

# Culturally-Sensitive Wellness Challenge Interventions in Predominantly African American Adults in the Southern Region of Florida: An Observational Study

P Reaves, R Weaver, F Gaines, E Carson, R Williams, R McCray, O Osiyemi, C Weaver, O Kirksey, M Holder

---

## Citation

P Reaves, R Weaver, F Gaines, E Carson, R Williams, R McCray, O Osiyemi, C Weaver, O Kirksey, M Holder. *Culturally-Sensitive Wellness Challenge Interventions in Predominantly African American Adults in the Southern Region of Florida: An Observational Study*. The Internet Journal of Health. 2008 Volume 8 Number 2.

## Abstract

**Background:** The rate of diabetes-related deaths among blacks in the State of Florida was reported in 2005 to be higher than national rates.

**Objectives:** A culturally-sensitive wellness pilot study was undertaken to evaluate and expand our understanding of an intervention tailored to educate and empower urban African-American adults.

**Goals:** Identify diabetes, provide wellness, improve lifestyle choices, and to close the gap between the health despaired and the informed consumer.

**Materials and Methods:** African-Americans were recruited from three cities in the southern most region of Florida. Health professionals collaborated to deliver health education in a comprehensive culturally-sensitive format.

**Results:** Gross outcomes included an effective response in hemoglobin glyceic control, cholesterol, triglyceride levels, and body mass indexes. The pilot study indicates a significant trend toward empowerment.

**Conclusion:** This Allengany Franciscan Foundation funded HNWC/TJLMS pilot study demonstrated that culturally-sensitive sessions will enhance self-managed glyceic control and overall wellness in this African-American population. More culturally-sensitive wellness intervention formats with increased funding are strongly suggested. These findings may prove valuable to researchers and public health professional in developing culturally-relevant interventions for African-Americans and other minority populations.

## INTRODUCTION

Diabetes is currently the seventh leading cause of death in the developed world (Geiss et al. 1997). In the United States (U.S.), this devastating disease accounts for more than \$132 billion in health care cost annually and these costs are predicted to rise as high as \$192 billion by the year 2020 (Rubin et al. 1994; Reviews/Commentaries/Position State Report from the ADA, 1998, 2003). Diabetes is one of the leading causes of morbidity and mortality in the United States. Diabetes now affects nearly 24 million people in the United States, an increase of more than 3 million in approximately two years, according to new 2008 prevalence data estimates released today by the Centers for Disease Control (CDC) and Prevention (CDC, 2008). This means that nearly 8 percent of the U.S. population has diabetes. Among adults, diabetes increased in both men and women

and in all age groups, but still disproportionately affects the elderly. Almost 25 percent of the population 60 years and older had diabetes in 2007. And, as in previous years, disparities exist among ethnic groups and minority populations including Native Americans, Blacks and Hispanics (CDC, 2005).

While this disease transcends all racial and ethnic boundaries, it has a higher prevalence among minority populations, especially African Americans. Reports by the Centers for Disease Control and Prevention indicate diabetes affects 24 million people in the United States (Brown and Hanis, 1999). This represents an increase of 3 million people of the past two years. Additionally, another 57 million have pre-diabetes. Age adjusted estimates in 2005 indicated that there are 1.1 million people living in Florida with diabetes. Ethnic minorities continue to be disproportionately impacted

by the disease. In fact, the rate of diabetes related deaths among blacks in the state of Florida was reported in 2005 to be higher than the national rates (CDC, 2005).

In addition to contributing to the progression of chronic complications and death associated with diabetes, poor glycemic control also places a significant economic burden on the health care system (Brown and Hanis, 1999). In 2007, the estimated total cost of diabetes in the United States was \$174 billion. The economic burden of diabetes in the State of Florida is just as alarming. In 2002, the estimated cost of diabetes was \$8.3 billion. Thus, the dilemma of poorly controlled diabetes along with the associated disabling chronic conditions presents the health care system with both a therapeutic and economic challenge. The current pool of health professionals certified to provide self-management diabetes care is insufficient to accommodate the need. Consequently, 53.3% patients diagnosed with diabetes reported in 2005 that they had never taken a course or class in how to manage their diabetes.

According to the American Diabetes Association® (ADA), diabetes is defined as “a group of metabolic diseases characterized by hyperglycemia resulting in defects in insulin secretion, insulin action, or both.” This disease causes high levels of blood glucose as a result of defects in insulin production (type 1), insulin action (type 2), or both (Reaven, 1988; Castano and Eisenbarth, 1990; Leslie et al. 2006). This in turns often leads to long-term medical complications, which compounds the cost of this devastating disease (Rubin et al. 1994; Reviews/Commentaries/Position State Report form the ADA, 1998, 2003).

In a quest to determine the best glycemic control method, the Diabetes Prevention Program (DPP) Research Group, which was developed by a consortium of investigators from approximately 20 clinical centers in the U.S. and the National Institute of Diabetes and Digestive and Kidney Disease (NIDDK), conducted a major multicenter clinical research study, which ended in 2007. This study was aimed at discovering whether modest weight loss through dietary changes and increased physical activity or treatment with the oral diabetes drug metformin hydrochloride (Glucophage®) could prevent or delay the onset of type 2 diabetes in study participants (Diabetes Prevention Program Research Group, 2007). Of the 3,234 non-diabetic participants with elevated fasting and post-load plasma glucose concentrations, random selected individual were placed on placebo, metformin, or a life-style-modification program with the goals of at least 7%

weight loss and at least 150 minutes of physical activity per week. The mean age was 51 years, 68% were women, and 45% were members of a minority group - African-American, Alaska Native, American-Indian, Asian-American, Hispanic/Latino, or Pacific Islander. The mean BMI was 34.0 and the follow-up was 2.8 years. As a result of this randomized, double-masked, placebo-group clinical trial study, it was demonstrated that the incidence of diabetes was 11.0, 7.8, and 4.8 cases per 100 persons in the placebo, metformin hydrochloride, and lifestyle changes, respectively. Lifestyle intervention reduced the incidence by 58% as compared with the placebo; lifestyle intervention was significantly more effective than oral glycemic medication (Diabetes Prevention Program Research Group, 2007; Nieuwenhuis-Ruifrok et al. 2008). The DPP demonstrated that lifestyle changes and treatment with metformin hydrochloride both reduced the incidence of diabetes in persons at high risk; however the lifestyle intervention was more effective than oral diabetes medication (Diabetes Prevention Program Research Group, 2007).

