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Self-Care Management of African American Men with Type 2 Diabetes

Kevin Konstantinos
Walden University

Walden University

College of Health Sciences

This is to certify that the doctoral study by

Kevin Konstantinos

has been found to be complete and satisfactory in all respects,
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Review Committee
Dr. Sue Bell, Committee Chairperson, Nursing Faculty
Dr. Casey Cole, Committee Member, Nursing Faculty
Dr. Francisca Farrar, University Reviewer, Nursing Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

Walden University
2018

Abstract

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MS, Rutgers University, 1996

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Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

African American men are disproportionately affected by type 2 diabetes and have a 3 times higher rate of 3 serious complications of diabetes, including blindness, amputations, and end-stage renal disease, compared to other groups. The purpose of this project was to address the gap-in-practice disparity that exists in care of African American men with diabetes by providing one-on-one self-care management education in an outpatient clinic setting. The behavior change theories that supported the project intervention were Orem's self-care theory and Bandura's self-efficacy theory. Employing a quasi-experimental design, 33 participants between the ages of 40 and 65 were divided into an intervention group (n = 18) and a comparison group (n = 15) by self-selection. Only participants in the intervention group received the diabetes self-care education program. Both groups completed pretest and the posttest questionnaires that collected demographic data and data from the Summary of Diabetes Self-Care Activities, the Diabetes Knowledge Test, and the Self-Efficacy for Diabetes tool. Statistically significant differences between the groups were found in the posttest scores of self-care activities, diabetes knowledge, and self-efficacy. The differences can most likely be attributed to the diabetes education intervention. This project demonstrated that diabetes self-care management education can be provided effectively in the clinic office setting, making diabetes education more available to and accessible for patients who need it most. Integrating diabetes self-care education into primary care providers' offices has the potential to address the gap-in-practice that exists for African American men with type 2 diabetes and contribute to social change by preventing disease progression.

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Dedication

This project is dedicated to my parents, my family, and especially my wife who provided me with the motivation and time needed to complete this journey.

Acknowledgments

I give special thanks to the faculty of Walden University, my project committee members, and especially my project committee chair, Sue Ellen Bell PhD, RN.

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Section 1: Overview of the Project

Introduction

Diabetes is a serious chronic disease and a major public health problem in the United States. According to the American Diabetes Association (American Diabetes Association [ADA], 2013), the estimated total economic cost of diagnosed diabetes in 2012 was $245 billion. Costs of diabetes increase over time with disease severity, indicating that early investments into prevention and disease management may be particularly worthwhile (Seuring, Archangelidi, & Suhrcke, 2015). Diabetes is the seventh leading cause of death in the United States (CDC, 2016). The two manifestations of diabetes are type 1 and type 2. According to the ADA (2015) type 2 diabetes, in which your body does not use insulin properly, is the most common form of diabetes.

Some ethnic groups have a higher risk for developing type 2 diabetes (Cowie et al., 2006). It is well documented that African American populations are disproportionately affected by type 2 diabetes compared to their Caucasian counterparts (Kountz, 2012). The problem of diabetes among African Americans is an example of health disparity in the United States (Wentzel, Utz, Steeves, Hinton, & Jones, 2005). The incidence of type 2 diabetes is four times higher for African Americans than for non-Hispanic Caucasians (Onwudiwe et al., 2011).

According to Fitzner, Dietz, and Moy (2011), diabetes has reached epidemic proportions in the older African American adult community. African American men have three times higher rates of three serious complications of diabetes--blindness,

amputations, end-stage renal disease--compared to other groups (Hendricks & Hendricks, 2000).

Many of the complications of type 2 diabetes are preventable with appropriate diabetes self-management (Byers, Garth, Manley, & Chlebowy, 2016).

Performing self-management is an important component of maintaining health and decreasing complications for individuals with diabetes (Byers et al., 2016). According to Clement (1995), diabetes self-management is the knowledge and skills needed to perform self-care, manage crisis, and make lifestyle changes required to manage the disease successfully. The ADA (2008) has suggested that on-going diabetes self-management education is required for persons diagnosed with the disease. This education would include following a prescribed diet plan, taking medications, participating in daily exercise, and performing blood glucose monitoring. When patients with diabetes successfully perform self-management, they can greatly reduce the chances of developing complications associated with the disease.

