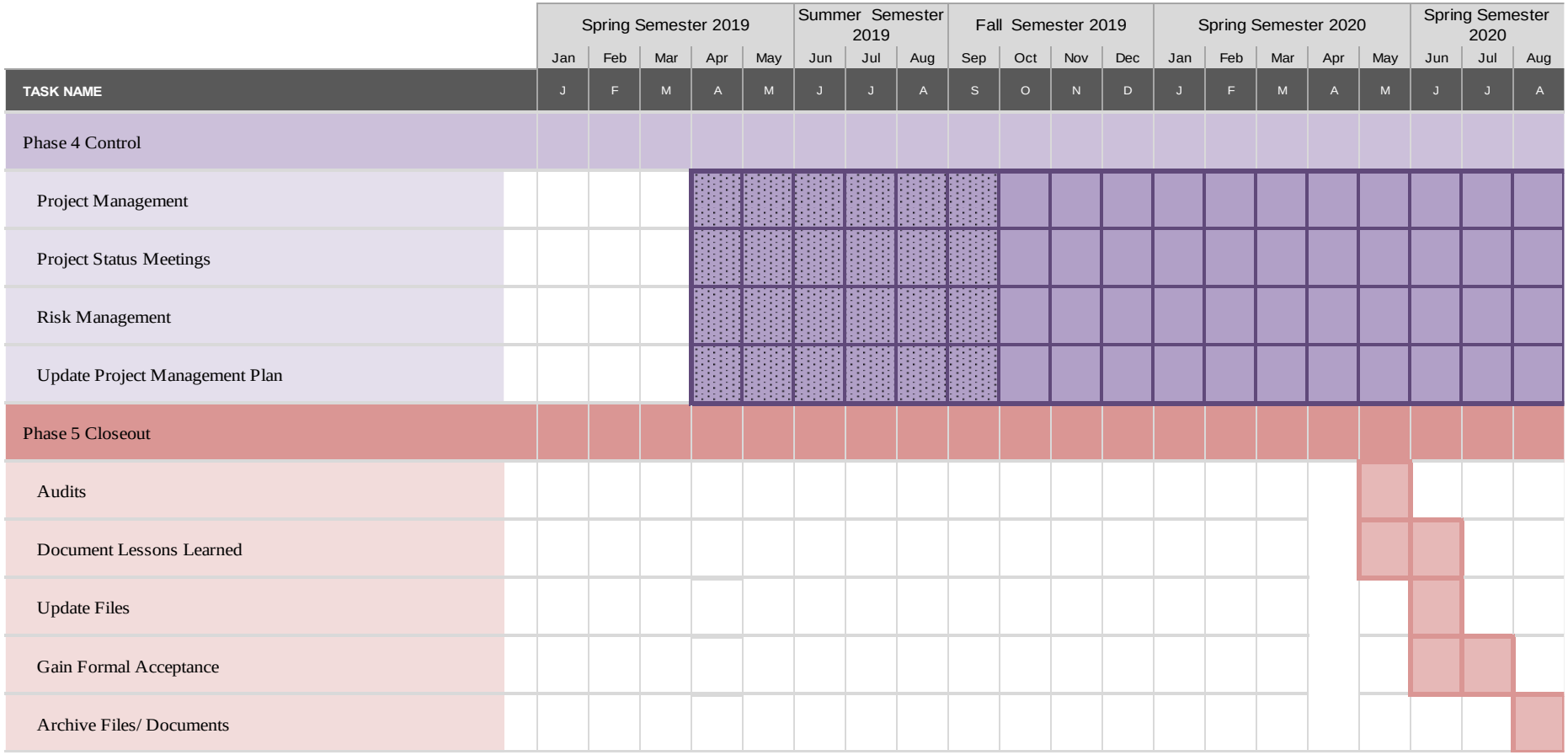
PROJECT TITLE

T2DM Training Project for Healthcare Providers
Patricia Anderson



# PROJECT TITLE

T2DM Training Project for Healthcare Providers
Patricia Anderson



## Appendix G

### *Work Breakdown Structure*

Level I Implement T2DM education for healthcare providers that is patient-centered and culturally sensitive.
Level 2 1.1 Initiation
Level 3
- 1.1.1 Evaluation & Recommendation
- 1.1.2 Develop a Project Charter
- 1.1.3 Deliverable: Submit Project Charter
- 1.1.4 Committee review Project Charter
- 1.1.5 Project Charter Signed/Approved

Level 2 1.2 Planning
Level 3
- 1.2.1 Create Preliminary Scope Statement
- 1.2.2 Determine Project team members
- 1.2.3 Project team Kickoff Meeting
- 1.2.4 Develop Project Plan
- 1.2.5 Submit a Project Plan
- 1.2.6 Milestone: Project Plan approval

Level 2 1.3 Execution
Level 3
- 1.3.1 Project Kickoff Meeting
- 1.3.2 Verify & Validate User Requirements for the T2DM training
- 1.3.3 Design and organize the T2DM healthcare education training toolkits
- 1.3.4 Decide on the venue for the T2DM workshops
- 1.3.5 Testing phase among a select group of Healthcare providers
- 1.3.6 Complete the toolkit
- 1.3.7 Healthcare providers training
- 1.2.6 Go Live

Level 2 1.4 Control
Level 3
- 1.4.1 Project Management
- 1.4.2 Project Status Meetings
- 1.4.3 Risk Management
- 1.4.4 Update Project Management Plan

Level 2 1.5 Closeout
Level 3
- 1.5.1 Document project in DNP Project Report
- 1.5.2 Document Lessons Learned
- 1.5.3 Archive DNP project

