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Road to Health Diabetes Program

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Road to Health Diabetes Program

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Abstract

Diabetes is a major health problem in the United States. Individuals with diabetes are at greater risk of developing other health problems such as heart or kidney disease. African Americans are at 1.8 times greater risk of developing diabetes, and they suffer more severe consequences and complications from the disease. One major reason for poor outcomes in African Americans with diabetes is a lack of knowledge and understanding of the disease process and sequelae of diabetes. This DNP scholarly project focused on implementing a culturally sensitive diabetes education program in the hope of improving glycemic control among participants. The project was implemented in a rural clinic outside of Oklahoma City. Prior to implementation of the project, all healthcare providers and their staff were informed about the program and asked to refer their patients to it. The DNP scholarly project occurred over a five-week period, and each session lasted from 1–3 hours depending upon the depth of the information covered as well as the participation level. In the first week, the sessions were accomplished on a one-to-one basis in an effort to establish a personal connection with participants and to build rapport with them. Those individuals who returned for more than one session experienced an improvement in their HgA1c at the completion of the DNP scholarly project: One participant had a 2 point decrease while the other return participant had a .2 decrease. All participants had an increase of 40–50% of their pre- and post-test scores.

Problem Statement

Diabetes is a major health problem in the United States (US), where approximately 8.3% of the population has diabetes. Individuals with diabetes are at greater risk of developing heart disease, stroke, blindness, kidney disease, neuropathy, and need for amputations. African Americans are at 1.8 times greater risk of developing diabetes, and they subsequently suffer more severe consequences and complications from the disease. One major reason for poor outcomes in African Americans with diabetes is a lack of knowledge and understanding of the disease process and sequelae of diabetes, as well as a lack of knowledge regarding proper nutrition and compliance with diabetic nutritional guidelines. These informational deficiencies lead to poor glycemic control. The reasons for poor glycemic control in African Americans are multifactoral and should be addressed while investigating the need for a culturally tailored diabetes education and treatment regimen. These issues must be faced and understood so that providers can design, implement, and evaluate more efficient and effective diabetes education for African Americans.

Evidence of the Problem

Approximately 25.8 million children and adults in the US have diabetes (American Diabetes Association, 2011a), roughly 8.3% of the population. Individuals who have diabetes are at greater risk for developing heart disease, stroke, blindness, kidney disease, neuropathy, and complications that lead to amputations. Studies have shown that glycemic control can reduce the risk of developing microvascular complications in individuals with diabetes (Centers for Disease Control and Prevention, 2011). One group of Americans suffers more than any other from diabetes, at a greater rate, and experiences more severe consequences of uncontrolled diabetes: That group is African Americans.

Approximately 3.7 million African Americans or 14.7% of the African Americans aged 20 or older, have diabetes (American Diabetes Association, 2011b; Office of Minority Health, 2012; Women's Health.gov, 2012). When compared to non-Hispanic whites, African Americans are approximately 1.8 times more likely to have diabetes. Twenty-five percent of African Americans over the age of 65 have diabetes. Morever, the complications of diabetes are particularly severe in this population. Compared to non-Hispanic whites, African Americans are approximately 50% more likely to develop diabetic retinopathy, they are 2.6–5.6 times more likely to suffer from kidney disease, and they are 2.7 times more likely to suffer from lower limb amputation. These statistics indicate that diabetes is a major health threat in the African-American community. If African Americans continue to exercise poor glycemic control of their diabetes, these statistics will not improve. Several factors contribute to poor glycemic controls in African Americans; however, the most important factor is lack of knowledge and understanding of the disease sequelae regarding diabetes and how to manage diabetes effectively.

Review of Literature

Methods

The Doctor of Nursing Practice candidate (DNP[c]) reviewed relevant research regarding diabetes in African Americans. This was accomplished by reviewing biomedical and social science search engines. Seven research engines were used to locate articles dated 2005–2012, with key articles being obtained primarily from CINAHL, Nursing Journals@Ovid, PubMed, and ERIC. Key terms used to identify potential articles included diabetes, African Americans, beliefs, perceived risk, complications, fatalism, and diabetes education. Research articles were selected if they specifically discussed diabetes in the African-American population; article selection was then reduced by concentrating on those

found to describe knowledge deficits, African-American beliefs regarding diabetes, and

diabetes educational programs specifically geared toward African Americans.

Lack of Knowledge and Understanding Regarding Diabetes

Skelly and colleagues (2006) conducted a study in which they examined the beliefs that African Americans held regarding diabetes. This study looked at participants' knowledge regarding diabetes in general, preventing diabetes, and whether or not diabetes could be controlled or cured. Common themes noted in this study regarding the etiology of the disease included that diabetes was caused from eating too much sugar and that diabetes ran in families. Those study participants did not draw a parallel between the role that diet and obesity play in the development of diabetes, and many of them consumed diets that were high in sugar, fat, salt, grease, and fried foods. They also lacked knowledge and understanding about the curability of diabetes. The younger participants understood that diabetes could not be cured, while the older ones, especially men, believed diabetes could be cured with insulin. Most of the participants were unsure if diabetes could be prevented.

Mann, Leventhal, Ponieman, and Halm (2009) conducted a study to examine the misconceptions about diabetes and its management among low-income minorities. The participants were Latinos and African Americans with diabetes who lived in New York City. Twelve percent believed they had diabetes only when their glucose levels were elevated, and the majority (56%) felt that their glucose was not elevated until it was over 200. The normal range for blood glucose for individuals with diabetes is up to 130 when fasting and less then 180 after eating. Another disturbing finding was that 54% of the participants stated they could feel when their glucose levels were elevated. While 29% expected their healthcare provider to cure their

diabetes, the majority felt the health consequences of uncontrolled diabetes were minimal and that they had little or no control over their diabetes.

In a study conducted by Wenzel, Utz, Steeves, Hinton, and Jones (2005), participants also disclosed a lack of knowledge regarding elevated glucose levels. They also voiced distrust in their healthcare providers and in their providers' ability to know what they had been eating based upon their blood glucose readings.