Based on the aforementioned randomized clinical results, it is clearly evident that an approach toward glycemic self-management control with emphasis on wellness education through diet, weight management, and healthy lifestyle behavior modification is a necessity. Although race and ethnicity as a guide to treatment is fraught with challenges, recognition of special aspects is important. As a result, congruent interventions are required to be tested with culturally-sensitive approaches that consider unique aspects of African-American adults. It is unknown whether African-Americans in the southern region of Florida respond to culturally-sensitive educational approaches rather than to traditional guidelines to healthcare. However, what has been reported by the Centers of Disease Control and Prevention is that the prevalence of type 2 diabetes mellitus among African-Americans is at a rate of 13%, nearly twice the 7% population average in the U.S. (CDC, 2008). Due to the high prevalence of people who have existing undiagnosed diabetes (pre-diabetes) or impaired glucose tolerance, rates are likely to be underestimated (Utz et al. 2008). Compared with non-Hispanic Caucasians, rates of long-term complications of diabetes are much higher among ethnic minorities (American Diabetes Association, 2005; Two Feathers et al. 2005; Utz et al. 2008). Studies indicate that particularly in older African-Americans with increased poverty rates or limited access to health care, poor glycemic

control, and health complications are increasingly elevated (Harris et al. 1999; Rekeniere et al. 2003; Institute of Medicine, 2004). The application of pharmacological intervention based on evidence from clinical outcomes has demonstrated differences based on race and ethnicity, and in terms of trial studies, are not currently robust in U.S. (Ferdinand and Ferdinand, 2008). Among the already existing complex regimens, complicating conditions such as hypertension, arthritis, and depression have been found in one-third to half of those individuals with diabetes (Utz et al. 2008). Barriers of health particularly in African-Americans have been identified in a variety of settings. The major barriers identified as obstacles included the issues of finances associated with insurance, while 1) attitude, 2) racism, 3) setting, 4) interaction with a personal provider, 5) language barriers, and 6) being rushed (Hatzfeld et al. 2008).

Recommendations from national standards dictate that individuals with diabetes benefit from support received from multidisciplinary teams delivering direct wellness education (Utz et al. 2008). Despaired communities rarely have sufficient programs with trained health professionals, thus limiting populations to quality diabetes education and care (Utz et al. 2008). As a result of this lack of quality care, the likelihood of individuals within this population to require expensive emergent care is encouraged (Peacock et al. 2006; Takakuwa et al. 2008; Ziemer et al. 2008). Rarely do the majority of African-American women with diabetes receive a culturally-sensitive direct intervention that is very comprehensible from physicians or medical group practices (Utz et al. 2008). Although acceptable and effective, diabetes education has been established, with very little reported studies examining successful outcomes of these approaches in adult African-American parishioners in the southern most region of Florida, United States. Among active churches in the southern U.S., there is a historical component that is very rich in its commitment and reliance, thus fostering openness to group learning (Utz et al. 2008). This effective delivery is efficient; however, whether successful outcomes of managed culturally-sensitive wellness educational activities and interventions in urban southern Florida African-American adults are unknown. Therefore, it is essential that this approach on the self-management of diabetes, triglycerides, cholesterol control, and other physiological parameter outcomes must be investigated, evaluated, and associated in this southern African-American adult population. The primary goal of this study was to provide an opportunity to improve the lifestyle

choices, health behaviors and attitudes through health education intervention and empowerment. A committed Hebni Nutrition Wellness Challenge and T. Leroy Jefferson Medical Society (HNWC/TJLMS) mandate and strategic partnership with researchers was undertaken to serve and deliver health education in a comprehensible format is deserved by all, particularly by those that are underserved. The HNWC/TJLMS pilot study results provide the avenue towards the improvement of healthy lifestyle choices and behaviors, the revitalization and adoption of urban improved policies and projects, thus, enhancing the economic and health conditions, and well as sustainable solutions which are culturally relevant.

The specific aims of this study were to educate 1) wellness participants on ways to reduce the dangers of heart disease and diabetes by reducing their body mass index, blood glucose levels, cholesterol, triglycerides through diet, healthy lifestyle /behavior choices, and exercise; 2) participants of the warning signs and symptoms of diabetes; 3) participants on portion control, developing healthy eating habits, and the importance of exercise to reduce obesity, and other diet-related diseases. All wellness participants were provided a medical physician on-site at each class to discuss health problems and issues.

## **MATERIALS AND METHODS**

### **RECRUITMENT AND SAMPLE POPULATION**

The study was conducted in three urban cities in one (1) county in the southern most region of Florida, United States. Each city had a population less than 30,000 people, with African-American populations of 22.89 percent (%), 67.81%, and 50.65% of the county's total population (U.S. Census Bureau State and County Quick Facts, 2008). Two of the three cities have populations that are predominantly African-American. In an effort to ascertain information designating and identifying the city as urban, a U.S. Government web site was utilized to verify the selected city category (U.S. Census Bureau State and County Quick Facts, 2008). A volunteer sample of one-hundred fifty (n=150) adult African-Americans, ranging in ages of 17 to 65 and older, were participants in this study. The recruitment methods included a) three-thousand (3,000) flyers distributed at wellness sites and faith-based organizations/churches throughout the three southern Florida cities; b) contacting pastors; c) solicited church announcements in an effort to reach urban African-American adults. To advertise the study, the wellness self-managed

pilot study program was entitled, “African Americans Take Charge of Your Health Wellness Challenge”. At the start of the wellness initiative, 150 predominantly African American adults were recruited and provided informed consent and enrolled into the HNWC/TLJMS program. Upon approval of grant funding, an Institutional Review Board (IRB) review and approval was received to begin the pilot study. Medical physicians conducted wellness lecture presentations for class participants. All team physicians reviewed all pre-laboratory results. Upon the determination of normal and/or abnormal test results, all physicians provided consultation and/or referral to those participants who had or did not have a primary physician. Each physician assisted the HNWC registered dietitians and the P.B. Black Nurses Association (PBBNA) registered nurses in offering individual diet consultation for those participants identified with elevated HbA1c, cholesterol, triglyceride and BMIs greater than the normal range. Self-management strategies, action planning, and goal setting skills were encouraged and taught at each session.

Incentives for each participant included the non-payment receipt of 1) a cookbook of the American Diabetes Association, Month of Meals Quick n' Easy Menus for People With diabetes, “Soul Food Selections”, with 20,000 menus combinations of calories, diabetic exchanges and carbohydrate counts, 2) pedometer, 3) exercise bands, 4) portion-controlled serving utensil, “spoodle” (Vollrath Grip n' Serve®), 5) food journal, 6) diet pie-chart and Hebni Soul Food Pyramid©, 7) fast-food dining-out calorie guide, 8) American Heart Association® Educational brochures, 9) HbA1c blood test and finger stick, 10) cholesterol testing, 11) triglyceride testing, 12) 12-week facility access for wellness program, 13) health education lectures and consultations, and 14) celebratory events for wellness program completion.

## **THE SOUL FOOD PYRAMID© AND NUTRITION**

It is well founded that individuals who understand the consequences and apply good dietary habits live longer. A lack of knowledge among the U.S. population has a direct impact on the cost of health care. Food pyramids have been developed by the government and other organizations to guide individuals on the consumption of food. Hebni Nutrition Consultants, (HNC) Inc. has determined, through contacting health care providers and targeted groups, that the standard food pyramid used today is not useful for changing the habits of some groups within the population, particularly

African Americans (Weaver and Gaines, 2002). African slaves brought many of their native fruits and vegetables to the Americas, all of which were soon adopted into the diets of their owners. This food pyramid incorporates ethnic foods (e.g. yams, okra, legumes, kale, collards, mustard greens, watermelon, goat, venison, etc.) that are used in the majority of African-American cuisine. To address this need a food pyramid must take into account the ethnic background of the targeted group. HNC designed the “Soul Food Pyramid©”, which is an educational tool specifically designed to educate individuals that traditionally eat “soul food”. Its goal is to teach minority to make smart choices about their health and diet. To date, HNC, Inc. is unaware of another product that effectively deals with these concerns. The Soul Food Pyramid© will close the gap that currently exists in the health care arena.