***Work Breakdown Structure*** **(Continued)**

| Level | WBS Code | Element Name | Definition |
|---|---|---|---|
| 1 | 1 | Implement T2DM education for healthcare providers that are patient-centered and culturally sensitive. | All work that will be necessary to design and implement workshops to train healthcare professionals in Jamaica to provide T2DM education that the patient-centered and culturally sensitive. |
| 2 | 1.1 | **Initiation** | Project initiation |
| 3 | 1.1.1 | Evaluation & Recommendation | The project team will evaluate the requirements for the T2DM training workshops, and make recommendations as needed for the implementation. |
| 3 | 1.1.2 | Develop Project Charter | The project manager will develop a project charter. |
| 3 | 1.1.3 | Submit Project Charter | The T2DM training project charter will be submitted to the committee designee. |
| 3 | 1.1.4 | Committee review Project Charter | The committee designee reviews the project charter |
| 3 | 1.1.5 | Project Charter signed/approved | The project charter is approved and signed. This moves the project into the planning phase. |
| 2 | 1.2 | **Planning** | Preparation phase in designing and implementing the T2DM training workshops. |
| 3 | 1.2.1 | Create Preliminary scope statement | The Project manager prepares a preliminary scope statement. |
| 3 | 1.2.2 | Determine project team | The project manager decides on the project team |
| 3 | 1.2.3 | Project Team Kickoff meeting | The project team meets officially to meet each other to beginning project planning. |
| 3 | 1.2.4 | Develop the project plan | With the leadership of the Project manager, the team develops the T2DM healthcare provider training project plan |
| 3 | 1.2.5 | Submit a Project plan | The Project plan is submitted for review. |
| 3 | 1.2.6 | Milestone: Project Plan approval | When the project plan is approved, the Project Manager has the authorization to proceed to the execution phase. |
| 2 | 1.3 | Execution | The execution phase of the project. |
| 3 | 1.3.1 | Project Kickoff meeting | The Project manager conducts a formal meeting with the team members. |

***Work Breakdown Structure*** **(Continued)**

| WBS Code | Element Name | Definition |
|---|---|---|
| 1.3.2 | Verify & Validate User Requirements for the T2DM training | Verify and validate the requirements for the training workshops. |
| 1.3.3 | Design and organize the T2DM healthcare education training toolkits | The training manuals, handouts, and presentation materials will be arranged. |
| 1.3.5 | Testing phase among a select group of Healthcare providers | A test T2DM workshop training will be conducted among select participants. |
| 1.3.6 | Complete the toolkits | Finalize the training workshop materials. |
| 1.3.7 | Staff training | All the training facilitators will be trained. |
| 1.4 | Go live | The T2DM education training workshop has started. |
| 1.4.1 | Project Management | Managing the project |
| 1.4.2 | Project status meetings | Engage in weekly project meetings to evaluated and monitor accomplishments against the plan. |
| 1.4.3 | Risk management | Forecasting and evaluation of the financial risks of the project and identify and minimize its impact on the project. |
| 1.4.4 | Update Project Management Plan | Continuously updating the project plan. |
| 1.5 | Close-out | The process to finalize the project. |
| 1.5.1 | Audit Procurement | Review the processes to determine the completeness and efficacy as well as the accuracy of the processes in designing the T2DM education for healthcare providers. |
| 1.5.2 | Document lessons learned | The Project manager and team document the lessons learned during the entire phase of the project. |
| 1.5.3 | Update files and records | The files, data, project details, lessons learned to reflect all the projects are recorded. |
| 1.5.4 | Gain formal acceptance | The training for healthcare providers in providing T2DM education that is patient-centered and culturally sensitive to patients and their families are accepted and the way forward. |
| 1.5.5 | Archive Files/documents | All project-related documentation is archived for future reference. |

## Appendix H

### *Communication Matrix*

| **Information Type** | **Prepared by** | **Distribution** | **Frequency** | **Transmittal** |
|---|---|---|---|---|
| Outline of the project | Project Lead | Project Team (including Jamaica Healthcare professionals) | As needed during the project life cycle | Email |
| Project kickoff | Project Lead | Project Team (including Jamaica Healthcare professionals) | Weekly | Email, zoom, telephone |
| T2DM workshop training | Project Lead | Project Team (including Jamaica Healthcare professionals) | Weekly | Email, zoom, telephone, meetings |
| Team debrief sessions, held after each training session | Project Lead | Project Team (including Jamaica Healthcare professionals) | Weekly | Email, zoom, telephone, meetings |
| Project issues | Project Lead | Project Team (including Jamaica Healthcare professionals) | As needed during the project life cycle | Email, zoom, telephone, meetings |
| Project updates | Project Lead | Leadership Team | Monthly | Face to face as needed |
| Updates to DNP chair | Project Lead | DNP Chair | Monthly | Email, zoom, telephone, meetings |
| Project wrap up and evaluation | Project Lead | Leadership Team | Once | Final meeting with the project team |

## Appendix I

### *SWOT Analysis*

| STRENGTHS | WEAKNESSES |
|---|---|
| • The DNP lead has a strong knowledge of the Jamaican culture<br>• The Doctors at the clinics support the project<br>• The support from the president of the Jamaican Diabetes Association and the Ministry of Health | • The cost to implement the project<br>• Obtaining the approval to conduct the project at a site that provided care to Jamaicans<br>• Implementing the project during the pandemic<br>• Finding a convenient time to meet with the healthcare professionals during project planning and implementation<br>• Ensuring that the healthcare providers incorporate the knowledge they gained from the training in their practice |
| **OPPORTUNITIES** | **THREATS** |
| • Improve the knowledge of healthcare professionals providing T2DM education to Jamaican patients and their families<br>• Improve the comfort level of healthcare professionals providing T2DM education to Jamaican patients and their families<br>• Reduce contact time with T2DM patients in the clinical settings<br>• Improved patient outcomes | • Obtaining funds to offset the cost to implement the project<br>• COVIN-19 pandemic and the National orders for safety. |