Lack of Knowledge Regarding the Complications of Diabetes

Calvin et al. (2011) examined perceived risk of complications in urban African-American adults with diabetes. The participants were recruited from three inner-city Chicago clinics. Included were 143 adult (18–75 years old), urban African Americans with diabetes. Fifty percent or more did not perceive their personal risk of developing complications of diabetes to be high or even moderate. Amputation, blindness, and kidney disease were ranked lowest of the participants' personal perceived risks of the disease. However, a positive relationship was found between participants who had more symptoms of diabetes and their perceived personal risk of developing complications.

Cullen and Buzek's (2009) study attempted to ascertain the risk perceptions of African-American and Hispanic adults and their adolescent children, all with a known family history of diabetes. The majority (74%) of the parents in the study were able to identify family history as a risk factor for developing diabetes; however, less than 25% of the students responded correctly to this question. An alarming 26% of the parents knew that being overweight was a risk factor for the development of diabetes, while only 10% of the students considered weight to be a risk factor. Other areas where lack of knowledge about perceived risk was noted were diabetes prevention practices and dietary behaviors.

McKenzie and Skelly (2010) explored the risk perception of developing coronary heart disease (CHD) in southern African-American females with diabetes. Many of the participants had a risk factor such as hypertension for developing CHD; however, many did not feel that they were at risk of actually developing CHD. The participants also did not see the link between past heart failure, past cardiac events, or having diabetes as a risk for developing CHD. Many felt that if they had CHD, they would experience some sort of symptoms or pain, and because they had not experienced any symptoms, they did not have CHD.

These studies reveal that large knowledge deficits and misconceptions continue to exist among participating African Americans regarding diabetes and its management. The information gained from these studies may help build a basic foundation for healthcare providers to use when discussing diabetes with their patients and providing diabetes education. Not only do many African Americans lack knowledge and understanding regarding the causes of diabetes, but they also lack knowledge and understanding about the sequelae of diabetes and their risk of actually developing diabetes or its complications. Not only is disease management of African Americans with diabetes affected by their beliefs about the disease sequelae but also by their religious beliefs as well as their beliefs regarding fatalism.

Fatalism in African Americans With Diabetes

Egede and Bonadonna (2003) explored the role that fatalism plays in African Americans with diabetes. This study was conducted at a large medical center in the southwestern US. Focus groups made up of 39 consenting African Americans with diabetes were asked general questions that sought to reveal their beliefs about diabetes and what having diabetes meant to them. The participants were also asked probing questions regarding their ability to stop or slow down the progression of diabetes, as well as if they had control over their diabetes. Many of the

participants felt that diabetes was a generational curse, which was passed from generation to generation, and that the only way the curse could be broken was to not acknowledge or claim diabetes.

Walker et al. (2012) examined the effects that diabetes fatalism had on medication adherence and self-care behaviors in adults with diabetes. The researchers hypothesized that the concept of fatalism may be more applicable to African Americans than to other ethnic groups due to their lived experiences in the US. The researchers recruited 378 African Americans with diabetes, ages 50–64, from two primary care clinics in the southeastern US. This study revealed that diabetes fatalism was associated with poor medication adherence and self-care behaviors. These findings suggest that diabetic individuals who exhibit higher fatalistic attitudes may be less adherent about taking their medications as well as their self-care behaviors. Walker et al. also found that a lack of knowledge about diabetes care was significantly associated with diabetes fatalism and that increasing diabetes knowledge in diabetic patients may be a line of attack to change fatalistic attitudes in diabetic African Americans.

Spirituality in African Americans With Diabetes

Polzer and Miles (2007) examined the spirituality of African Americans with diabetes and how their relationship with God affects their diabetes self-management behaviors. This study was conducted in central and eastern North Carolina and contained 29 participants (10 men and 19 women) as well as five Protestant ministers. The religious affiliations of the study participants included Apostolic (1), Baptist (11), Church of God (2), Episcopal (5), Holiness (3), Methodist (2), nondenominational (2), Resurrection and Power of Jesus Christ (1), Jehovah's Witness (1), and no religious affiliation (1). The religious affiliation of the ministers included African Methodist Episcopal Zion-AME (1), Episcopal (1), nondenominational (1), and Presbyterian (2).

Polzer and Miles found there were three main typologies in their study participants regarding spirituality and diabetes management: God is in the background, God is in the forefront, and God is healer. The study participants who saw God as in the background felt that God was always present with them but that it was their responsibility to participate in their relationship with God. This participation included performing diabetes self-management activities, spiritual activities, and having faith that God would provide them with the support they needed to manage their diabetes. Members of this typology acknowledged that they were responsible for their diabetes and God was a supportive force there to assist them. This typology contained five study participants and three ministers, all of the Episcopal faith.

Those who saw God at the forefront of their diabetes management also participated in a relationship with God by performing self-care behaviors, spiritual practices, and having faith; however, these participants viewed God's role in their diabetes management as more important than their own role. These participants felt that, if they had enough faith and submitted themselves to the authority of God, their diabetes would be healed and God would take care of them. A total of 22 participants were in this typology (16 women and 6 men). The religious affiliation of this group included Apostolic, Baptist, Church of God, Holiness, Methodist, nondenominational, Resurrection, and Power of Jesus Christ. One AME Zion minister belonged to this typology as well.

Those who saw God as Healer also managed their diabetes through a relationship with God and believed that, if they had enough faith, God would heal them; however, they believed that, if they were spiritually mature enough and had enough faith, they did not need to manage their diabetes. One male participant and one minister belonged to this typology, both identifying as nondenominational. A 53-year-old Jehovah's Witness man did not fall into any of the

abovementioned typologies and managed his diabetes due to his hope for and belief in the afterlife. Faith and religious beliefs play a major role in the African-American community, and healthcare providers need to consider this when educating this patient population on chronic disease management. Another consideration that healthcare providers should keep in mind is the dietary habits of African Americans.

Dietary Habits of African Americans

Historically, the diets of African Americans have differed from the diets of other ethnic groups. These differences may have contributed to African Americans having higher rates of chronic diseases such as hypertension or diabetes. African Americans typically consume diets that are high in fat, calories, and salt, as well as salt-cured, smoked and nitrite-cured foods, and that are low in fruits, vegetables, and whole grains. Diet plays a major part in managing diabetes; therefore poor eating habits put many African Americans with diabetes at risk of having poor glycemic control (Bovell-Benjamin, Dawkin, Pace, & Shikany, 2009).