## **TYPES OF DIABETES**

### **TYPE 1 DIABETES**

Type 1 diabetes was previously called insulin-dependent diabetes mellitus (IDDM) or juvenile-onset diabetes. Type 1 diabetes develops when the body's immune system destroys pancreatic beta cells, the only cells in the body that make the hormone insulin that regulates blood glucose. To survive, people with type 1 diabetes must have insulin delivered by injection or a pump. This form of diabetes usually strikes children and young adults, although disease onset can occur at any age. In adults, type 1 diabetes accounts for 5% to 10% of all diagnosed cases of diabetes. Risk factors for type 1 diabetes may be autoimmune, genetic, or environmental. There is no known way to prevent type 1 diabetes. Several clinical trials for the prevention of type 1 diabetes are currently in progress or are being planned (CDC, 2008).

### **TYPE 2 DIABETES**

Type 2 diabetes was previously called non-insulin-dependent diabetes mellitus (NIDDM) or adult-onset diabetes. In adults, type 2 diabetes accounts for about 90% to 95% of all diagnosed cases of diabetes. It usually begins as insulin resistance, a disorder in which the cells do not use insulin properly. As the need for insulin rises, the pancreas gradually loses its ability to produce it. Type 2 diabetes is associated with older age, obesity, family history of diabetes, history of gestational diabetes, impaired glucose metabolism, physical inactivity, and race/ethnicity. African Americans, Hispanic/Latino Americans, American Indians, and some Asian Americans and Native Hawaiians or Other Pacific Islanders are at particularly high risk for type 2

diabetes and its complications. Type 2 diabetes in children and adolescents, although still rare, is being diagnosed more frequently among American Indians, African Americans, Hispanic/Latino Americans, and Asians/Pacific Islanders (CDC, 2008).

## **GESTATIONAL DIABETES**

Gestational diabetes is a form of glucose intolerance diagnosed during pregnancy. Gestational diabetes occurs more frequently among African Americans, Hispanic/Latino Americans, and American Indians. It is also more common among obese women and women with a family history of diabetes. During pregnancy, gestational diabetes requires treatment to normalize maternal blood glucose levels to avoid complications in the infant. Immediately after pregnancy, 5% to 10% of women with gestational diabetes are found to have diabetes, usually type 2. Women who have had gestational diabetes have a 40% to 60% chance of developing diabetes in the next 5–10 years (CDC, 2008).

## **OTHER TYPES**

Other types of diabetes result from specific genetic conditions (such as maturity-onset diabetes of youth), surgery, medications, infections, pancreatic disease, and other illnesses. Such types of diabetes account for 1% to 5% of all diagnosed cases (CDC, 2008).

## **TREATING DIABETES**

Diabetes can lead to serious complications, such as blindness, kidney damage, cardiovascular disease, and lower-limb amputations, but people with diabetes can lower the occurrence of these and other diabetes complications by controlling blood glucose, blood pressure, and blood lipids (CDC, 2008).

Many people with type 2 diabetes can control their blood glucose by following a healthy meal plan and exercise program, losing excess weight, and taking oral medication. Some people with type 2 diabetes may also need insulin to control their blood glucose.

To survive, people with type 1 diabetes must have insulin delivered by injection or a pump.

Among adults with diagnosed diabetes (type 1 or type 2), 14% take insulin only, 13% take both insulin and oral medication, 57% take oral medication only, and 16% do not take either insulin or oral medication. Medications for each individual with diabetes will often change over the course of

the disease.

Many people with diabetes also need to take medications to control their cholesterol and blood pressure.

Self-management education or training is a key step in improving health outcomes and quality of life. It focuses on self-care behaviors, such as healthy eating, being active, and monitoring blood sugar. It is a collaborative process in which diabetes educators help people with or at risk for diabetes gain the knowledge and problem-solving and coping skills needed to successfully self-manage the disease and its related conditions (CDC, 2008).

## **GLYCEMIC CONTROL AND BLOOD GLUCOSE**

Hb equals hemoglobin, which is the compound in the red blood cells that transports oxygen. Hemoglobin exists in several variants; the one which composes approximately ninety-percent of the total is known as hemoglobin A. A1c is a specific subtype of hemoglobin A. It has been described that the “1” is actually a subscript to the A, while the “c” represents a subscript to the “1” (Goldstein et al. 2008; Ismail et al. 2008). In recent years, at the point of care, new technology has made it possible to acquire and report accurate hemoglobin (HbA1c) measurement levels with just a finger stick method. This is an advantage and is deemed “friendly” as compared to a venipuncture method performed in most laboratories (Utz et al. 2008). The measurement of blood by a glycosylated hemoglobin blood (HbA1c) testing has been deemed the gold standard for testing management of blood glucose and adequacy. This method was utilized in the study. The HbA1c test is a measurement of the amount of blood glucose that has bonded to the erythrocytes, or red blood cells (RBC). As a result, upon testing, results reveal the average of blood glucose over a time period of three (3) months, which is the one-hundred twenty (120) -day lifespan of the RBC (Goldstein et al. 2008; Ismail et al. 2008; Utz et al. 2008). When determining the results, achieving a HbA1c level of 7% or lower reveals an association with a significant reduction in the microvascular complications of diabetes mellitus (DM) (Goldstein et al. 2008; Utz et al. 2008). Therefore, this currently provides a clinical indication that is followed closely by clinicians for the achievement of standards of care (AAACE/American Association of Endocrinologist, 2003). This method is one that is 1) cost effective, and 2) convenient to both patients and providers in the management of diabetes control. In this HNWC/TJLMS empowerment pilot study, the HbA1c analyzer (Siemens DCA 2000® + Analyzer) was utilized and validated by

numerous laboratories in the U.S. (Siemens DCA 2000®+ Analyzer, 2008). In this study, a score of seven (7) or lower was a desirable level in the control of diabetes. In the outpatient setting, HbA1c correlates with glucose levels, which make valid comparisons of glycemic control (Siemens DCA 2000®+ Analyzer, 2008). In addition, in patients with DM, the concentration of glycated hemoglobin predicts the progression of diabetic microvascular complications (Sacks and McDonald, 1996).

## **TRIGLYCERIDE CONTROL**

Triglyceride blood tests are usually part of a lipid profile used to identify the risk of developing heart disease. In individuals with diabetes, it is especially important to have triglycerides measured as part of any lipid testing since triglycerides increase significantly when blood glucose levels are out of control. Triglycerides and lipid (cholesterol) profiles, are highly recommended as routine tests. Since the risk of heart disease is based cholesterol levels, triglyceride testing is often recommended in association with lipid testing. Each participant's blood was analyzed prior to the start of the program utilizing a cholesterol testing screening system (Cholestech LDX® System). Triglyceride levels are established as a risk factor for heart disease results reveal profiles greater than 1000 mg/dL (11.30 mmol/L). It has been demonstrated that levels greater than 1000 mg/dL promotes increased risk for pancreatitis (Cziraky et al. 2008; Riche et al. 2008).