In this doctor of nursing practice (DNP) project, I determined if the knowledge, self-efficacy, and self-management of African American men with type 2 diabetes would be improved by implementation of a diabetes self-care education program. Successful implementation of a self-care education program that increases self-efficacy of African American men could potentially lead to reducing the health disparities so prevalent in this population.

Problem Statement

The problem that I addressed in this project were the health disparities that exist between African Americans and non-Hispanic Whites surrounding diabetes and the lack of research about the relationship between gender and diabetes self-management. This lack of research is especially true for African American men. Hawkens et al. (2015) found that African American men with type 2 diabetes encounter significant challenges to maintaining optimal health. Research has shown that self-efficacy of people with diabetes can be effectively improved by planned implementation of a diabetes self-management program (Wu, Liang, Lee, Yu, & Kao, 2014). The lack of research involving African American men and diabetes self-care management warranted further research in this area. This DNP project may impact the field of nursing by providing nursing direction for educating African American men with type 2 diabetes.

Purpose Statement and Project Objectives

The purpose of this project was to address the gap-in-practice that exists for African American men, who are disproportionately affected by type 2 diabetes. There are very few studies involving African American men specific to diabetes self-care management. This project has potential to address that gap-in-practice by providing interventions specific to diabetes management in African American men. The project could also provide information regarding the use of Orem's self-care theory and Bandura's self-efficacy theory as they pertain to diabetes self-management research with African American men.

Practice-Focused Question

The guiding practice-focused question for this doctoral project was: Will the knowledge, self-care management, and self-efficacy of African American men with type 2 diabetes improve after implementation of a diabetes self-care education program?

Evidence-Based Significance of the Project

For this project, I used the Summary of Diabetes Self-Care Activities (SDSCA) for measuring self-management among African American men. The SDSCA questionnaire is brief but has been shown to be a reliable and valid self-report measure of diabetes self-management assessing the following aspects of the diabetic regimen: general diet, specific diet, exercise, blood-glucose testing, foot care, and smoking. (Toobert, Hampson, & Glascow, 2000). Wallston, Rothman, and Cherrington (2007) successfully used the SDSCA in an African American population. For this project, the questionnaire was administered before and after a diabetes self-management education (DSME) program.

The stakeholders in this study were healthcare consumers--which in this case would be African American men--and healthcare providers. This study can impact African American men by providing ways for them to self-manage their diabetes and educating them about the choices they can make while performing self-care. This project could also impact African American men by reducing the health disparities in diabetes that affect African American men through appropriate and culturally sensitive education. Healthcare providers could learn from this project by providing providers with specific means to help African American men self-manage their diabetes. For example, this

project can provide self-care treatment preferences of African American men. This project has the potential to provide self-care management techniques for African American men that can be applied to other chronic diseases and help to reduce the health disparities that currently exist.

Implications for Social Change in Practice

Effective diabetes management is dependent upon an individual's education, knowledge, and self-care management skills. African American men have been underrepresented in research related to self-care management of diabetes. This project will add to the knowledge base concerning African American men and self-care management and help reduce the health disparities in this ethnic population.

Definition of Terms

Self-care management: The knowledge and skills needed to perform self-care, manage crisis, and make lifestyle changes required to manage the disease successfully (Clement, 1995).

Type 2 diabetes: The most common form of diabetes in which the body does not use insulin properly (ADA, 2016).

Self-efficacy: people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives (Bandura, 1994).

Summary of Diabetes Self-Care Activities (SDSCA): a brief questionnaire used to measure self-care (Toobert et al., 2000).

Diabetes Self-Management Education (DSME): a critical element of care for all people with diabetes and necessary in order to improve patient outcomes (Funnell et al., 2010).

Diabetes Knowledge Test (DKT): The DKT is a two-part 23-item questionnaire that measures diabetes knowledge (Fitzgerald et al., 1998).

Self-Efficacy for Diabetes: This 8-item scale is used to demonstrate change after education (Lorig, Villa, & Armas, 2009).

Assumptions and Limitations

I collected data from patients who routinely visit the primary care center where the project took place and are diagnosed with type 2 diabetes. The results I obtained might not be applicable to men in the African American population who do not seek routine care. The questionnaire that was used in this project includes several self-report instruments, which, according to Toobert et al. (2000), can be open to bias, but also can be made more reliable by asking specific nonjudgmental questions. The participants in the project were only be followed for a . This time frame might not be a sufficient to determine if any benefits occurred and if changes as a result of the project can be sustained over time.