When slaves were brought to the US, they combined their cooking methods with those of the British, Spanish, and Native Americans to develop what is now known as soul food. Soul food places emphasis on foods that are fried, roasted, or boiled and are usually made of chicken, pork, pork fat, or organ meat, as well as sweet potatoes, corn, and green leafy vegetables. James (2004) explored the factors that influence the food choices of African Americans and the attitudes that African Americans have towards nutrition. This study conducted six focus groups in north central Florida. The focus groups consisted of 40 participants (19 women and 21 men) who answered questions about the following topics: concepts of healthy eating, barriers and motivators to healthful eating.

This study revealed that women in the African-American community would be more willing than the men to make healthy lifestyle changes. The participants felt that women were the best targets for nutritional education because they do the shopping and prepare the food and that the men studied were not interested in changing to healthy eating habits. Another important factor noted in this study is that nutritional education in the African-American community should go beyond the individual and should target immediate and extended family as well.

Lucan, Barg, and Long (2010) explored barriers to healthy eating in low-income African Americans in Philadelphia. Forty participants (20 men and 20 women) were interviewed for this study. Results showed that the flavor of food prompted the consumption of all foods. The participants also mentioned the cost of healthy foods as a barrier, as well as location and convenience.

Evidence Supporting Diabetes Education and Lifestyle Modifications

Research has shown that diabetes education and lifestyle modifications help reduce the incidence of diabetes and help to delay or prevent complications related to diabetes. Several studies have explored ways to provide diabetes education and lifestyle modifications to African Americans; however, not one specific study could be found that posits a clear-cut way to reach this population that has made significant changes in the rate or complications of diabetes in African Americans.

Anderson-Loftin et al. (2005) examined the effect a culturally sensitive dietary and self-management intervention had on physiological outcomes and food behaviors of African Americans with diabetes. A total of 97 participants with high-risk diabetes in rural South Carolina were studied. They were defined as high risk due to one of the following: a glycosylated hemoglobin (HgA1c) greater or equal to 8%; cholesterol greater than or equal to

200; triglycerides greater than or equal to 200; LDL cholesterol greater than or equal to 100; and weight greater than or equal to 25kg/m; or high dietary fat patterns all determined by the participant's score on a food habits questionnaire.

The groups were split in half, with 49 in the experimental group and 48 in the control (usual care) group. Participants in the experimental group were instructed on how to make healthy low-fat food choices as well as on purchasing, planning, and preparing low-fat healthy meals, and food choices away from home. The researchers used ethnic food models to teach the participants how to prepare healthy meals as well as in-class cooking demonstrations. The control group participants were referred to a local, traditional diabetes class where they were given information regarding diabetes and the complications of diabetes. Data on both the experimental and control groups were collected at baseline, 6 months, and at the end of the intervention. At 6 months, members of the experimental group decreased their weight by 1.8 kg (4 lbs), while the weight of individuals in the control group increased 1.9 kg (4.2 lbs). There were no significant differences in the HgA1c values between the two groups.

Leeman, Skelly, Burns, Carlson, and Soward (2008) conducted a pilot study in which they tailored a diabetes management intervention to 43 older, rural African-American women. An intervention that was focused on the symptoms of diabetes as well as self-care practices was administered to the participants. The women were randomly assigned to an intervention group and a comparison group. The participants were questioned about their symptom experiences, the strategies they used to manage their symptoms, and how they managed their diabetes. The information obtained allowed the research nurse to develop individualized interventions that focused on each participant's past symptom experience. The participant's symptomatology was used as a guide for subsequent visits with the research nurse; this approach differed from

traditional diabetes education. At the conclusion of this pilot study, the researchers found that the intervention group showed more improvement when compared to the control group in recognizing their symptoms, in their diabetes self-care practices, and in their quality of life.

Evidence Supporting Culturally Sensitive Diabetes Education in African Americans

Steinhardt, Mamerow, Brown, and Jolly (2009) examined the effectiveness of the Diabetes Coaching Program (DCP) intervention that was adapted for African Americans. This pilot study contained a convenience sample of 16 African Americans (8 men, 8 women) who were recruited via radio and announcements in local churches. Quantitative data were collected pre-intervention and at 6 months, while qualitative data were collected at 8 months.

The DCP intervention consisted of four 2-hour weekly classes; these classes focused on the Transforming Lives through Resilience Education and nutrition in diabetes. In addition to these meetings, eight biweekly support group meetings were held. The Transforming Lives through Resilience Education portion of the intervention was intended to equip the participants with the necessary skills to cope effectively with the stressors of having diabetes, to begin to feel empowered about managing their diabetes, and to assist with developing meaningful social connections with others who have diabetes. The nutritional portion of the intervention provided participants with the information, skills, and support needed for better diabetes management. The researchers found that, prior to the beginning of the study, the mean baseline HgA1c for the participants was 6.94 and that, following the intervention, the mean HgA1c was 5.57. Qualitative information was gathered on the participants at 8 months to ascertain if they felt the DCP intervention was effective, and 11 of the 12 participants who participated in the 8-month-follow-up indicated they felt the intervention was effective.

Utz et al. (2008) conducted a pilot study to evaluate a culturally tailored intervention for rural African Americans. The study was conducted over 6 months and took place at a local community center in the participants' community.

Participants of this study were randomly selected to take part in a group or an individual Diabetes Self Management Education (DSME) program. The purpose of the DSME program is to equip participants with the needed skills to manage their diabetes effectively. Study participants who received the group DSME met for 2 hours weekly for a total of 8 weeks. The DSME group activities consisted of storytelling, hands-on activities, and problem-solving activities. While those assigned to the individual DSME met with a certified diabetes educator on three different occasions over an 8-week period, and worked on individual goal-setting as well as problem-solving strategies for diabetes management. All received culturally tailored information based upon seven areas of diabetes self-management that included healthy eating, being active, monitoring blood glucose, taking medication, problem-solving, reducing risks, and healthy coping. Participants in both groups lowered their HgA1c; however, participants in the group DSME lowered theirs more than the individual DSME (Group DSME = -.32, individual DSME = -.24). Participants in the group DSME showed greater improvement in the diabetes self-care activities, which included self-management skills related to general diet, specific diet, exercise, blood glucose monitoring, foot care, and smoking. The Group DSME members improved their carbohydrate spacing when compared to member of the individual DSME intervention.