**Appendix J**

***Budget: Expenses and Expected Revenue***

# Proposed Budget (Expenses) - Healthcare Provider Education: Adult Jamaicans with Type 2 Diabetes

| Expenses | Participants | Number of hours | Unit cost (US $) per hour | Total Cost (US$) |
|---|---|---|---|---|
| **Estimated meeting time-salaries for Clinic staff:** | | | | |
| - Medical Doctor | 1 | 2 | $ 150 | $ 300 |
| - Family Nurse Practitioner | 5 | 2 | $ 65 | $ 650 |
| **Total expense for the staff training** | | | | **$ 950** |
| **Esitimated cost for the quality improvement facitlitator** | | | | |
| - Facilitator | | 2 | $ 50 | $ 100 |
| - Resource preparation | | 200 | $ 50 | $ 10,000 |
| - Data collection and analysis | | 30 | $ 50 | $ 1,500 |
| **Cost for Training** | | | | **$ 11,600** |
| Cost for training materials (including photo copies, papers, logo) | | | | $ 400 |
| **Total estimated project costs** | | | | **$ 12,950** |

***Budget: Expenses and Expected Revenue*** **(Continued)**

## Projected Revenue - Healthcare Provider Education: Adult Jamaicans with Type 2 Diabetes

| INCREASED IN REVENUE | Cost charged per provider | Additonal Patients seen | Estimated Increase in Revenue (per day) * | Year After Implementation: Estimated Gross Annual Increase in Revenue |
|---|---|---|---|---|
| Medical care providers: | | | | |
| - Medical Doctor | $ 167.00 | 1 | $ 167.00 | $ 40,080.00 |
| - Family Nurse Practitioner | $ 167.00 | 1 | $ 167.00 | $ 40,080.00 |
| Gross Revenue | | | | $ 80,160.00 |

Estimated incease in annual revenue ( Days per year seeing pts (240dys/yr))

* Cost per provider for Office or other outpatient visit for the evaluation and management of a new patient, which requires a medically appropriate history and/or examination and moderate level of medical decision making. (Medtronic, 2020)

## Appendix K

### *Revised Diabetes Knowledge Test (DKT2)*

**Michigan Diabetes Research and Training Center's Revised Diabetes Knowledge Test**

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

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

3. Which of the following is highest in fat?
   a. Low fat (2%) milk
   b. Orange juice
   c. Corn
   d. Honey

4. Which of the following is a "free food"?
   a Any unsweetened food
   b. Any food that has "fat free" on the label
   c. Any food that has "sugar free" on the label
   d. Any food that has less than 20 calories per serving

5. A1C is a measure of your average blood glucose level for the past:
   a. day
   b. week
   c. 6-12 weeks
   d. 6 months

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

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

8. Which should not be used to treat a low blood glucose?
   a. 3 hard candies
   b. 1/2 cup orange juice
   c. 1 cup diet soft drink
   d. 1 cup skim milk

9. For a person in good control, what effect does exercise have on blood glucose?
   a. Lowers it
   b. Raises it
   c. Has no effect

10. What effect will an infection most likely have on blood glucose?
    a. Lowers it
    b. Raises it
    c. Has no effect

11. The best way to take care of your feet is to:
    a. look at and wash them each day
    b. massage them with alcohol each day
    c. soak them for one hour each day
    d. buy shoes a size larger than usual

12. Eating foods lower in fat decreases your risk for:
    a. nerve disease
    b. kidney disease
    c. heart disease
    d. eye disease

13. Numbness and tingling may be symptoms of:
    a. kidney disease
    b. nerve disease
    c. eye disease
    d. liver disease

14. Which of the following is usually not associated with diabetes:
    a. vision problems
    b. kidney problems
    c. nerve problems
    d. lung problems

15. Signs of ketoacidosis (DKA) include:
    a. shakiness
    b. sweating
    c. vomiting
    d. low blood glucose

16. If you are sick with the flu, you should:
    a. Take less insulin
    b. Drink less liquids
    c. Eat more proteins
    d. Test blood glucose more often

17. If you have taken rapid-acting insulin, you are most likely to have a low blood glucose reaction in:
    a. Less than 2 hours
    b. 3-5 hours
    c. 6-12 hours
    d. More than 13 hours

18. You realize just before lunch that you forgot to take your insulin at breakfast. What should you do now?
    a. Skip lunch to lower your blood glucose
    b. Take the insulin that you usually take at breakfast
    c. Take twice as much insulin as you usually take at breakfast
    d. Check your blood glucose level to decide how much insulin to take

19. If you are beginning to have a low blood glucose reaction, you should:
    a. exercise
    b. lie down and rest
    c. drink some juice
    d. take rapid-acting insulin

20. A low blood glucose reaction may be caused by:
    a. too much insulin
    b. too little insulin
    c. too much food
    d. too little exercise

21. If you take your morning insulin but skip breakfast, your blood glucose level will usually:
    a. increase
    b. decrease
    c. remain the same

22. High blood glucose may be caused by:
    a. not enough insulin
    b. skipping meals
    c. delaying your snack
    d. skipping your exercise

23. A low blood glucose reaction may be caused by:
    a. heavy exercise
    b. infection
    c. overeating
    d. not taking your insulin

Note: For non-US patient populations, we recommend reviewing the terms used in items 1, 2, 3, 4 and 8 for appropriateness.