Summary

Diabetes is a serious chronic disease and a major public health problem in the United States. Type 2 diabetes disproportionately affects African American populations. Many of the complications of type 2 diabetes are preventable with appropriate diabetes self-management. Although research has shown that self-efficacy of people with diabetes

can be improved by planned implementation of a diabetes self-management program (Wu et al., 2014), there is a lack of studies that focus on African Americans and diabetes education (Samual-Hodge et al., 2009). In this project, I determined if the self-efficacy of African American men with type 2 diabetes could be improved by the implementation of a diabetes self-care education program. Findings from this project will contribute to the knowledge base of diabetes education and diabetes self-care management among African American males.

Section 2: Background and Context

Introduction

Although the literature showed that African American men are disproportionately affected by type 2 diabetes, there are very few studies involving African American men specific to diabetes self-care management. In this DNP project I addressed that gap-in-practice by providing an intervention specific to diabetes management in African American men. The project could also provide information regarding the use of Bandura's self-efficacy theory as it pertains to diabetes self-management research with African American men. The guiding practice-focused question for this doctoral project was: Will the knowledge, self-care management, and self-efficacy of African American men with type 2 diabetes improve after implementation of a diabetes self-care education program?

In this section, I will discuss the concepts, models, and theories used in this project and the topics relevance to nursing practice. I will also discuss the local background and context and my role in the project. Finally, I will provide a summary of the section.

Concepts, Models, and Theories

According to the American Association of Diabetes Educators (American Association of Diabetes Educators [AADE], 2008), persons with diabetes can successfully manage the disease on their own if they adopt diabetes self-care activities. Building on this assertion, I used the Orem's self-care theory and Bandura's self-efficacy theory to direct this study.

Orem defined self-care as "the practice of activities that individuals initiate and perform on their own behalf in maintaining life, health, and well-being" (Orem, 1991, p. 117). Orem maintained that there were conditioning factors that influenced an individual's practicing of therapeutic self-care actions. An individual has to have the ability to perform self-care action to have self-care agency. According to Sousa and Zausniewski (2005), when an individual's therapeutic self-care demands are less than their self-care agency, the individual can perform self-care actions that meet their needs for promotion and maintenance of life, health, and well-being.

Bandura stated that self-efficacy is a belief that the individual has the power to produce an effect by completing a task and relates to a person's perception of their ability to reach a goal (Bandura, 1997). Bandura (2004) stated that a patient's perception of self-efficacy is influenced by performance accomplishments, vicarious experience, verbal persuasion, and self-appraisal, with the ultimate goal being adoption of self-management behaviors. The most important precondition for behavior change is self-efficacy. According to Michie (2008), improved population health requires changing behaviors; for example, those who are ill will adhere to health advice.

Relevance to Nursing Practice

African Americans have greater than twice the risk of developing type 2 diabetes than Caucasions (National Diabetes Information Clearinghouse, NDIC, 2014). African Americans are 40% to 50% more likely to develop complications such as retinopathy than their Caucasion counterparts and approximately four times more likely to experience

kidney failure (NDIC, 2009). According to Marshall (2005), they also experience greater morbidity and mortality associated with diabetes.

There have been many studies conducted on type 2 diabetes, yet African American men have been included in less than 10% of these studies (Newton, Griffith, Kearney, & Bennett, 2014), despite the National Institutes of Health (NIH) requirement of the inclusion of underrepresented minorities in medical research. One of the most effective diabetes intervention programs is the Diabetes Prevention Program (DPP). Despite the success of the DPP, African American men have experienced poorer outcomes compared to African American women and men from other racial groups (Samuel-Hodge, Johnson, Braxton, & Lackey, 2014).

Type 2 diabetes is a disease that requires an individual to monitor and manage their own treatment. African American culture influences behavior and beliefs and they influence the self-care behaviors of African Americans. For example, there was Project DIRECT (Engelgau et al., 1998) in which three main community interventions were initiated: (a) health promotion, (b) outreach, and (c) diabetes care. There was the Lifestyle Balance Church Diabetes Prevention Program (Davis-Smith, 2007), in which faith-based initiations for lifestyle change showed promise in helping to promote healthy behaviors in African American communities. However, most of the research has focused on African American women. Gumbs (2012) performed a study to explore the extent to which African American women participated in DSME and the impact of participation on self-care behaviors and was able to show that African American women who participated

in diabetes self-management education were significantly more likely to engage in self-care behaviors.