Cramer, Sibley, Bartlett, Kahn, and Loffredo (2007) examined the effectiveness of the Diabetes Prevention Program Lifestyle Resources Core Teaching Plan in African Americans with diabetes. This pilot study examined the effectiveness of a culturally tailored, edited version of the Diabetes Prevention Program (DPP) for managing underserved urban African Americans

with diabetes. The researchers incorporated the DPP teaching plan as well as an evidence-based, accelerated, medical management algorithm. The study took place over 9 months and differed from the original DPP in that it was implemented in patients with diabetes. A total of 67 participants were recruited from family medicine clinics that served predominantly minority patients who lived in the inner city of Buffalo, NY. The study participants were randomly placed in either the nurse case management intervention or the usual care intervention.

The original DPP curriculum consisted of 16 modules that were implemented over a 24-week period with monthly follow-up appointments during the remainder of the study; this was not feasible in the study of Cramer et al., and the study content was therefore edited. The edited version of the DPP consisted of seven modules that focused on basic diabetes knowledge, complications of diabetes, individual diet and exercise goals, basic education on the caloric and fat content of foods, guidance in selecting appropriate exercise and physical activity for age and physical condition, specific strategies for eating out, diabetes self-monitoring techniques, dietary and exercise relapse prevention, and individual coaching.

The authors found the DPP intervention group had better outcomes than the usual care intervention group. Participants in the DPP group increased their walking by an average of 34–54 minutes per week, while the usual care group decreased their walking by 19 minutes per week. The absolute HgA1c percentage fell an average of 1.87 in the intervention group and 0.54 in the usual care group. This study was successful in achieving weight loss and positive dietary changes in high-risk diabetic African-American patients. The participants also responded positively to the culturally relevant dietary portion of the classes as well as the face-to-face case management.

Synthesis

The studies cited indicate that, even with the wealth of knowledge available on diabetes management and the complications of untreated or undertreated diabetes, a knowledge deficit continues in the African-American community. This community has a disproportionate rate of diabetes when compared to other ethnic groups. The reasons for the high rate of diabetes in African Americans is not fully understood; however, studies have shown that one major reason is lack of knowledge and understanding with regard to the disease sequelae and the consequences of untreated or undertreated diabetes, as well as possessing a fatalistic attitude and the diabetic's spiritual beliefs. Providing education alone to this patient population has not been shown to be effective in decreasing the rate of diabetes and its complications. Healthcare providers who are educating African Americans on diabetes should take into consideration the patient's beliefs regarding diabetes, consider the role religion plays in those views, and provide culturally relevant and sensitive materials to the patient.

Health Belief Model

The Health Belief Model was originally developed by Irwin Rosenstock to try to understand why individuals did not perform preventative healthcare measures (Carpenter, 2010). The Health Belief Model is patient-centered and focuses on behavior modification. It postulates that an individual's perception of five different variables can help predict his or her healthcare behavior. The first variable is perceived risk or susceptibility to a health problem. The model argues that individuals will become motivated to adopt healthy behaviors if they believe they are susceptible to a negative health outcome. The second variable is the perceived severity of a negative health outcome. The model argues that the stronger the perception an individual has regarding the possibility of developing a negative health outcome, the more likely he or she is to

avoid behaviors that will cause that outcome. Perceived benefits, the third variable, affect

healthcare behaviors because the individual is more likely to adopt healthy behavior if he or she

perceives a benefit to doing so. Barriers to adopting healthy behaviors represent the fourth

variable. The model argues that the more barriers individuals believe they will face in adopting

healthy behaviors, the less likely they are to change their behavior. Finally, this model postulates

that there are internal and external cues to action that either help or prevent individuals from

changing their health behavior (Carpenter, 2010; Harvey & Lawson, 2008).

This model formed the basis for this DNP scholarly project. The educational materials

were presented in such a way that the participants understood their susceptibility of either

developing diabetes or the complications of diabetes. The severity of the disease was discussed

with the participants as well as the benefits and barriers to developing a more healthy lifestyle.

Figure. Rosenstock's Health Belief Model

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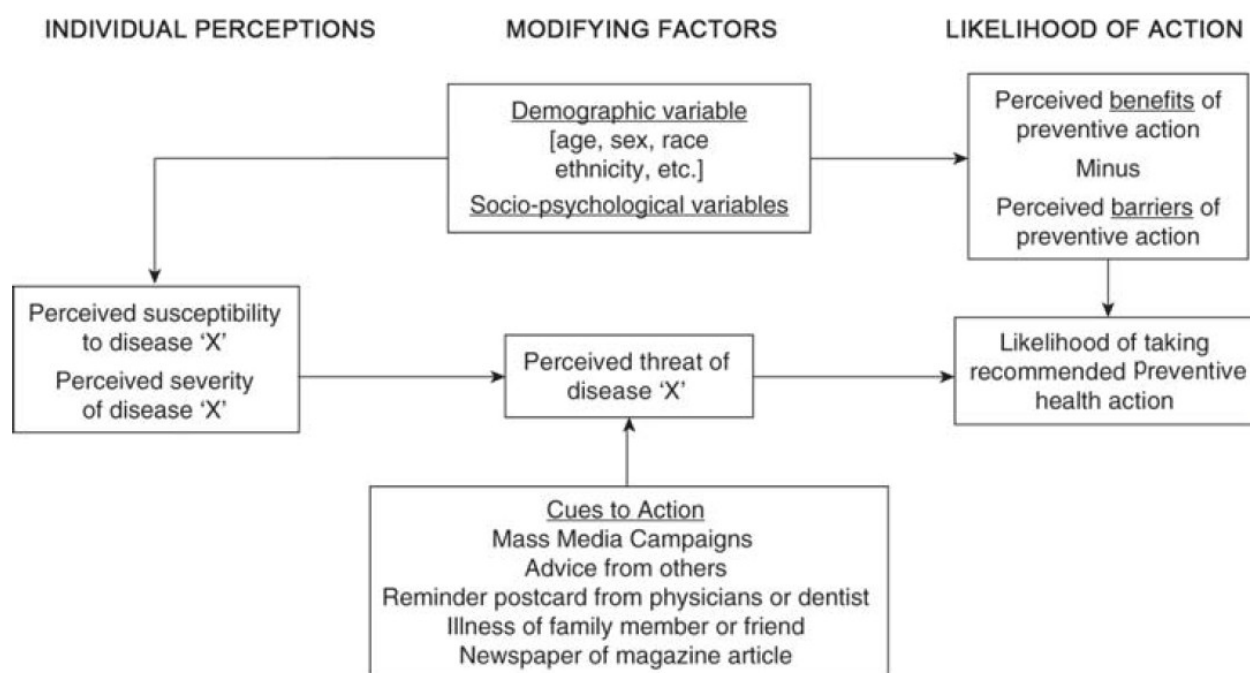
Project Description