## **CHOLESTEROL CONTROL**

Unlike triglyceride screening test, cholesterol screening is not used to monitor or diagnoses heart disease (Anan et al. 2008; Goldstein et al. 2008). Since elevated levels of cholesterol are associated with atherosclerosis and increased risk of deaths from heart attacks, cholesterol is traditionally considered as a routine part of preventative health care. As reported and established by The National Heart Lung and Blood Institute, “good” or high density lipoproteins (HDL) constitutes levels less than 200 mg/dL, while that of “bad” low-density lipoproteins (LDL) are identified as levels of 240 mg/dL or greater. Under normal conditions, individuals who have been diagnosed with abnormal levels may require pharmacological intervention. Testing in adults performed for risk s are grouped into three target categories identified as 1) desirable, 2) borderline, and 3) high risk. Cholesterol profiles below 200 mg/dL (5.18 mmol/L) reflect low risks for heart disease and identify desirable lipid levels. A cholesterol test of 200 to 239 mg/dL (5.18 to 6.18 mmol/L)

reflect moderate risk, which may encourage clinicians to recommend lipid profile to identify the presence of either bad (elevated LDL) or good HDL (Rosolova et al. 2008). Cholesterol greater than or equal to 240 mg/dL (6.22 mmol/L) in patients is considered high risk (Rosolova et al. 2008). As recommended with patients diagnosed as borderline, high risk patients are provided lipid profile testing for further determination of the cause (Rosolova et al. 2008).

Despite similar serum cholesterol levels, HDL cholesterol was lower and triglyceride contents in serum were higher in the diabetic group than in the control group, revealing the typical lipoprotein lipid profile of diabetes (Miheala et al. 2004). Among 5672 women with type 2 diabetes from the Nurses' Health Study, diet was assessed prospectively and updated periodically (Miheala et al. 2004). As a result, higher intake of cholesterol and saturated fat and a low polyunsaturated to saturated fats were related to increased cardiovascular disease (CVD) risk among women with type 2 diabetes. Among diabetic persons, replacement of saturated fat with monounsaturated fat may be more effective in lowering CVD risk than is replacement with carbohydrates.

## **MEASUREMENT OF BODY FAT**

As to date, it has been estimated that over 100 million Americans are obese and overweight (Thompson, 2007). Being overweight poses an individual's chances for developing many deleterious disease, especially heart disease, diabetes, and stroke. The body weight of each participant was indirectly measured and recorded before and at the termination of the HNWC/TJLMS pilot program. Participants were weighed utilizing Tanita body scales (2201-SuperUltimateScale®) designed for simple operation in the control of weight and body fat management. In addition to measuring the body weight, the height of each participant was measured and recorded. Each participant received a calculated body mass index (BMI) that was determined using the recorded indirect body weight and height. Because BMI determination requires only two body measurements, it provides a non-invasive, inexpensive, fast, easy-to-use method, and effective tool used for screening weight categories that may possible lead to health problems (Chu et al. 2008; Mosen et al. 2008). BMI can be useful regardless of age, gender, race or ethnicity. The English system was the preferred method for the HNWC/TJLMS pilot study. With this system, the participant's weight is

recorded in pounds (lbs.), which is divided by height in inches (in.) exponentially squared (inches (in.)<sup>2</sup>) and multiplied by a conversion factor of seven-hundred three (703) described as: (weight (lbs.) / [height (in.)]<sup>2</sup> x 703) (Chu et al. 2008). Therefore, the BMI was calculated by taking the weight in lbs. and divide it by the height in inches. The results were taken and divided by the participant's height again, then multiplied by 703. The resulting calculation was rounded to the second decimal place. The category used to interpret the BMI results was the same for both men and women. Participant's whose BMI was below 18.5 were classified as underweight. Those with a BMI range above 18.5 to 24.9 were considered as normal weight status. BMI ranges of 25.0 to 29.0 and 30.0 and above were classified as overweight and obesity, respectively. Consultations from both physicians and educators emphasized the relevance of BMI measurements. BMI was used as one of various tools used in the association with obesity.

## **PROCEDURES AND CULTURALLY RELEVANT INTERVENTIONS**

Upon developing the HNWC/TLJMS group intervention tailored for African-American adults, the multidisciplinary team of researchers, physicians, and nurses combined resources to support efforts towards reducing the health care needs based on decades of health disparities in predominantly black neighborhoods. The two registered dietician/educators, medical physicians, and nurses delivered the HNWC sessions, consisting of two-hour educational/lectures and consultative sessions over the 12-week duration. The study was conducted over a fourteen-month period. The participants attended the HNWC/TLJMS program sessions held at one of the three churches. Each participant was taught by the same HNWC dieticians, PBBNA nurses, and TLJMS medical physicians, all of whom were African-American. Attendance at each church facility was maintained at 85% or higher for all twelve (12) wellness sessions held during the period of February 2005 through April 2006. A telephone tree/call list was maintained at each site to ensure participant attendance at each 12-week session. Each southern U.S. church in Florida provided a designated Wellness Ministry staff person committed both to securing the facility and the encouragement of parishioner/participant attendance. These culturally-sensitive sessions incorporated activities and problem-solving based priorities of topics emphasized by the American Association of Diabetes Education (AADE) (Utz

et al. 2008).

The educators established a set of culturally-sensitive rules for participants to follow, in an effort to provide an atmosphere of support and comradeship. Anderson-Loftin et al. (2005) demonstrated the effectiveness of empowerment stories and strategies for diabetes education. The first rule involved discussion of issues or “stories” related to health behaviors, obstacles, illnesses and/or diabetes care. The second rule involved the distribution of culturally appropriate for African-Americans. The third rule involved the “lessons-learned” during the discussions which set the tone to focus on the 15 areas of diabetes self-management. The fourth and last rule involved the educator responsiveness to the group priorities, ensuring the American Diabetes Association® (ADA) standards and approaches are emphasized throughout the sessions. In addition to setting ground rules the HNWC/TLJMS sessions provided 1) educators served as mentors and role models for each participant; 2) facilitated dialogue through the use of problem-solving techniques concerning the self-management of diabetes; 3) opportunities for family support involvement; 4) guidance and instructions for reading food labels; 5) cooking and dietary instructions; 6) exercise practices utilizing videotapes; 7) carbohydrate counting; 8) inexpensive meal planning; 9) alternative/complementary therapies; and 10) self-management sessions at successful completion of the program.