Even though African American men bear a heavier burden of diabetes, rarely has research been devoted to type 2 diabetes in the African American male population. One promising study by Treadwell et al. (2010) successfully increased African American men's knowledge relative to strategies for managing obesity and type 2 diabetes. A need still exists to increase the knowledge concerning the self-care practice of African American men with type 2 diabetes. I addressed this gap-in-practice by providing education to improve self-efficacy, knowledge, and self-management behaviors of African American men.

Local Background and Context

Type 2 diabetes is characterized by the body's resistance to insulin and/or a relative inadequate production of insulin by the pancreas (ADA, 2010). According to data from the Centers for Disease Control and Prevention (Centers for Disease Control and Prevention [CDC], 2010), African Americans continue to be one of the minority groups most affected by diabetes in terms of prevalence and poor outcomes. The estimated cost of diabetes in the United States in 2012 was $245 billion (ADA, 2013).

Diabetes self-care management is recognized by healthcare professionals as an essential component to achieving optimal health outcomes including a decrease in the cost and the long-term effects of type 2 diabetes (Jennings, Powell, Armstrong, Sturt, & Dale, 2009). Insufficient research has been conducted pertaining to African American men with regard to self-care management of type 2 diabetes.

I conducted this DNP project at a primary care office setting and included African American men as the participants to determine if their self-efficacy was improved after receiving diabetes self-care education.

Role of the DNP Student

I am an occupational health nurse who has worked at the same site for 28 years. Due to the nature of work conducted at the site, the employee population is approximately 90% male. Approximately 40% of the men are African American. The average age of the population is 53 years old. I have treated both African American and Caucasian men for type 2 diabetes. It has been my experience that the African American men have had more complications and a harder time self-managing their diabetes than their Caucasian counterparts. This led me to research the reasons for this observation, and I discovered the lack of research involving African American men and self-care management of diabetes. That is when I decided that I would concentrate on the topic of diabetes for my DNP project.

My role in the DNP project was to help recruit participants for the project, provide pre- and posttesting via questionnaires, and provide participants with a diabetes self-education program. The participants were recruited by staff from the primary care office where the DNP project was completed. Diabetes runs in my family, so I have always had an interest in knowing as much about it as possible. Throughout my life I have been told that I have prediabetes or that my glucose levels are borderline, which has been one of the biggest motivations for me to exercise and eat healthfully. I have been able to maintain my blood glucose levels at normal rates for more than 30 years. I realize

that genetics predisposes persons to diabetes and that cultural influences are involved. I did not let these factors affect me in any way concerning the findings of the project.

Summary

In this DNP project I addressed the gap-in-practice that exists concerning African American men and diabetes while addressing the issue of the limited number of studies involving diabetes and African American men. The conceptual models used to direct this project were Orem's self-care theory and Bandura's self-efficacy theory. African Americans continue to be one of the minority groups most effected by diabetes in terms of prevalence and poor outcomes. The diabetes education training of this DNP project increased the knowledge, self-care management, and the self-efficacy of African American men with type 2 diabetes.

Section 3: Collection and Analysis of Evidence

Introduction

Despite the health disparities that exist between African Americans and non-Hispanic Caucasians surrounding diabetes, there is a lack of research involving African American men. African American men with type 2 diabetes encounter significant challenges to maintaining optimal health (Hawkins et al., 2015). Research has shown that self-efficacy of persons with diabetes can be improved by planned implementation of a diabetes self-management education program; however, there is a lack of research involving African American men and diabetes self-management care. Further research in this area is warranted.

Diabetes self-care management is recognized as an essential component to achieving optimal health outcomes. It is a critical option for care considering the cost of diabetes and the long-term effects of type 2 diabetes (Jennings, Powell, Armstrong, Sturt, & Dale, 2009). Behavioral change does not come from knowledge alone, it is also a prerequisite to improving self-efficacy and changing behaviors (D'Eramo-Melkus et al., 2004). Insufficient research has been conducted pertaining to African American men about self-care management of type 2 diabetes.