Description of Group, Community, Population, and Results of Needs Assessment

The DNP scholarly project was provided to African-American patients who received their primary healthcare at Mary Mahoney Health Center in Spencer, Oklahoma. Inclusion criteria to participate in the project consisted of the following: male or female African American, age 30–65; having been diagnosed with diabetes; or having a family member who has been diagnosed with diabetes.

Spencer, Oklahoma is part of the Oklahoma City metropolitan area; however, it is a rural community. The population in 2010 was approximately 4,000, with the median household income being approximately $34,000. Approximately 56% of the population in Spencer is African American, 29% is Caucasian, and the remainder consists of Asian Americans, Hispanic Americans, and Native Americans.

Mary Mahoney Health Center has been open since 1973 and is a private, nonprofit primary healthcare facility. It provides healthcare and dental services, as well as lab and radiology services to its healthcare consumers. Healthcare is provided to individuals with and without insurance, and fees are based upon family size and income. The facility has three full-time physicians, four full-time nurse practitioners, and medical assistants, as well as a counselor and dental staff.

A discussion was held in April 2012 with the medical director regarding quality improvement projects and improving patient healthcare outcomes in. One of the major healthcare problems faced by the patient population is uncontrolled diabetes, as well as complications from uncontrolled diabetes. The medical director noted that the patients at the clinic have knowledge deficits regarding diabetes and that a comprehensive diabetes education program would be

beneficial. The clinic had a diabetes education program; however, attendance had been low, and the class currently offered is geared only toward patients who are on insulin therapy. The clinical site was looking for new ways to engage all diabetic patients and improve their health outcomes. The key stakeholders of the DNP scholarly project included the medical director, the CEO, the clinic dietician, as well as the patients themselves. This DNP candidate worked closely with these stakeholders during the implementation of the project.

Description of Resources, Constraints, and Facilitators or Barriers to Implementation

The diabetes education program selected by the DNP(c) was the Road to Health Diabetes Education program (Road to Health Toolkit, 2009). This program was developed by the National Diabetes Education Program in partnership with the National Institutes of Health and the Centers for Disease Control and Prevention. The program was designed specifically to prevent or delay the development of diabetes or diabetes complications in the African-American and Latino communities. The DNP(c) used educational materials from the Road to Health program as a foundation and adapted the program to meet the needs of the participants attending the DNP scholarly project at Mary Mahoney Health Center.

The DNP scholarly project was implemented at Mary Mahoney Health Center and took place in the education room. Some available resources used to assist in implementation of this project included usage of the education room, teaching aids, diabetes hand-outs, and access to the electronic medical records of participants to obtain their HgA1c values. One major barrier to the implementation of the DNP scholarly project that the DNP(c) tried to overcome was lack of interest from the target population and the fatalistic attitude of the providers in the clinic. Possible ways to increase interest that were used included providing snacks at the education

sessions, giving away free resources such as diabetic cookbooks, glucometers, test strips, and other diabetes resources.

Protocol/Plan

The DNP scholarly project was implemented over a 5-week period and consisted of weekly sessions that lasted approximately 2 hours. Participants were recruited by flyers that were placed in exam rooms and in high-traffic areas of the clinic. Patients were also referred to the program by providers in the clinic. The Road to Health program had three different sections, each section containing four separate units. The DNP(c) selected those topics that were most relevant to the specific patient population at Mary Mahoney Health Center, and those topics were covered in the DNP scholarly project. The HgA1c of the participants who had been diagnosed with diabetes were evaluated at the beginning of the program; however, those in attendance for family members did not have this done. IRB approval was not needed for this DNP scholarly project. The project started at the end of February 2013 and lasted for 5 weeks. At the end of the project, the HgA1c values of the participants were again evaluated to determine if there was any change. Participants were also given a pre- and post-test (Appendix A) to evaluate their knowledge base before implementation of the program and afterwards. They were also given an evaluation form (Appendix B) upon which they were asked to assess the program.

Goals and Objectives

The goal of this project was to have 10 participants attend the educational sessions each week with an expected outcome of 5 participants actually showing up for each weekly session. The DNP(c) also set a goal that each participant would have a 1-point decrease in his/her HgA1c at the conclusion of the DNP scholarly project. The goal of increased knowledge was to have a 30% increase when the pre-test and post-test scores were compared. Another goal set forth by the

DNP(c) was to provide the participants with culturally relevant information about diabetes and their risk of either developing diabetes or experiencing its complications. The DNP(c) hoped to dispel some of the myths about diabetes in the African-American population by providing solid information that would assist them in managing their diabetes, improving their glycemic control, and bettering their own and their family's health outcomes.