## **RESULTS**

### **GROSS INTERVENTION OBSERVATIONS**

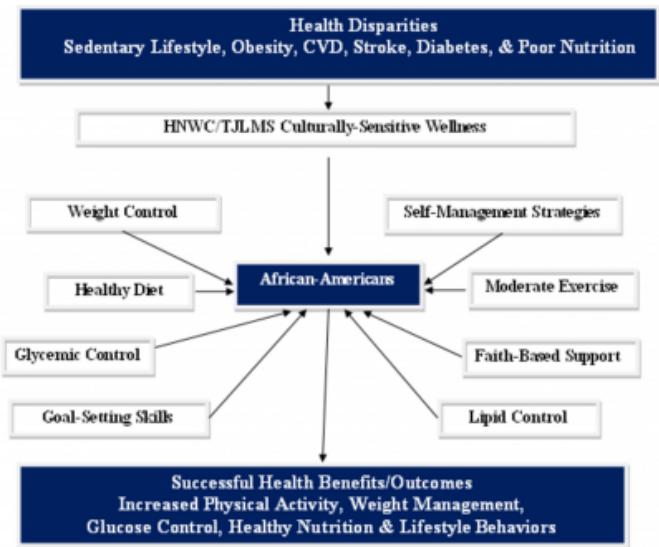
#### **HNWC/TLJMS PILOT PROJECT DEMOGRAPHICS**

One-hundred fifty predominantly African-American adults (n=150) enrolled and participated in the HNWC/TLJMS culturally-sensitive pilot study. A concept map depicting the declared influencing wellness and interventions (i.e. culturally-sensitive wellness education, self-management glucose control, cholesterol & triglyceride management, weight management, etc.) in African-Americans is exhibited in Figure 1. The study was held at the selected church sites during the time period of February 2005 through April 2006. The majority of the participants enrolled were female (92%), with 8% males enrolled. Of the total participants, 6% reported that they were of Caribbean-American descent, while 94% identified themselves of African-Americans. The range of participants age was from 17 years to 65-years and older. As a result, attendance at each church was maintained

at 80% or higher for all wellness sessions during the 14 month pilot study period. Participants were provided the opportunity to join a variety of educational well topics during the period of the pilot study. The HNWC/TLJMS culturally-sensitive sessions that emphasized weight management, health and nutrition, and exercise were the sessions that provided the incentive gifts such as, the Soul Food Diabetes Cookbook, pedometers, exercise bands, portion-control cooking demonstration/instructions, food journals, diet pie-charts/Hebni Soul Food Pyramid, fast-food dining-out guides, American heart Association culturally-sensitive literature on diabetes and heart disease. Of the various sessions throughout the pilot study period, the weight management (n=150), health and nutrition (n=140), heart health issues (n =145), and exercise (n=140) sessions were those most participants favored, with diabetes management control sessions with fewer attendees (n =136).

**Figure 1**

Table 1: Concept Map Depicting the Influencing Factors and Outcomes of a Culturally-Sensitive Wellness Intervention in African-Americans in the Southern Region of Florida.



**INTERVENTION OUTCOMES**

Each participant (n=150) was provided an initial (pre-screening) and last (post-screening) HbA1c blood test performed to screen for diabetes by the finger stick method. Aseptic techniques were utilized for each diagnostic procedure done. Finger tips were cleaned with sterile pre-packaged alcohol swabs and disposed appropriately in biohazard containers. Physicians conducted and managed all blood pre-and post-laboratory results. Each participant with abnormal laboratory results received a confidential consultation/referral to their primary care physician or public

provider. The HNWC dieticians and PBBNA nurses offered individual diet and weight management consultation for these participants.

Of the participants pre-screened for glycosylated HbA1c, 12 % were found to have elevated levels. A beneficial response was observed at the termination of the pilot study following 14-months of culturally-sensitive wellness education relevant to this predominantly African-American population. Post-screening revealed a 6% decrease in the HbA1c levels of enrolled participants that were previous screened with increased glycosylated hemoglobin subtype. At the time of the initial wellness education sessions, participants received pre-screening blood cholesterol and triglyceride levels. It was observed during the initial cholesterol and triglyceride screening that 31% and 22% of the program participants were found to have elevated triglyceride levels, respectively. Following subsequent months of a robust attendance, 23% and 13% of those screened initially with high cholesterol and triglyceride levels were successful in the attenuation of previously increased levels. The majority of the participants were observed with pre-and post cholesterol levels of 140 to 180 mg/dL, indicating a range that reflects low risks for heart disease and diabetes. Pre-and post-triglyceride screening for the majority of enrolled participants in this predominantly African-American population presented response of levels that were within the range of 50 to 100 mg/dL. These observations were indicative of the reductions found in cholesterol and triglyceride analyzed screening results during the 12-week culturally-sensitive wellness pilot study targeted for these African-Americans.

Upon the start of participant enrollment at each of the three church sites, all participants were provided the opportunity to receive body weight and height measurements that were recorded and calculated for evidence of BMI. This method of body weight measurement was non-invasive, fast, and inexpensive to perform. The pre-and post-BMIs were observed, and as a result, calculations revealed that at the start of the culturally-sensitive wellness study, 19% of enrolled attendees were found to have a BMI of 30 or greater, reflecting ranges indicating obesity, and a potentially increased predisposition to heart disease and diabetes. Following active participation and attendance during the course of this HNWC/TLJMS intervention tailored for culturally-sensitive predominantly African-Americans, observations demonstrated a resulting 29% post-wellness education reduction, lowering their BMIs.



## **DISCUSSION**

This culturally-sensitive HNWC/TLJMS pilot study was the first project developed in this southern Florida region designed to improve the health disparity problem(s) addressed in this study. The contribution of this pilot study will serve to lay the ground work for future funded wellness programs and research that will continue to embrace, promote adoption policies, and the development of urban revitalization projects that take responsibility for closing the gap between the underserved population and the informed consumer in this Florida region. Without accomplishing this directive, we cannot, in fact, be deemed leaders in health care. One specific aim of the Hebni Nutrition and Wellness Challenge, the T. Leroy Jefferson Medical Society, researchers/educators, and The Allengany Foundation, was to create strategic partnerships within our organization, local professional health organizations, and the faith-based organizations in the southern region of Florida. HNWC/TLJMS et al. had a chance and an opportunity to enhance healthy lifestyle choices, economic conditions, and the sphere of probable opportunities for African-American persons residing in the southern county targeted. Our mandate to serve and deliver health education in a comprehensive culturally-sensitive format was something that our clients and customers increasingly will demand of us, which is deserved by every person. The evolution of this pilot study was not designed to impose on developing communities, but rather to create a study from the ground up and to develop locally sustainable solutions which are culturally relevant. It is essential to rethink how we can work together with these underserved communities to empower, sustain and liberate, rather than to exclude, erode, and restrain. Without the appropriate funding support, we would expect to continue to see increases in illnesses that could be prevented, joblessness, poverty, and overall degradation and despair within these communities. The economics would also continue to be disproportionately skewed and alarming as there would continue to be persons included without the means to pay for healthcare succumbing to preventable diseases and state and/or federal dollars. Government funding would have to increase in order to pay for public health services for people who cannot afford health insurance. There is a direct link between preventing disease and decreased morbidity. When individuals are experiencing pain and suffering and can not contribute positively to themselves or their community, the focus becomes simply survival. Persons in this position are not equipped to participate in or contemplate positive, uplifting, empowering

activities, but will play active roles in unhealthy, degenerative life activities that erode rather than enrich themselves and their communities.

The opportunity to fund this HNWC/TLJMS pilot study was vital to improving the health of these participants. Change is extremely difficult for these families, and many times by having the support within the community, individuals are connected with the source that bridges the gap for many individuals who are trying to improve many aspects of their lives. Resolutions and promises are short term solutions at best, and really only contemplate “what if” scenarios and solutions. In order for real, tangible and sustainable programs to exist, financial, health, and human resources that are a permanent part of a community must be supported to become a vehicle and an asset to help people stay committed to their promise to change. Changes are hard to make and bad habits are tough to break. To succeed within these communities, committed health care professionals must listen and be on the front line in order to motivate, support, and educate communities with culturally relevant and competent solutions designed for their needs. Providing structured programs that are delivered by a group of providers and leaders that will connect with these communities, support their needs, and are committed to be there for the long term is essential to succeeding in improving the valued health of the underserved residents of this southern region in Florida.