RevDKT; Diabetes Research and Training Center

**Appendix L**

***Pre-Training Questionnaire***

# EDUCATING JAMAICAN PATIENTS WITH DIABETES:

# PRE-TRAINING QUESTIONNAIRE

**Introduction:**

Thank you very much for your participation in this training. The objective of this class is to increase your knowledge about Jamaican patients with diabetes using a patient-centered approach that includes culturally humility.

**Please circle your response.**

**Questions:**

1. Do you know the geographical location of Jamaica?
   a. Central America
   b. South America
   c. Africa
   d. Caribbean

2. What race are Jamaicans?
   a. Blacks
   b. Predominately blacks
   c. A mixture of blacks and Rastafarians
   d. A mixture of all ethnicities

3. What is the Jamaican dialect?
   a. French creole
   b. English creole
   c. Patios
   d. Spanish

4. What makes up the Jamaican diet?
   a. Vegetables only
   b. Vegetables and carbohydrates
   c. Fruits
   d. Predominantly carbohydrates

5. What other names do Jamaicans use to refer to having diabetes?
    a. High glucose in the blood
    b. Sugar in the body
    c. The pancreas is not functioning properly
    d. I need to eat a small amount of food

6. How do Jamaicans view the treatment of diabetes?
    a. Tablets only
    b. Insulin and tablets
    c. Insulin only
    d. Diet and or exercise only

7. What are the local remedies for diabetes?
    a. Bush tea
    b. Cinnamon leaf
    c. Both bush and cinnamon leaf
    d. Medication

8. What is a typical Jamaican breakfast?
    a. Cereal
    b. Fruits and cereal
    c. Boiled yams, dumplings, and protein
    d. Sandwich

9. What is a typical Jamaican lunch?
    a. Sandwich
    b. Fruit bowl
    c. Rice, vegetables, and protein
    d. Patties
    e. Bun and cheese

10. What is a typical Jamaican dinner?
    a. Salad
    b. Fruit bowl
    c. Rice, vegetables, and protein
    d. Boiled yams, dumplings, and protein

11. Have you ever asked Jamaican patients about their culture/traditions and included that information in reference to your diabetes teachings?
    a. Yes
    b. No

12. Do you think that understanding a patient's culture will improve patient compliance with diabetes treatment?
    a. Yes
    b. No

13. Do you think that understanding a patient's culture will improve diabetic patient-outcomes?
    a. Yes
    b. No

14. Have you ever included the patient's economic status in planning diabetic patient care?
    a. Yes
    b. No

**Demographics:**

15. What if your gender?
    a. Male
    b. Female

16. What is your age?
    a. 20 – 30
    b. 31 – 40
    c. 41 – 50
    d. >50

17. What is your profession?
    a. Physician
    b. Physician Assistant
    c. Nurse Practitioner
    d. Registered Nurse
    e. Medical Assistant
    f. Health Services (Manager/Office Attendant/Secretary)
    g. Other (Write in position)_____

18. How long have you been working in this profession?
    a. 1-3 years
    b. 3-6 years
    c. > 7 years

**Appendix M**

***Post-Training Questionnaire***

# EDUCATING JAMAICAN PATIENTS WITH TYPE 2 DIABETES:

# POST-TRAINING QUESTIONNAIRE

## Introduction:

Thank you very much for your participation in this training. The objective of this class is to increase your knowledge about Jamaican patients with diabetes using a patient-centered approach that includes culturally humility.

**Please circle your response.**

## Questions:

1. Do you know the geographical location of Jamaica?
   a. Central America
   b. South America
   c. Africa
   d. Caribbean

2. What race are Jamaicans?
   a. Blacks
   b. Predominately blacks
   c. A mixture of blacks and Rastafarians
   d. A mixture of all ethnicities

3. What is the Jamaican dialect?
   a. French creole
   b. English creole
   c. Patios
   d. Spanish

4. What makes up the Jamaican diet?
   a. Vegetables only
   b. Vegetables and carbohydrates
   c. Fruits
   d. Predominantly carbohydrates

5. What other names do Jamaicans use to refer to having diabetes?
    a. High glucose in the blood
    b. Sugar in the body
    c. The pancreas is not functioning properly
    d. I need to eat a small amount of food

6. How do Jamaicans view the treatment of diabetes?
    a. Tablets only
    b. Insulin and tablets
    c. Insulin only
    d. Diet and or exercise only

7. What are the local remedies for diabetes?
    a. Bush tea
    b. Cinnamon leaf
    c. Both bush and cinnamon leaf
    d. Medication

8. What is a typical Jamaican breakfast?
    a. Cereal only
    b. Fruits and cereal
    c. Boiled yams, dumplings, and protein
    d. Sandwich

9. What is a typical Jamaican lunch?
    a. Sandwich
    b. Fruit bowl
    c. Rice, vegetables, and protein
    d. Patties, Bun and cheese

10. What is a typical Jamaican dinner?
    a. Salad
    b. Fruit bowl
    c. Rice, vegetables, and protein
    d. Boiled yams, dumplings, and protein

11. In the future, will you ask patients about their culture/traditions and included that information to reference your diabetes teachings?
    a. Yes
    b. No

12. Do you think that understanding a patient's culture will improve patient compliance with diabetes treatment?
    a. Yes
    b. No