Costs

Attendance at the DNP scholarly project was free to clinic participants and their family members; however, copies of each week's educational materials were made to hand out to the participants. The Road to Health participant booklet consists of 76 pages, and it cost approximately $38 to copy the entire booklet. The DNP(c) used the information provided in the Road to Health Diabetes Education program as well as information from research journals, online websites, textbooks, and diabetes books to develop Powerpoint presentations each week for the class participants. Once the Powerpoint presentations were completed, they were taken to a local print shop and 10 copies were made each week. The total cost for the entire 5-week program was approximately $250. Along with the printed copies, the DNP(c) also gave each participant a recyclable bag that contained a notebook for storing the printed materials, a resuable water bottle, an ink pen, and a small notebook in which participants could record their blood sugars. The total cost for these bags was approximately $50. The remainder of the cost for this DNP scholarly project was devoted to providing the class participants with prizes and incentives as follows: cookbooks, snacks, Subway gift cards, food scale, hand weights, pedometers, measuring cups, measuring spoons, and, a kit that included a glucometer, strips, alcohol wipes, and lancets. The total cost for these materials was approximately $300. The total cost of implementing this DNP scholary project was approximately $600 (Appendix C).

Results, Data Analysis, and Interpretation

Prior to the implementation of this DNP scholarly project, the DNP(c) met with the medical director of the clinic again to discuss strategies to recruit and retain participants for the education program. The DNP(c) was informed that the various healthcare providers in the clinic would refer their patients and that two community volunteers would be contacting potential participants via telephone. The DNP(c) also developed flyers advertising the date and time of the classes and placed them in high-traffic areas of the clinic and provided all providers with the flyers to hand out to their patients. Prior to implementation of the program, the DNP(c) also personally invited all African-American diabetic patients whom she encountered during her clinical hours to attend the classes. The Road to Health Diabetes education program is intended to be taught during a full one-day session; however, the DNP(c) chose to adapt the program to the audience and to break it down into weekly sessions and also to add information to the basic information the program provided. Initially, the DNP(c) had planned to teach an 8-week program; however, this was reduced to 5 weeks due to low participation rates and the candidate being able to cover the material in a shorter time frame.

Population Results

Initially, the DNP(c) had to conduct one-on-one educational classes for the first 2 weeks of the program. This was done for two separate reasons: (a) no participants showed up at the scheduled time or place for the first classes, and (b) this was an opportunity to develop a personal connection and rapport with potential project participants. Therefore, the candidate taught each participant individually when requested by her preceptor or other clinic providers. Each participant was given a bag that contained a notebook with a folder containing educational materials to be covered during the educational session. A total of six participants received

individual diabetes education during the first 2 weeks of the program (a total of five the first week, and one the second week). Each of these participants was contacted by the DNP(c) and community volunteers and was asked to attend the next week's class; however, none of those taught individually the first 2 weeks returned to any subsequent classes.

During the third week of the DNP scholarly program, two participants showed up at the scheduled time and place for the class. Those participants had been contacted by the community volunteers and agreed to participate in the class. During this class, the DNP(c) taught the information that had been covered during the first 2 weeks as well as the material to be covered during the third week. Both participants were encouraged and invited to return to class the following week, which they did. During the fourth week of class, the two participants from the prior week returned, as well as two others. The DNP(c) covered the information from the prior 3 weeks with those new participants, as well as the current week's information. The last week of the diabetes education class was attended by three participants: two who had participated in the classes the prior 3 weeks, and another participant.

Class Structure

Each week, except for the week when medications were covered, participants were given a pre-test to examine their knowledge level of the information being covered and a post-test, which was the same as the pre-test (Appendix A). They were also given a notebook and handouts that covered that week's lesson. Each week, games were played with the participants such as diabetes word find, diabetes word search, and diabetes bingo. Each week, the participants were given new information. Topics covered included the basics of diabetes, complications of diabetes, carbohydrate counting, diabetic medications, and healthy eating, and exercise. Winners of the games that were played each week were given prizes that coordinated with the lesson

being taught that week. Participants were also given an anonymous evaluation form that they were asked to complete; this form helped the candidate to determine which aspects of the class the participants enjoyed and which they did not enjoy.

Follow-up Phone Calls

The community volunteers were an integral part of recruiting and retaining class participants. Each week, the community volunteers were given the name and phone number of that week's participants, whom they would contact. They also contacted other African-American patients in the clinic with uncontrolled diabetes who would benefit from the class. Potential participants were also offered free transportation to and from the classes, and the community volunteers also provided information about needed resources such as help with medications and help scheduling follow-up appointments with providers.

Patient Outcomes

The EMR of each participant was reviewed to determine his or her baseline HgA1c, but because, only two participants returned for more than one class, their HgA1c was noted at baseline and at the end of the DNP scholary project. Both return participants showed improvement in their HgA1c values at the end of their participantion in the class (see Table 1).

Table 1

Pre- and Post-HgA1c Values

Participant	Date Attended Class	Return to Class?	HgA1c
#1	02/25/13	No	Pre-class 7.1
#2	02/25/13	No	Pre-class 6.4
#3	02/25/13	No	Pre-class 10.8

#4	02/25/13	No	Pre-class 14.0
#5	02/25/13	No	Pre-class 10.3
#6	03/04/13	No	Pre-class 8.5
#7	03/11/13	No	Pre-class 6.3
#8	03/11/13, 03/18/13, 03/25/13	Yes	Pre-class 12.3 Post-class 10.3
#9	03/11/13, 03/18/13, 03/25/13	Yes	Pre-class 11.4 Post-class 11.2
#10	03/18/13	No	Pre-class 14.0
#11	03/18/13	No	Pre-class 9.4
#12	03/25/13	No	Pre-class 6.5

The HgA1c range among participants was 6.4–14.0. As Table 1, above, indicates, the majority of the class participants had uncontrolled diabetes and would have benefited greatly if they had returned to the class. However, there were also participants who had controlled diabetes, and those participants picked which classes they attended based upon the information that was being taught each week. Both return participants had an improvement in the HgA1c at the end of the classes; however, only one met the HgA1c goal the candidate was trying to achieve by implementing this DNP scholary project. The average pre-test score for the participants of this project was 40–50%; however, the average post-test score was 80–100%. That is an increase of 40–50%, which surpassed the DNP(c)'s education goal of the participants increasing their post-test scores by 30%.

Participant Satisfaction

Each week, the participants were given an evaluation form to complete anonymously after the class; the only negative feedback was that the participants would have enjoyed the class more if there had been more participants. The participants enjoyed the subjects covered and expressed that they learned something new each week, that they enjoyed the games that were played, and that they felt they now had tools to help them better manage their diabetes.