I conducted this DNP project at a primary care office setting and included African American men as the participants to determine if their self-efficacy was improved after receiving diabetes self-care education.

In Section 3 I will discuss the practice focused question; the sources of evidence; the methodology; the population; and the data collection, analysis, and synthesis. I will conclude the section with a summary.

Practice Focused Question

The guiding practice-focused question for this doctoral project was: Will the knowledge, self-care management, and self-efficacy of African American men with type 2 diabetes improve after implementation of a diabetes self-care education program?

In this DNP project I addressed the gap-in-practice that exists involving African American men and self-care management of diabetes. According to the AADE (2008), persons with diabetes can successfully manage the disease on their own if they use diabetes self-care activities.

Sources of Evidence

The evidence for this project came from two sources: a literature review of research on best practices for African American men with type 2 diabetes and a pretest/posttest of diabetes knowledge, self-care management, and self-efficacy before and after implementation of the DSME program. I performed a systematic search to retrieve peer-reviewed articles addressing self-care management among African American men diagnosed with type 2 diabetes. I used Academic Search Complete (EBSCO), ERIC (EBSCO), Science Direct (Elsevier), MEDLINE (OVID), and PsycINFO to search for potentially eligible studies from January 1994 to December 2016. I used a combination or variation of the following keywords (a) *type 2 diabetes management*; (b) *self-care*

management; (c) *African American men, black*; (d) *diabetes, T2DM, diabetes mellitus, and*; (e) *men's health and type 2 diabetes*.

I chose studies based on the following inclusion criteria: (a) studies involved African American men; (b) diabetes self-management interventions targeting improvement of health outcomes, and; (c) sample participants had a diagnosis of type 2 diabetes. I excluded studies if they were theoretical studies that did not include African American men with type 2 diabetes or were studies that did not address male involvement and participation in type 2 diabetes research. I identified 126 articles initially 50 met the criteria. Out of the 50 articles only 15 gave a clear indication pertaining to how many African American men and women were in the study. Nine of the studies included African American men.

Peyrot and Rubin (1994) stated that an evaluation of the effectiveness of a diabetes self-care management education program is essential for assessing self-efficacy. Data collection for this project was done using pre- and posttest questionnaires to determine the effectiveness of diabetes self-care education. No data was collected until approval was received from the Walden University Institutional Review Board (IRB).

Gumbs (2012) showed the significance of diabetes education in promoting self-care behaviors among African American women with type 2 diabetes using an exploratory design. A cross-sectional survey design was employed by Bernal, Woolley, Schensul, and Dickinson (2000) to explain modest levels of self-efficacy among the African American women population. Kumar (2007) used Orem's self-care deficit theory to enhance a client's ability to self-manage her diabetes. In a randomized control

study, Moriyama et al. (2009) concluded that self-management education works successfully in relation to patients' behavior modification skills, degree of goal attainment, and self-efficacy, which in turn improves their health outcomes. Walker, Stevens, and Persaud (2010) used a quasi-experimental pretest/posttest comparison group design to show significantly increased knowledge among intervention group participants between the pretest and posttest and the pretest and follow-up.

Methodology

Project Design

I employed a quasi-experimental design in this project. The project was conducted by the staff at the office of a primary care internist. I was able to assess the effectiveness of a diabetes education intervention aimed at increasing the self-efficacy of African American men aged 40 and over who are diagnosed with type 2 diabetes using the results of the study. Participants were divided into intervention and comparison groups by self-selection. Participants in the comparison group received usual care from staff at this primary care office. Usual care consists of advice on dietary control, exercise, personal hygiene, medications, and encouragement to follow their treatment regimen. Participants in the intervention group received the usual care and in addition received a diabetes self-care education program. Both groups received the pretest and the posttest presented by staff at the primary care site. Training was done weekly for 3 weeks on weight loss, medications, diet, exercise, monitoring, self-management strategies, and avoidance of complications.