13. Do you think that understanding a patient's culture will improve diabetic patient-outcomes?
    a. Yes
    b. No

14. Will you included the patient's economic status in planning diabetic patient care?
    a. Yes
    b. No

**Appendix N**

***Training Evaluation Form***

# EDUCATING JAMAICAN PATIENTS WITH TYPE 2 DIABETES:

# TRAINING EVALUATION FORM

**Please answer the following questions to help us improve future training sessions.**

1. Please circle the primary position that best describes you.

    a. Physician
    b. Physician Assistant
    c. Nurse Practitioner
    d. Registered Nurse
    e. Medical Assistant
    f. Health Services (Manager/Office Attendant/Secretary)
    g. Other (Write in position)_____

2. List the three most important things you learned during the training session?

    A. _____

    _____

    _____

    B. _____

    _____

    _____

    C. _____

    _____

    _____

3. Please rate this training in terms of its usefulness in the following areas.

| **Usefulness of Training** | **1** | **2** | **3** | **4** |
|---|---|---|---|---|
| | Not Useful | Somewhat Useful | Useful | Very Useful |
| 3. This training will be **useful** in your daily interaction with Jamaican patients | | | | |
| 4. This training was **useful** in increasing your **willingness to include what you have learned in your practice** with Jamaican patients | | | | |
| 5. This training was **useful** in increasing your **ability to mentor other colleagues** in adopting this change in practice in planning patient care for Jamaican patients | | | | |

| **Comfort Level** | **1** | **2** | **3** | **4** |
|---|---|---|---|---|
| | Not Comfortable | Somewhat Comfortable | Comfortable | Very Comfortable |
| 6. How **comfortable** are you after this training to include the knowledge of the culture in **planning care**? | | | | |
| 7. How **comfortable** are you after this training to include the knowledge of the culture in **providing care**? | | | | |

8. Please provide at least one example of how your practice will change as a result of this training.

_____

_____

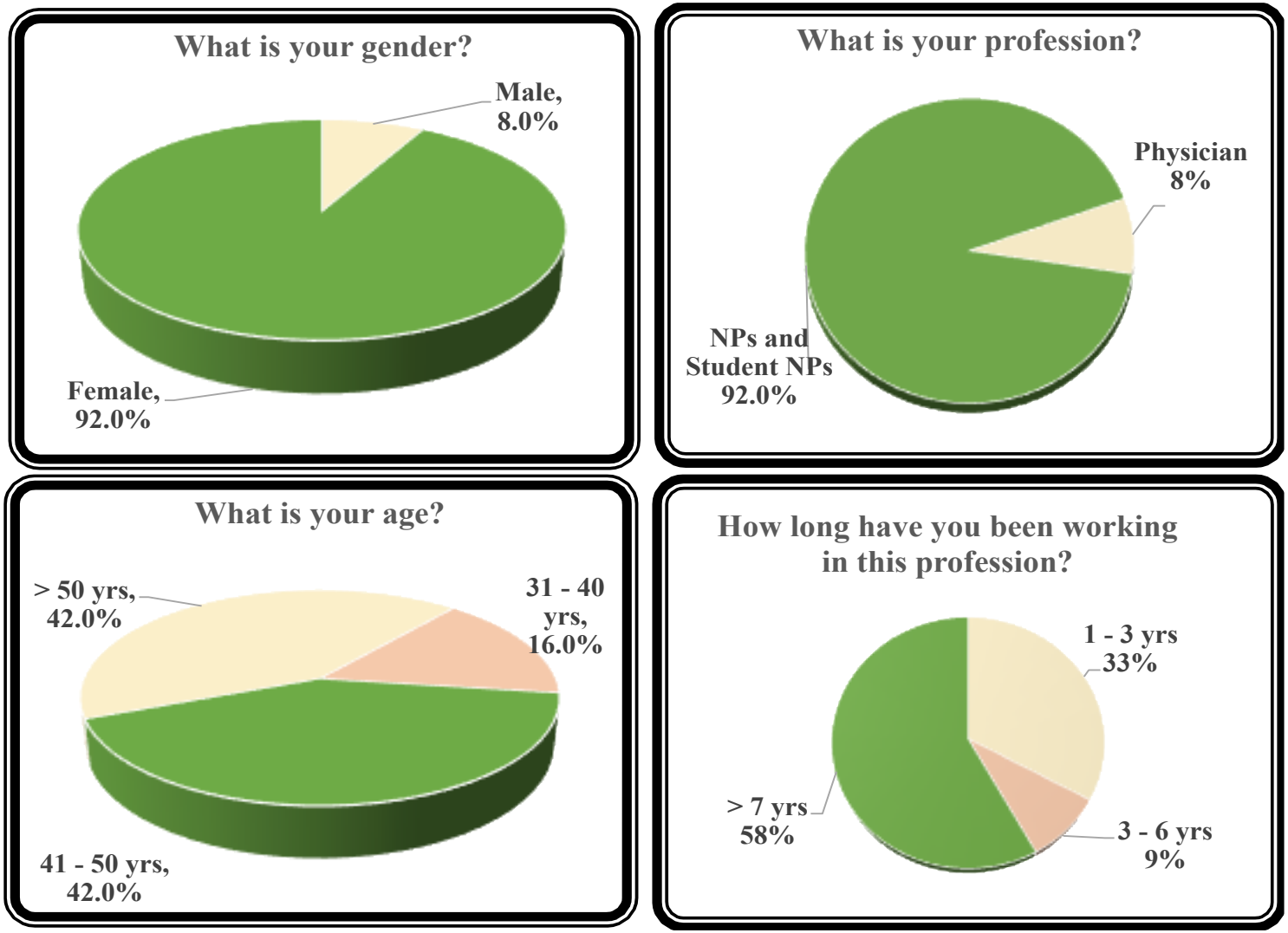
_____

_____

Thank you for your feedback.