Barriers to the Program

Participant Barriers

There are many factors that this DNP(c) viewed as barriers to patient participation in the diabetes education program. Nam, Chesla, Stotts, Kroon, and Janson (2011) reviewed previous studies to examine barriers to diabetes management from both the patient and provider point of view. They noted that patient attitudes regarding the need for improved glycemic control has an impact if a patient is interested in participating in diabetes education. They also found similar attitudes toward adherence to prescribed medications: If those studied felt their prescribed medications would benefit their diabetes, they were more likely to adhere to their medication regimen. The researchers found also that, even though knowledge was an important part of diabetes management, knowledge was not the most important factor in improving diabetes self-care behaviors in the study participants. Cultural factors also played a major role in improved diabetes management: They found that the deep spiritual roots possessed by many African Americans may help to improve their diabetes management.

This DNP(c) did notice different attitudes among those participants who came once to the class and the two participants who returned for the final three sessions. The two participants who returned for those three sessions were more engaged during the classes, more vocal, and they

participated more. They also voiced weekly that they wanted to improve their health outcomes, while those who did not return were less engaged during the educational sessions and appeared less concerned about their diabetes management, or said that they had too many other things going on in their lives to return for classes. Other factors that may have played a part in the low participation rate included the following: (a) initial concerns about transportation back and forth to classes, although that concern was alleviated by offering transportation to those who did not have it, (b) concerns about missing work, (c) lack of interest in the class, and (d) personal issues that took the patient's focus away from improving their healthcare. Another factor that may have played an important role in the low class-participation rate is the relationship the patient had with his or her healthcare provider and the healthcare provider's attitude.

Healthcare Provider Barriers

This DNP(c) did not expect a negative attitude among the healthcare providers at the site of the DNP scholary project; however, she heard on more than one occasion and from more than one provider that "our patients just don't participate in health education programs." This statement both confused and propelled her to prove them wrong and, although the candidate did not have a large number of participants, she was able to get two participants to return for 3 consecutive weeks. Doing this caused her to wonder why she had achieved success (small, yet success nonetheless), while the providers at the clinic repeatedly said their patient population would not attend any type of educational session.

Nam et al. (2011) proposed that a healthcare provider's attitude toward diabetes management may be more important than the knowledge the provider has about diabetes. They also noted that the attitude of the healthcare provider influences the patient's level of adherence to their treatment regimen. During an encounter with a healthcare provider, if the patient can

sense the frustration the provider feels toward the patient and his/her poor management of the disease, the patient may begin to feel that neither he/she nor the provider can control the diabetes, thus diminishing the patient's ability to feel empowered and able to manage his/her diabetes. This DNP(c) wonders if patients who are seen at this clinical site can sense the frustration or lack of trust regarding their ability to manage their diabetes from their healthcare provider and if this affects their outcomes. The patient-provider relationship and ability to communicate effectively also influence patient outcomes, as does a collaborative relationship between patient and provider. Heisler et al. (2003) noted that patients who agreed with their providers regarding treatment regimens were more likely to adhere to treatment recommendations and rated their ability to manage their diabetes as higher than those who did not agree with their providers.

Limitations

The biggest limitation to this project was patient participation. Although participants were offered free transportation, free class materials, and incentives such as prizes for winning games or participating in class, the participation level was still low. The HgA1c of the majority of the participants was out of control, and this candidate is not sure if this is a good representation of the majority of the African-American patients with diabetes who receive care at the facility. However, the majority of diabetic patients the DNP(c) encountered during her clinical time at this facility would lead her to believe that participants in the DNP scholarly project were a good representation of African-American patients with diabetes at the facility.

Conclusion

Diabetes is a major health problem in the US; it affects individuals of all economic statuses as well as all ethnic groups. However, African Americans with diabetes encounter more

severe complications from diabetes when compared with other ethnic groups. Evidence suggests that tight glycemic control and increased knowledge about diabetes and the consequences of poor glycemic control may help to improve their diabetes outcomes. In the patients who attended more than one educational session, improvement in their HgA1c was noted. This DNP(c) does believe that a diabetes education program can be successfully implemented at Mary Mahoney Health Center; however, the attitudes of both the patients and the providers will have to improve in order for the program to be successful. Incentives and giveaways seemed to help motivate the two return participants, and the DNP(c) believes that the use of monetary incentives may help promote more individuals to attend classes on a routine basis. The site where the DNP scholary project was implemented is currently in the process of writing a grant for the implementation of another diabetes education program in the future. This program will utilize its funds to engage various speakers such as cardiologists, podiatrists, dieticians, and chefs to discuss different topics with participants. Funds will also be used to provide participants with written materials and cookbooks. Though the numbers were small, this DNP scholarly project did show that increasing the knowledge of African Americans with diabetes can help improve glycemic control and therefore improve their diabetes outcomes.

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Appendix A
Road to Health Pre-Test #1

Name:_____   **Date:** _____

1. Which ethnic group had the highest rate of diabetes between 2007 and 2009?
    A. Caucasians
    B. Asians
    C. African Americans
    D. Hispanics
2. More people die from cancer than diabetes each year
    A. True
    B. False
3. What causes diabetes?
    A. Eating too much sugar
    B. Family History
    C. Being Overweight
    D. A&B
    E. B&C
4. Insulin is made in which body organ?
    A. Stomach
    B. Kidneys
    C. Pancreas
    D. Liver
5. Which of the following are signs of diabetes?
    A. Frequent thirst
    B. Falling down a lot
    C. Frequent cough
    D. Bleeding easily
6. Which of the following are risk factors for developing Diabetes
    A. Being overweight
    B. Drinking soda
    C. Family History
    D. A&B
    E. A&C
7. Nothing can be done to prevent diabetes
    A. True
    B. False
8. If you have a family history of diabetes you will definitely develop diabetes
    A. True
    B. False