Nationally, half of all black neighborhoods lack access to a full service grocery store or supermarket (Moore et al. 2006; Zenk et al. 2006). Nationwide, predominately white neighborhoods have 4 times more supermarkets than predominately black neighborhoods (Moore et al. 2006; Powell et al. 2007). When there is a supermarket in the community, studies show that there is a 32 % increase in fresh fruit and vegetable consumption. In general, there are 1.7 acres of park space for every 1,000 people in African American neighborhoods in densely populated cities (Moore et al. 2006; Powell et al. 2007).

The HNWC/TLJMS greatest challenges will be the inability to reduce the disparities in health care at the rate it continues to rise. It would be ideal to reduce it at the same pace of its increase; however we realize that it is not yet possible. The challenge is to “plant” the seeds of knowledge about good health, fertilize, and nurture this message in order to see this seedling produce at the rate of a rapidly growing vine that reaches all communities in Florida.

## **RESEARCH AND PRACTICE IMPLICATIONS**

It is well established that among the greatest challenges of diabetes control self-management, are among those that include making changes in exercise patterns and dietary modifications (Utz et al. 2008). As noted, African-American adults in the southern region of Florida face these and many challenges with few resources to tap into or assistance from dedicated health professional and researchers. In testing culturally-sensitive wellness intervention, the gross observations indicate that the participants in the group demonstrated a trend of improvements in very difficult areas such as, weight management (BMI), cholesterol, triglyceride, and HbA1c levels, compared with their pre-education/pre-screening observations. Participants receiving gifts as incentives toward enhanced weight and exercise modifications, cooking instructions and recipes, showed a heightened interest to attend more sessions associated with amenities promoting these beneficial lifestyle changes. While blood glucose self-management and screening was primarily initiated at the start of pilot study during the 12-week wellness and empowerment period, specific interest was not pervasive as those sessions that were culturally structured around weight management, health, nutrition, and exercise modification. The group wellness culturally-sensitive educational approach targeted for this southern Florida predominantly African-American population may be more effective, compared to a traditional clinical management typically used in primary care practices.

The cultural literature utilized in this culturally-sensitive wellness approach were tailored to African-Americans were appealing, and concise with accurate information about this population of consumers. Providing this type of literature that were colorful simple handouts, in addition to wall posters and advertisements appeared to be very significant in visual presentations depicting the self-management and actions to this population, many of whom had low levels of education. Cultural competence plays a major and key role in attenuating ethnic and racial health disparities; however some argue in support, although limited evidence has been established for this technique (Murphy et al. 1993; Brach and Fraser, 2000; Utz et al. 2008). The church was very instrumental in means of providing not only the sites for this wellness pilot study, but also for the support of fostering the openness and comfort for the “storytelling” and dialogue that is so culturally appropriate for this format of wellness education received by these African-Americans. As noted in a study of hypertension care for African-Americans,

storytelling as a strategy for culturally-tailored approaches holds promise among African-Americans, due to the tradition of oral history (Utz et al. 2008). In order to effectively reach this underserved population of predominantly African-American population in southern Florida, this intervention utilized in this pilot study is a highly recommended strategy. The Task Force on Community Preventative Services strongly recommends this format of approach when offering diabetes education (Norris et al. 2002). Financial support and monetary sources through grant funding is limited. In Portland, Oregon, the African American Health Coalition, Inc. was developed to implement initiatives that would reduce health disparities and promote trust and increased communication between the African-American population, which comprises 1.7% of the state population, and the community and local institutions and organizations (McKeever et al. 2006). One of the initiatives is an annual week long African-American Wellness Village that uses a model of cultural sensitivity to provide access to free health screening and health information (McKeever et al. 2006). From this model, and limited others, partnership must be built at multiple levels, including institutions and granting agencies to provide financial resources and in-kind donations to assist with outreach and recruiting. Gold et al. (2006) sought to assess the extent to which race/ethnicity and socioeconomic status are jointly and independently related to lifetime morbidity burdening among white, black, Hispanics, Asian/Pacific Islanders, and American Indian/Alaska Native (AIAN) (Gold et al. 2006). It was demonstrated that women with high lifetime morbidity were more likely to be AIAN or black, poor, less educated, diverse, separated or widowed, past/current smoker, obese, underinsured or publicly insured (Gold et al. 2006). This study demonstrates the importance of race/ethnicity relative to health outcomes.

Lutfiyya et al. (2008) examined the staggering burden of myocardial infarction (MI) and stroke in a population of African-Americans of African descent. There is a disparity in MI and stroke symptom knowledge along racial and socioeconomic lines. African-American males and poor individuals had significantly lower scores, and measures targeting measures to enhance knowledge in these groups might yield more benefits (Lutfiyya et al. (2008). In a groundbreaking study by Brown et al. (1999), a culturally competent health program designed for Mexican-Americans was designed for this U.S. population that bears a disproportionate burden of type 2 diabetes. The focus group

participant identified knowledge deficits regarding diabetes and self-management strategies, and suggested characteristics of an effective intervention for Mexican-Americans (Brown and Hanis, 1999). Preliminary analyses indicated that the intervention was successful in significantly improving metabolic control in the target population (Brown and Hanis, 1999).

## **STRENGTHS**

One strength was the commitment to provide this wellness intervention pilot study through limited grant funding. This was an opportunity to explore whether a culturally-sensitive format would be accepted and be effective in this population that was had never been introduced to diabetes education. Another pilot study strength was the inclusion of faith-based organizations that were willing to allow the HNWC/TJLMS announcements and advertisement, as well as the assignment of health care professional/practitioners and participants recruited, despite logistical and historic barriers. Observations show the success for achieving individual goals by those receiving a culturally-sensitive and competent wellness program tailored format. A positive element of this study was the willingness and finding provided for this direct point-of-care blood testing of HbA1c to detect and obtain results instantly and inexpensive. This convenience was done in effort to empower each participant with diabetic knowledge and information of glycemic management. Based on the initial recruiting challenges, researchers developed strategies and were able to get the quota required to test this pilot study. An important strength of this study was the sharing of educational information throughout the community and families because of the close-knit nature fostered between the participants. One final strength is the commitment and collaboration of expert community and public health academicians/statisticians to assist in the satisfactory human data collection and quantitation. Due to the efforts and findings of this HNWC/TJLMS pilot study, we have received a commitment of collaborative efforts of designated researchers and educators from both private and public institutions throughout the State University System of Florida, whom are trained in public health, allied, as well as pharmacy education. Demographics and outcome measures will be described as means with standard deviations (SDs) for continuous variables and percentages (frequencies) for categorical variables. Intervention effects will be furthered investigated in the analysis of covariance (ANCOVA) which relates the pre- and post-intervention level of outcomes, while controlling for the baseline level of the outcome and

number of months since the diagnostic of diabetes. Because of the anticipated diversity of this southern Florida American population which will potentially comprise of a small population of individuals of Caribbean, particularly those of Haitian descent, results for the intervention effect may be vulnerable to possible outliers. Therefore, a median test will be also utilized to test robustness of the potential results.