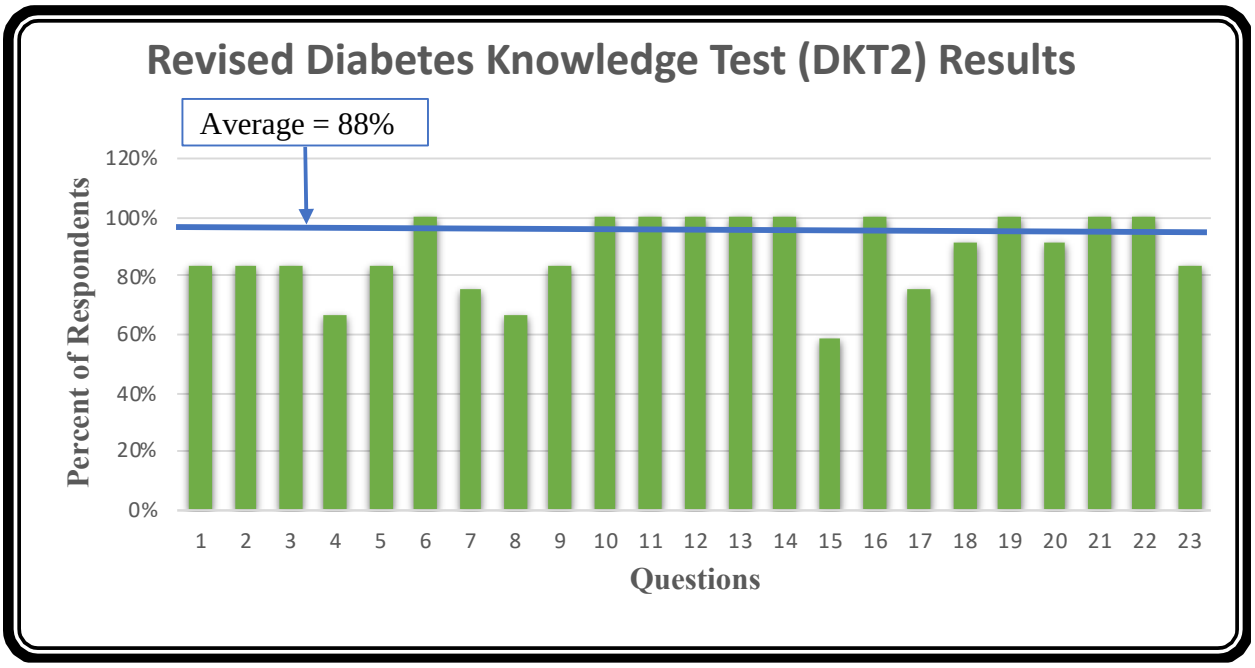
**Appendix O**

***Demographic Data Results***



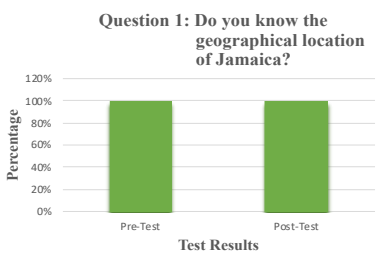
**Appendix P**

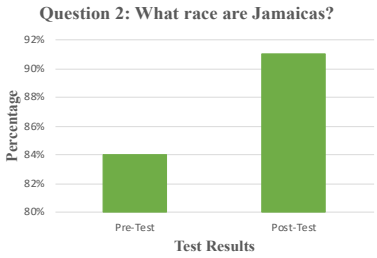
***Revised Diabetes Knowledge Test (DKT2) Results***

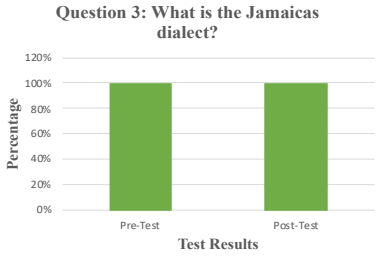


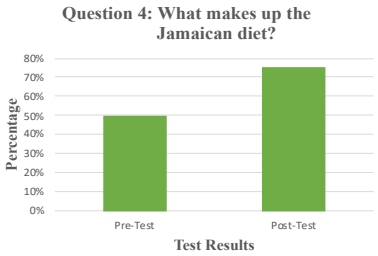
# Appendix Q

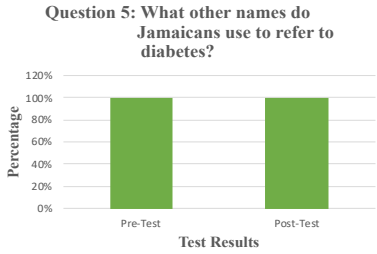
## *Percentage of Correct Responses for Each Question on Pre and Post-Training Questionnaires* (Pre n=11) (Post n=12)