Road to Health Pre-Test #2

Name:_____   Date:_____

1. Kidney disease is the # 1 case of death or disability in individuals with Type 2 Diabetes?
    A. True
    B. False
2. What percentage of Type 2 Diabetes die from some form of heart disease or stroke
    A. 10%
    B. 65%
    C. 50%
    D. 90%
3. A Heart attack occurs when the heart can't pump enough blood to meet the body's needs
    A. True
    B. False
4. What level do you want your HgA1c (3 month blood sugar)
    A. 8 or above
    B. 7 or less
    C. 10 or above
    D. 9 or less
5. How often should an individual with Type 2 diabetes get their eyes check?
    A. Once every 6 months
    B. Every 2 years
    C. Once a year
    D. Every 3 months
6. Coronary Heart Disease occurs when plaque builds up in the coronary arteries
    A. True
    B. False
7. What level should an individual with Type 2 Diabetes try to keep their blood pressure?
    A. 140/90
    B. 130/80
    C. 100/60
    D. 160/100

Road to Health Pre-Test #3

Name:_____   **Date:**_____

1. Diabetics should never eat carbohydrates?
    A. True
    B. False
2. Carbohydrates are found in meats and fish?
    A. True
    B. False
3. Which of the following are starchy vegetables
    A. Broccoli
    B. Tomatoes
    C. Sweet Onions
    D. Green Peas
4. 1 Carb Choice is equal to 30 grams of Carbohydrates?
    A. True
    B. False
5. To Maintain their weight women should eat 30-45 carbohydrates per meal?
    A. True
    B. False
6. To lose weight men should eat 45-60 carbohydrates per meal
    A. True
    B. False
7. Your fist is about the size of 3 ounces?
    A. True
    B. False
8. Your thumb equals about 1 ounce
    A. True
    B. False

Road to Health Pre-Test #4

Name:_____   **Date:** _____

1. The American Diabetes Association has a specific diet they recommend diabetics to follow?
   A. True
   B. False
2. How many servings of milk or dairy products should you eat each day?
   A. 0
   B. 1-2
   C. 2-3
   D. 3-4
3. Which of the following is the best oils to cook with?
   A. Canola
   B. Coconut
   C. Peanut
   D. Lard
4. Which if the following are benefits of exercising?
   A. It helps to lower your blood pressure
   B. It helps you lose weight
   C. It helps to lower blood glucose levels
   D. All of the above
5. What is the first thing you should do before starting an exercise plan?
   A. Start slow
   B. Make a plan
   C. Discuss with your healthcare provider
   D. Find an exercise activity you like
6. How much exercise should you complete each week
   A. 1 hour most days of the week
   B. 10 minutes most days of the week
   C. 30 minutes most days of the week
   D. 45 minutes most days of the week
7. Walking slowly for 30 minutes you can burn about 105 calories?
   A. True
   B. False
8. Aerobic Exercise helps you to build strong bones and muscles?
   A. True
   B. False

Road to Health Pre-Test #5

Final Test

Name:_____   Date: _____

1. Which ethnic group had the highest rate of diabetes between 2007 and 2009?
   A. Caucasians
   B. Asians
   C. African Americans
   D. Hispanics
2. Insulin is made in which body organ?
   A. Stomach
   B. Kidneys
   C. Pancreas
   D. Liver
3. Which of the following are signs of diabetes?
   A. Frequent thirst
   B. Falling down a lot
   C. Frequent cough
   D. Bleeding easily
4. Nothing can be done to prevent diabetes
   A. True
   B. False
5. Kidney disease is the # 1 case of death or disability in individuals with Type 2 Diabetes?
   A. True
   B. False
6. What level do you want you HgA1c (3 month blood sugar)
   A. 8 or above
   B. 7 or less
   C. 10 or above
   D. 9 or less
7. How often should an individual with Type 2 diabetes get their eyes check?
   A. Once every 6 months
   B. Every 2 years
   C. Once a year
   D. Every 3 months

8. What level should an individual with Type 2 Diabetes try to keep their blood pressure?
    A. 140/90
    B. 130/80
    C. 100/60
    D. 160/100
9. Carbohydrates are found in meats and fish?
    A. True
    B. False
10. Which of the following are starchy vegetables
    A. Broccoli
    B. Tomatoes
    C. Sweet Onions
    D. Green Peas
11. Carb Choice is equal to 30 grams of Carbohydrates?
    A. True
    B. False
12. Your fist is about the size of 3 ounces?
    A. True
    B. False
13. The American Diabetes Association has a specific diet they recommend diabetics to follow?
    A. True
    B. False
14. Which of the following is the best oils to cook with?
    A. Canola
    B. Coconut
    C. Peanut
    D. Lard
15. Which if the following are benefits of excercising?
    A. It helps to lower your blood pressure
    B. It helps you lose weight
    C. It helps to lower blood glucose levels
    D. All of the above
16. How much exercise should you complete each week
    A. 1 hour most days of the week
    B. 10 minutes most days of the week
    C. 30 minutes most days of the week
    D. 45 minutes most days of the week
17. Once you are diagnosed with Diabetes and your A1c is less than 7.5 you are automatically placed on medication

    A. True

    B. False

18. Glipizide works by causing the pancreas to decrease the amount of insulin the body makes?

    A. True

    B. False

19. Metformin should be taken 30 minutes after a meal

    A. True

    B. False

20. Short acting insulin begins to work

    A. 30 minutes to 1 hour after taking

    B. 1-2 hours after taking

    C. 5-10 minutes after taking

    D. 3-4 hours after taking

21. Lantus is a long acting insulin

    A. True

    B. False

22. Signs of hypoglycemia (low blood sugar) include:

    A. Shakiness

    B. Confusion

    C. Hunger

    D. All of the above

Appendix B

Diabetes Education Evaluation Form

1. What did you enjoy about today's class?

   _____
   _____
   _____
   _____
   _____
   _____

2. What did you not enjoy about the class
   today?_____

   _____
   _____
   _____
   _____

3. What would have made the class more
   enjoyable?_____

   _____
   _____
   _____
   _____

4. Do you feel you learned anything new
   today?_____

   _____
   _____
   _____
   _____

5. Any topics you would like to discuss in the
   future?_____

   _____
   _____
   _____
   _____

Other comments or
suggestions_____
_____
_____
_____
_____

Appendix C

Program Costs

	Handouts	Participation Bags	Prizes and Incentives
Participants 10	$250	$50	$300
Grand Total = $600			