## **LIMITATIONS**

The primary barrier in this study was the limited funding resources available to meet the extended screening needs to offer enhanced focused interaction between the participants and the providers. The additional number of combination lipid profiles that would include further HDL and LDL testing for participants targeted for health risk factors was not feasible. This posed an obstacle for instant test results for those participants that were publicly insured. The limited number of volunteer due to strict budgetary constraints inhibited the thorough demographic and outcomes measures.

HNWC/TJLMS et. al. will adopt and incorporate a structured culturally-sensitive pre- and post-assessment questionnaire of attitudes and behaviors toward health and goal-setting for this predominantly African-American population. The list of health attitudes, awareness, and behaviors will acknowledge and synthesize the many years of diabetes self-management and research dedicated towards individuals desiring to improve the quality of life while balancing diabetes control. The 15 areas of health behaviors, awareness, and attitudes that will be questioned prior to the start of the HNWC in an effort to evaluate the frequency of the following: (1) diet high in fats, (2) level of sugar intake, (3) 6 to 11 servings of whole grains and cereals, (4) 2 to 4 servings of fresh fruits, (5) 2 to 3 servings of low-fat milk or dairy, (6) 2 to 3 servings of lean protein (e.g. meats), (7) limited salt intake, (8) fast-food consumption, (9) read food labels, (10) diabetes knowledge, (11) reporting of signs and symptoms, (12) 20 minutes or more of exercise, (13) mild-stretching, (14) body inspections, and (15) sedentary lifestyles (exercise activity).

One last and essential obstacle discovered in this predominantly African-American group in southern Florida was a language disparity. HNWC/TJLMS has found the need to recruit Creole (Haitian)/Spanish (Hispanic/Latinos) speaking interpreters for future projects conducted in this particular region of southern Florida. HNWC/TJLMS et al. is committed to address this issue by expanding services to communities where literacy and English language is found.

Therefore, a need for collaboration with speaking interpreters is imperative and vital to ensure the success of future culturally-sensitive wellness programs.

## CONCLUSIONS

Developing successful diabetes interventions for minority groups that are culturally competent requires careful planning, systematic approaches implemented, a concise and assessments of cultural characteristics of the target population. In our lifetime, we will not be able to eradicate disease; however HNWC/TLJMS et al. has created opportunities for this community of underserved Americans to learn about health in a culturally competent way. These results provide guidance, and a need for further sustainable programs instituted by public health workers and health professionals in targeting programs to improve glycemic controls among African-American adults with diagnosed diabetes in the United States. Above all things, ultimately, all efforts must result in empowering men and women. That is our challenge and advice to others that support our mission and vision.

## FUNDING

This pilot study was funded by The Allengany Franciscan Foundation of Palm Beach County, a non-profit Catholic organization.

## CORRESPONDENCE TO

Reaves P., School of Allied Health Sciences, Florida Agricultural & Mechanical University, Tallahassee, Florida.  
E-mail: phyllis.reaves@famu.edu

## References

1. AACE/American Association of Clinical Endocrinologist. 2003. State of diabetes empowerment scale-short form (DES-SF). *Diabetes Care* 26:1641-1643.
2. American Diabetes Association. 2005. Standards for diabetes education. [www.diabetes.org](http://www.diabetes.org).
3. Anan F, Masaki T, Eto T, Fukunaga N, Iwao T, Kaneda K et. al. 2008. Postchallenge plasma glucose and glycemic spikes are associated with pulse pressure in patients with impaired glucose tolerance and essential hypertension. *Hypertens Res* 31(8): 1565-71.
4. Anderson-Loftin W, Barnett SK, Bunn PS, Sullivan P. 2005. Recruitment and retention of rural African Americans in diabetes research: lessons learned. *Diabetes Educ* 31:251-259.
5. Brach C, Fraser I. 2000. Agency for Healthcare Research and Quality: can cultural competency reduce racial and ethnic health disparities? A review and conceptual model. *Med Care Res Rev* 57S:181-217.
6. Brown SA, Hanis CL. 1999. Culturally competent diabetes education for Mexican-Americans: The Starr County Study. *Diabetes Educator* 25(2): 226-236.
7. Castano L, Eisenbarth GS. 1990. Type-1 diabetes: a chronic autoimmune disease of human, mouse, and rat. *Annu Rev Immunol* 8:647-679.
8. CDC. Centers for Disease Control and Prevention. 2005. Diabetes fact sheet. <http://www.cdc.gov/diabetes/pubs/factsheet05.htm>.
9. CDC. Centers for Disease Control and Prevention. 2008. Number of people with diabetes increases to 24 million. <http://www.cdc.gov/diabetes>.
10. CDC. Centers for Disease Control and Prevention. 2008. National diabetes fact sheet: general information and national estimates on diabetes in the United States in 2007. Atlanta, GA: U.S. Dept. of Health and Human Services, Center for Disease Control and Prevention.
11. Chu X, Erdman R, Susek M, Gerst H, Derr K, Al-Agha et al. 2008. Association of morbidity obesity with FTO and INSIG2 allelic variants. *Arch. Surg.* 143(3):235-40.
12. Cziraky MJ, Watson KE, Talbert RL. 2008. Targeting low HDL-cholesterol to decreased residual cardiovascular risk in the managed care setting. *J Manag Care Pharm* 14(8 Suppl A):1-32.
13. Diabetes Prevention Program Research Group. 2007. Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. *N Engl J Med* 346:1829-1830.
14. Ferdinand KC, Ferdinand DP. 2008. Race-based therapy for hypertension: possible benefits and potential pitfalls. *Expert Rev Cardiovasc Ther* 6(10):1357-66.
15. Geiss L, Englegau M, Frazier E, Tierney E. 1997. Diabetes Surveillance. Atlanta, GA: Centers for Disease Control and Prevention, U.S. Department of health and Human Services.
16. Gold R, Michael YL, Whitlock EP, Hubbell FA, Mason ED, Rodriguez BL et. al. 2006. Race/ethnicity, socioeconomic status, and lifetime morbidity burden in the women's health initiative: a cross-sectional analysis. *J Womens Health (Larchmt)* 15(10):1161-73.
17. Goldstein LB, Amarenco P, Lamonte M, Gilbert S, Messig M, Callahan A et. al. 2008. Relative effects of statin therapy on stroke and cardiovascular events in men and women: secondary analysis of the Stroke prevention by Aggressive Reduction in cholesterol levels (SPARCL) Study. *Stroke* 39(9): 2444-8.
18. Harris M, Eastman R, Cowie C, Flegal K, Eberhardt M. 1999. Racial and ethnic differences in glycemic control of adults with type 2 diabetes. *Diabetes Care* 22:403-408.
19. Hatzfeld JJ, Cody-Connor C, Whitaker VB, Gaston-Johansson F. 2008. African-American perceptions of health disparities: a quantitative analysis. *J Natl Black Nurses Assoc* 19(1):34-41.
20. Institute of Medicine (IOM) Report. 2004. Health Literacy: a prescription to end confusion. Washington, DC: The National Academics Press.
21. Ismail K, Thomas SM, Maissi E, Chalder T, Schmidt U, Bartlett J et. al. 2008. Motivational enhancement therapy with and without cognitive behavior therapy to treat type 1 diabetes: a randomized trial. *Ann Intern Med* 149(10):708-19.
22. Leslie RD, Williams R, Pozzilli P. 2006. Clinical review: type 1 diabetes and latent autoimmune diabetes in adults: one end of the rainbow. *J Clin Endocrinol Metab* 91: 1651.
23. Lutfiyya MN, Lipsky MS, Bales RW, Cha I, McGrath C. 2008. Disparities in knowledge of heart attack and stroke symptoms among men: an analysis of behavioral risk factor surveillance survey data. *J Natl Med Assoc* 100(10):1116-24.
24. McKeever C, Koroloff N, Faddis C. 2006 The African-American Wellness Village in Portland, Ore. *Prev Chronic Dis* 3(3):A104.