Population

A group of 33 participants were recruited from the patient database of this primary care office by office staff. The staff placed posters n the primary care site waiting room explaining the study. Patients meeting the requirements of the study, African American men over 40 years of age diagnosed with type 2 diabetes, were contacted by staff during routine office visits or via telephone and asked to participate. When a patient decided to participate in the study, the patients were asked whether they wanted to be in the intervention group or comparison group. All information collected during the study remains confidential. Participants' names or any other personal identifiers were not used in any part of this study. All pretests and posttests were submitted directly to the office staff and were kept separate from medical records. Data were provided to me by the site at completion of the project. These data will be held for 5 years after the study has been conducted, after which it will be destroyed by office staff. Participants were offered the option to opt out of the project for any reason at any time.

The role of the Walden University IRB was to ensure that this research complied with the university's ethical standards as well as U.S. federal regulations and that any potential risks of the study were outweighed by the potential benefits (Walden University, 2016). I obtained permission prior to initiation of participant recruitment and data collection.

Instruments

I used three instruments in this project and they are described in detail below. Participants required approximately 60 minutes to complete all 3 instruments.

1. The Summary of Diabetes Self-Care Activities Measure (SDSCA)

This questionnaire is a brief yet reliable self-report measure of diabetes self-management across different components of the diabetes regimen. Those components are diet, exercise, blood sugar testing, foot care, smoking, self-care recommendations, and medications. According to Toobert, Hampson, and Glasgow (2000), the SDSCA has been demonstrated to be a multidimensional measure of diabetes self-management with adequate internal and test-retest reliability, and evidence of validity and sensitivity to change. The average inter-item correlations within scales were high (mean = 0.47), with the exception of specific diet; test-retest correlations were moderate (mean = 0.40). Correlations with other measures of diet and exercise generally supported the validity of the SDSCA subscales (mean = 0.23; Toobert et al., 2000).

2. Diabetes Knowledge Test (DKT)

   The DKT is a two-part 23-item questionnaire that measures diabetes knowledge. It can be self-administered, has a 6th grade readability level, and the administration time is 15 minutes (Fitzgerald et al., 1998).

3. Self-Efficacy for Diabetes

   This 8-item scale has an internal consistency reliability of 0.828 and was administered pre and post to demonstrate change after education (Lorig, Villa, & Armas, 2009).

Data Collection

Data were collected at two points by office staff: baseline and 4 week follow-up at the primary care office site. Office staff administered and collected the questionnaires.

After completing the self-care diabetes educational program, the intervention group took a posttest. The comparison group received the usual care and then completed the same pretest and posttest (after 4 weeks) as the intervention group. The participants completed the DKT as well as the SDSCA and the Self-Efficacy for Diabetes questionnaires. Both the SDSCA and the Self-Efficacy for Diabetes questionnaires were administered as self-completion questionnaires in paper-and-pencil form. Submission of the questionnaires represented consent to use the information in the project. This was indicated on the questionnaires. I used a Likert scale for scoring the Self-Efficacy for Diabetes questionnaire. I computed the means of the SDSCA items. The staff and I treated all questionnaires and information collected in association with this project in a confidential manner.

Data Analysis

The office staff transferred data from the paper format to an electronic file for analysis. I performed data analysis using the Statistical Package for Social Sciences (SPSS). When I compared the baseline data and the scores of the respective scale scores between the intervention group and the comparison group, I performed an independent *t*-test. The significance level was set at 0.05 for both the intervention group and the comparison group. To deal with missing information, I used linear trend at point, a more robust method than simply replacing with the mean. When I dealt with outliers, I either discarded the outliers or kept the outliers in, and the method I used will be addressed in Section 4 under limitations/conclusions/need for further research. Using data analysis

methods that have already been shown to be effective increased the validity and reliability of this project.

Summary

The lack of research involving African American men with diabetes is an issue that needs to be addressed. The literature showed that self-efficacy of persons can be improved by implementation of a diabetes self-management education program. Participants in the intervention group were given training on weight loss, medications, diet, exercise, monitoring, self-management strategies, and avoidance of complications over a 4-week period. Those in the comparison group did not receive this training. In this project I tried to determine if the self-efficacy of African American men could be improved through a diabetes self-management education program. The use of comparison and intervention groups provided a way to measure the success of the intervention. This project will greatly help in addressing the gap-in-practice that exists involving African American men and self-care management of diabetes.