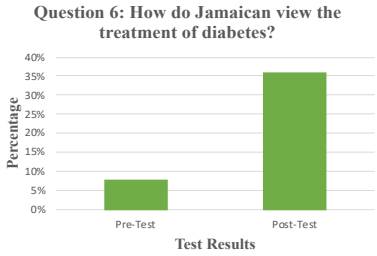


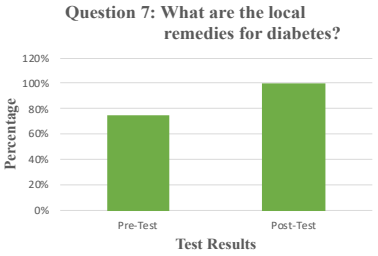



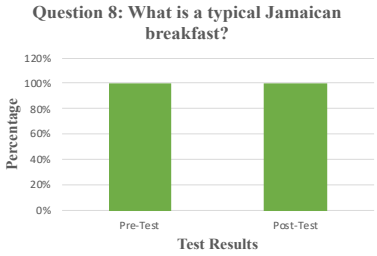



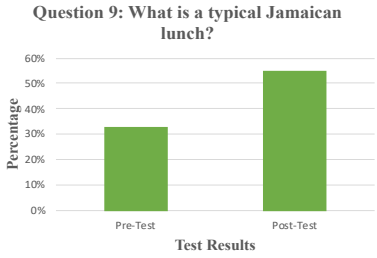



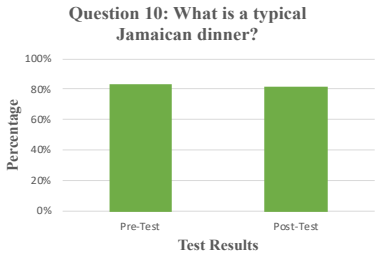



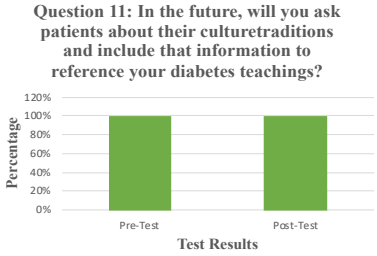



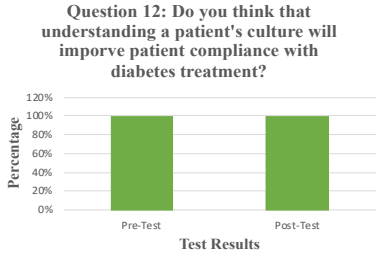



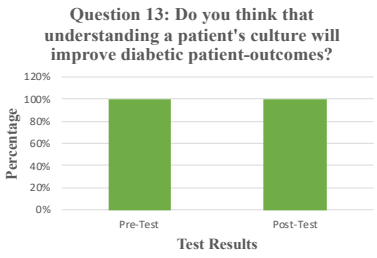



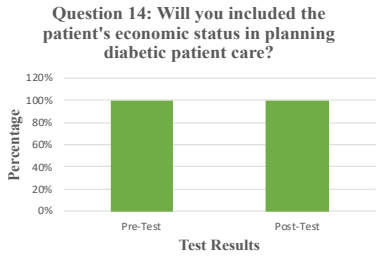



**Appendix R**

***Training Evaluation Form Results***
**(n=12)**

**Part two**

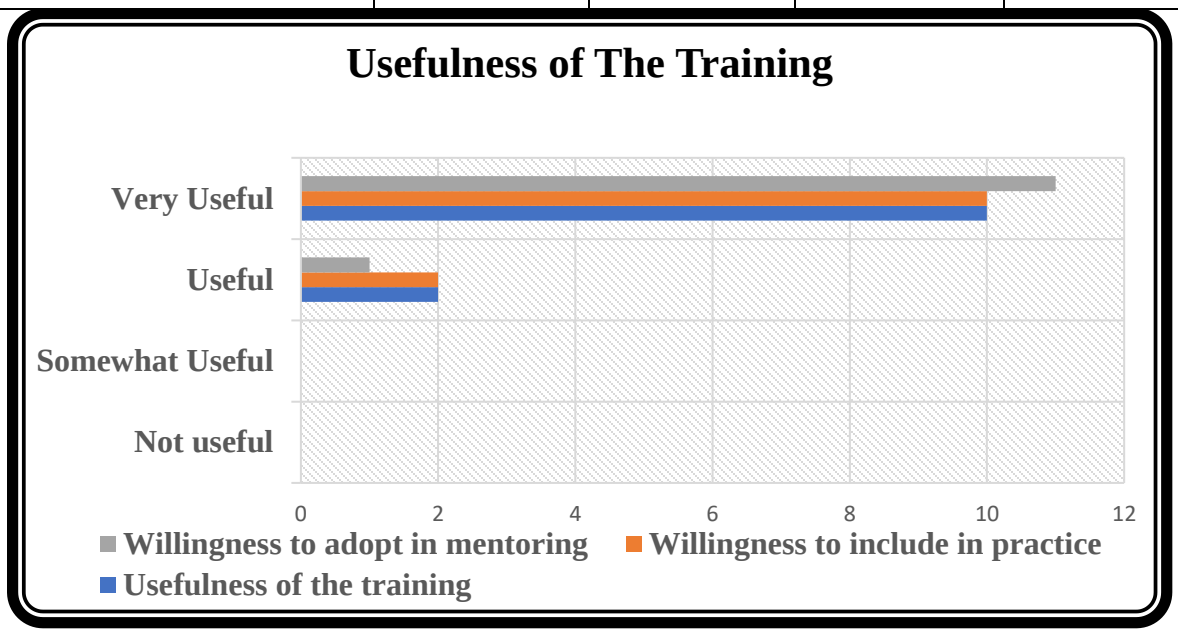
| **2. List two things that you learned during the training session?** |
|---|
| 1. The need for cultural humility, and a reminder to not make assumptions about the patient population |
| 2. Reinforces the importance of cultural humility and its impact on chronic illnesses |
| 3. I am Jamaican so most were familiar, however, it did emphasize culture, and food preference which will affect diabetes and its' control |
| 4. How Jamaicans view diabetes, and Jamaicans are multi-cultural. |
| 5. How important is cultural sensitivity and using cultural knowledge for disease management. |
| 6. How Jamaicans view diabetes treatment. Most Jamaican do not understand the "pathophysiology" behind diabetes thus leading to what we call "non-compliance. |
| 7. Diet and communicating techniques |
| 8. Jamaican diet Jamaican view of diabetes |
| 9. I am Jamaican so I did not learn anything new. The culture was familiar. |
| 10. The home remedies used and that 4/10 Jamaicans have DM and do not know |
| 11. Free food has less than 20 cal per serving; the International Diabetes Federation is I good place to get population-specific information about diabetes |
| |