25. Miheala T, Eunyoung C, Manson JE, Hu FB. 2004. Dietary fat and cholesterol and the risk of cardiovascular disease among women with type 2 diabetes. *Am J Clin Nutr* 79(6): 999-1005.
26. Moore LV, Diez Roux AV. 2006. Associations of neighborhood characteristics with the location and type of food stores. *Am J Public Health* 96(2):352-31.
27. Mosen DM, Schatz M, Magid PJ, Camargo CA Jr. 2008. *J Allergy Clin Immunol* 122(3):507-11.e6.
28. Murphy F, Anderson R, Lyons A. 1993. Diabetes educators as cultural translators. *Diabetes Educ* 19:113-118.
29. Nieuwenhuis-Ruifrok AE, Kuchenbecker WKH, Hoek A, Middleton P, Norman RJ.
30. Insulin sensitizing drugs for weight loss in women of reproductive age who are overweight or obese; systematic review and meta-analysis. *Hum Reprod Update* 15:57-68.
31. Norris SL, Nichols PJ, Caspersen CJ et. al. 2002. Increasing diabetes self-management education in community settings: a systematic review. *Am J Prevent Med* 22:39-66.
32. Peacock WF, Summers RL, Vogel J, Emerman CE. 2006. Impact impedance cardiography on diagnosis and therapy of emergent dyspnea: the ED-IMPACT trial. *Acad Emerg Med* 13(4):365-71.
33. Powell LM, Slater S, Mirtcheva D, Bao Y, Chaloupka FJ. 2007. Food store availability and neighborhood characteristics in the United States. *Prev Med* 44(3):189-95.
34. Reaven GM. 1988. Role of insulin resistance in human disease. *Diabetes* 37:1595-1607.
35. Rekeniere N, Rooks R, Simonsick E et. al. 2003. Racial differences in glycemic control in a well-functioning older diabetic population: findings from a health, aging, and body composition study. *Diabetes Care* 26:1986-1992.
36. Reviews/Commentaries/Position Statements Report from the American Diabetes Association, Inc. 1998. Economic consequences of diabetes mellitus in the U.S. in 1997. *Diabetes Care* 21(2): 296-309.
37. Reviews/Commentaries/Position Statements Report from the American Diabetes Association, Inc. 2003. Economic costs of diabetes in the U.S. in 2002. *Diabetes Care* 26:917-932.
38. Riche DM, East HE, Priest HM. 2008. Practical management of dyslipidemia with elevated lipoprotein(a). *J Am Pharm Assoc* 48(6):803-7.
39. Rosolova H, Petriova B, Simon J, Sifalda P, Sipova I. 2008. High-sensitivity C-reactive protein and the hypertriglyceridemic waist in patients with type 2 diabetes and metabolic syndrome. *Med Sci Monit* 14(8): CR411-5.
40. Rubin RJ, Altman WM, Mendelson DN. 1994. Health care expenditures for people with diabetes mellitus. *J Clin Endocrinol Metab* 78(4): 809A-809F.
41. Sacks DB, McDonald JM. 1996. The pathogenesis of type II diabetes mellitus: a polygenic disease. *Am J Clin Pathol* 105:149-156.
42. Siemens DCA 2000@+ Analyzer.  
<http://www.cardinal.com/cardinalhealth/search.aspx?query=DCA+2000%2B&Submit=Go&collection=all>.
43. Takakuwa KM, Shofer FS, Hollander JE. 2008. The influence of race and gender on time to initial electrocardiogram for patients with chest pain. *Acad Emerg Med* 13(8):867-72.
44. Thompson DL. 2007. The cost of obesity: what occupational health nurses need to know. *AAOHN J* 55(7):265-70.
45. Two feathers J, Keiffer EC, Palmisano G et. al. 2005. Racial and ethnic approaches to community health (REACH) Detroit partnership improving diabetes-related outcomes among African Americans and Latino adults. *J Public Health* 95:1552-1560.
46. U.S. Census Bureau State and County Quick Facts.
2008. Source U.S. Census Bureau: Census of Population and Housing.  
<http://quickfacts.census.gov/qfd/states/12/12099.html>.
47. Utz SW, Williams IC, Jones R, Hinton I, Alexander G, Yan G et. al. 2008. Culturally tailored intervention for rural African Americans with type 2 diabetes. *Diabetes Educator* 38:854-865.
48. Weaver R, Gaines FD. 2002. American Diabetes Association. In L. Guffey (Ed.), *Month of Meals Quick & Easy Menus for People with Diabetes*. Soul Food Selections. (pp. 7-75). American Diabetes Association.
49. Zenk SN, Schulz AJ, Israel BA, James SA, Bao S, Wilson ML. 2006. Fruit and vegetables access differs by community racial composition and socioeconomic position in Detroit, Michigan. *Ethn Dis* 16(1):275-80.
50. Ziemer DC, El-Kebbi IM, Umpierrez GE, Rhee MK, Phillips LS, Cook CB. 2008. Diabetes management in urban African Americans. Review of a public hospital experience. *Ethn Dis* 18(3):336-41.

**Author Information**

**Phyllis Y. Reaves, Ph.D.**

Assistant Professor, School of Allied Health Sciences, Florida A&M University

**Roniece Weaver, M.S., R.D., L.D.**

Executive Director, Non-Profit, Hebni Nutrition Consultants, Inc.

**Fabiola Gaines, R.D., L.D.**

Founding Partner, Non-Profit, Hebni Nutrition Consultants, Inc.

**Ellareetha Carson, R.D., L.D.**

Founding Partner, Non-Profit, Hebni Nutrition Consultants, Inc.

**Rojean Williams, M.S., R.D., L.D.**

Wellness Consultant, Non-Profit, Hebni Nutrition Consultants, Inc.

**Rochun McCray, R.N.**

Palm Beach Black Nurses Association, Inc.

**Olyayemi Osiyemi, M.D.**

T. Leroy Jefferson Medical Society, Inc.

**Curtis Weaver, MD**

Cardiovascular Physician

**Otis Kirksey, Pharm.D.**

College of Pharmacy and Pharmaceutical Sciences, Florida A&M University

**Maurice S. Holder, Ph.D.**

College of Pharmacy Cardiovascular Research Institute, College of Pharmacy and Pharmaceutical Sciences, Florida A&M University