Section 4: Findings and Recommendations

Introduction

Type 2 diabetes continues to be a major risk for African American men, more than twice that for Caucasians (National Diabetes Clearing House, 2014). African American men also have a greater prevalence of type 2 diabetes when compared to Black women and Whites (CDC, 2016). This gap-in-practice needs to be addressed. The practice focused question of this doctoral project was: Will the knowledge, self-care management, and self-efficacy of African American men with type 2 diabetes improve after implementation of a diabetes self-care education program? The purpose of this project was to address the gap-in-practice that exists for African American men who are disproportionately affected by type 2 diabetes.

The sample for this project was 33 African American men between the ages of 40 and 65. Participants self-selected into either the control group or intervention group. The control group had 18 participants with an average age of 53.3 years. The intervention group had 15 participants with an average age of 49.2 years. All participants completed the 4-week project.

Three instruments were used to collect data. The DKT, the SDSCA, and the Self-Efficacy for Diabetes. The office staff administered the DKT, the SDSCA, and the Self-Efficacy for Diabetes questionnaires as self-completion pretests and posttests in pencil and paper form. I analyzed data using the Statistical Package for Social Sciences (SPSS) version 21. I used the independent *t*-test to evaluate mean scores between pretest and posttest scores.

Findings

I analyzed knowledge using the independent *t*-test to evaluate the mean knowledge scores on the DKT between the control group and the intervention group. Table 1 shows the mean score on the DKT for the control group pretest was 16.78 (SD = 2.92). The mean score on the DKT for the control group posttest was 16.11 (SD = 3.82). There was no statistically significant difference between the pretest and posttest scores for the control group (p = .286). The mean score on the DKT for the intervention group pretest was 16.33 (SD = 2.58), while the mean score on the DKT for the intervention group posttest was 17.53 (SD = 3.07). There was a statistically significant difference between pretest and posttest scores for the intervention group (p = .003). The difference between the means are most likely due to the intervention group receiving diabetes education.

Table 1

Diabetes Knowledge Test Pre- and Posteducational Intervention

	Mean	N	Std. Deviation	Std. Error Mean
Control Pretest	16.7778	18	2.92163	.68864
Control Posttest	16.1111	18	3.81774	.89985
Intervention Pre	16.3333	15	2.58199	.66667
Intervention Post	17.5333	15	3.06749	.79202

I measured self-efficacy by use of the Self-Efficacy for Diabetes questionnaire, which was administered to participants prior to the start of the project and at completion of the project. I analyzed scores using the independent *t*-test to evaluate the mean scores. Table 2 shows the mean self-efficacy score for the control group pretest was 6.15 (SD =

.556) while the mean score posttest was 6.06 (SD = .608). There was no statistically significant difference between pretest and posttest scores for the control group (p = .208). The self-efficacy score for the intervention group pretest was 5.81 (SD = .593) while the mean score posttest was 6.01 (SD = .601). There was a statistically significant difference between pretest and posttest scores for the intervention group (p = .001). The difference between the means are most likely due to the intervention group receiving diabetes education.

Table 2

T-Test Self-Efficacy for Diabetes Pre and Posteducational Intervention

	Mean	N	Std. Deviation	Std. Error Mean
Control Pretest	6.1550	18	.55616	.13109
Control Posttest	6.0583	18	.60805	.14332
Intervention Pre	5.8107	15	.59390	.15335
Intervention Post	6.0107	15	.60114	.15521

I measured self-care management by use of the SDSCA, a reliable self-report measure of diabetes self-management across different components of the diabetes regimen. In this project, I specifically looked at diet, exercise, medications, blood sugar testing, and foot care. The SDSCA was administered to participants in the control group prior to the start of the project, and then again 4 weeks later at the completion of the project. I analyzed scores using the independent *t*-test to evaluate the mean scores.

The diet component of the SDSCA measures general diet, specific diet, and days a week on diet. Table 3 shows the mean for general diet pretesting was 4.53 (SD = .946), a specific diet mean of 4.19 (SD = 1.264), and a days on diet mean of 4.22 (SD = .178).

There was no statistically significant difference between pretest and posttest scores for any of the diet components of the SDSCA, as can be seen by the following p values: (1) general diet (p = .790); (2) specific diet (p = .263); and (3) diet days (p = .495). These findings mean that members of the control group did not change their dietary habits during the project.