| 12. Culture relating to diet! Compliance |
|---|

***Training Evaluation Form Results***
**(n=12) (Continued)**

**Part three**

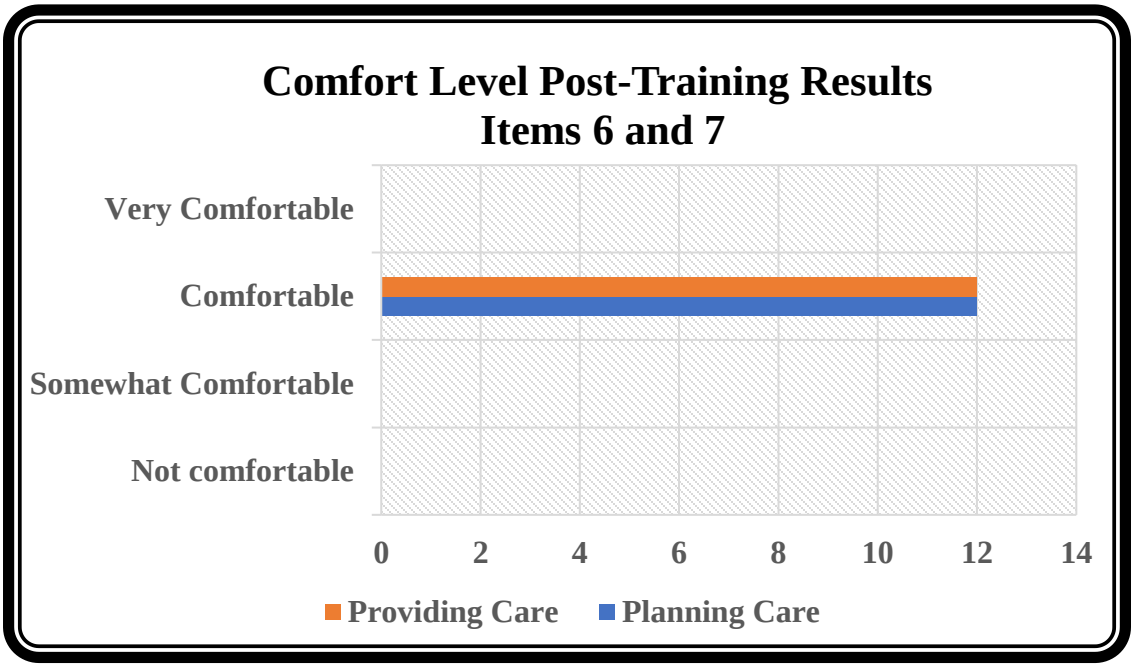
| **Usefulness of Training** | **Not Useful** (Number of respondents, %) | **Somewhat Useful** (Number of respondents, %) | **Useful** (Number of respondents, %) | **Very Useful** (Number of respondents, %) |
|---|---|---|---|---|
| 3. This training will be **useful** in your daily interaction with Jamaican patients. | 0(0%) | 0(0%) | 2(17%) | 10(83%) |
| 4. This training was **useful** in increasing your **willingness to include what you have learned in your practice** with Jamaican patients. | 0(0%) | 0(0%) | 2(17%) | 10(83%) |
| 5. This training was **useful** in increasing your **ability to mentor other colleagues** in adopting this change in practice in planning patient care for Jamaican patients. | 0(0%) | 0(0%) | 1(8%) | 11(92%) |



***Training Evaluation Results***
**(n=12) (Continued)**

**Part four**

| **Comfort Level** | **Not Comfortable** (Number of respondents, %) | **Somewhat Comfortable** (Number of respondents, %) | **Comfortable** (Number of respondents, %) | **Very Comfortable** (Number of respondents, %) |
|---|---|---|---|---|
| 6. How **comfortable** are you after this training to include the knowledge of the culture in **planning care**? | 0(0%) | 0(0%) | 12(100%) | 0(0%) |
| 7. How **comfortable** are you after this training to include the knowledge of the culture in **providing care**? | 0(0%) | 0(0%) | 12(100%) | 0(0%) |



***Training Evaluation Results***
**(n=12) (Continued)**

**Part five**

| **8. Please provide at least one example of how your practice will change as a result of this training.** |
|---|
| 1. I will continue to ask patients about their culture to ensure that I can assist them in creating a plan of care that is culturally relevant and thus more likely to lead to adherence and positive health outcomes |
| 2. Be more of an active listener |
| 3. Helping patients understand how their diet affects their disease process |
| 4. After watching the video, I became more informed of Jamaican culture and learned to be more culturally sensitive when educating my patients regarding treatment diabetes such as diet. |
| 5. Remembering cultural beliefs affect compliance and try to always incorporate their cultures in the treatment plan |
| 6. I will consider how other people's culture affect their care. |
| 7. By awareness |
| 8. Include culture in planning diet for a patient |
| 9. Educating on culturally sensitive foods. |
| 10. Will continue to provide culturally competent care |
| 11. I will include evidence-based data in educating Jamaicans about diabetes |
| 12. Be more culturally aware |