The mean score of the control group for the exercise component of the SDSCA pretest was 3.75 (SD = .324). The mean score for exercise posttest was 3.52 (SD = .322). There was no statistically significant difference between pretest and posttest scores for the control group (p = .057). Members of the control group did not increase their amount of exercise from the beginning of the project to the completion of the project. The difference between pretest and posttest means are likely due to chance.

The next component of the SDSCA was the medication section. The question asked was: on how many days of the last 7 days did you take your diabetes medication? The mean score of the control group pretest was 6.77 (SD = .427) and the mean score at posttest was 7.00 (SD = .000). This was a statistically significant increase in the use of medications for the control group (p = .042). A possible explanation for this increase could be the short time frame of the study and the participants remembering that they would be asked this question.

The blood sugar testing component of the SDSCA asked: how many of the last 7 days did you test your blood sugar the number of times recommended by your health care provider. The mean score of the control group pretest was 6.52 (SD = .554) and the mean

score posttest was 6.77 (SD = .520). As represented by the *p* value (.024), this showed a statistically significant increase for testing blood sugars.

The final component of the SDSCA involved questions around foot care. The question asked was how many times in the last 7 days did you check your feet and inspect the inside of your shoes. The mean score of the control group pretest was 2.54 (SD = .581) and the mean score posttest was 2.71 (SD = .380). There was no statistically significant difference between the pretest and posttest means. This means that participants of the control group did not change their foot care habits during the time frame of the project.

Table 3

T-Test Summary of Diabetes Self-Care Activities Measure Pre and Posteducational Intervention - Control Group

	Mean	N	Std. Deviation	Std. Error Mean
Control Pre-General Diet	4.5278	18	.94670	.22314
Control Post-General Diet	4.5556	18	1.12314	.26473
Control Pre-Specific Diet	4.1944	18	1.2641	.26550
Control Post-Specific Diet	4.0556	18	.98352	.23182
Control Pre-Diet Days	4.2222	18	1.06027	.24991
Control Post-Diet Days	4.1111	18	.75840	.17876
Control Pre-Exercise	3.7500	18	1.37467	.32401
Control Post-Exercise	3.5278	18	1.36632	.32204
Control Pre-Medications	6.7778	18	.42779	.10083
Control Post-Medications	7.0000	18	.00000	.00000
Control Pre-Blood Sugar Testing	6.5278	18	.55498	.13081
Control Post-Blood Sugar Testing	6.7778	18	.52081	.12276
Control Pre-Foot Care	2.5467	18	.58180	.13713
Control Post-Foot Care	2.7167	18	.38079	.08975

Office staff administered the SDSCA to participants in the intervention group prior to the start of the project, and again 4 weeks later after having received three weekly training sessions on diet, exercise, medications, blood sugar testing, and foot care. I analyzed scores using the independent *t*-test to evaluate the mean scores.

Table 4 shows results for the intervention group. The mean for general diet pretest was 4.26 (SD = .677), a specific diet mean of 3.56 (SD = .842), and a days on diet mean of 3.33 (SD = 1.175). The posttest mean for general diet was 4.66 (SD = .957), a specific diet mean of 4.00 (SD = .801), and a days on diet mean of 3.53 (SD = 1.060). The general diet mean (p = .013) and the specific diet mean (p = .007) showed statistically significant differences between pretest and posttest means, while the days on diet mean (p = .082) did not show any statistically significant differences. These findings

can be interpreted that although the intervention group did not increase the number of days they followed the prescribed diet, they did make better general and specific diet choices on the days that they did follow the prescribed diet.

The exercise component of the SDSCA also showed a statistically significant difference (p = .041) between the pretest scores mean (3.10) and the posttest scores mean (3.23). The benefit of the educational intervention can be seen by the intervention group's increase in the amount of exercise after having received the educational intervention.

When it came to taking medications, the intervention group's pretest score mean was 6.8 (SD = .560) and the posttest score mean was 7.0 (SD = .000). There was no statistically significant change (p = .189) between pretest and posttest means. This could be attributed to the very high pretest mean of the participants in the intervention group, meaning that the participants in the group were already at a very high level of medication compliance prior to the start of the project.

The blood sugar testing component of the SDSCA showed similar results. The pretest score mean for the intervention group was 6.53 (SD = .581) and the posttest mean for the intervention group was 6.8 (SD = .368). There was no statistically significant change (p = .056) between pretest and posttest means. The high compliance rate for blood sugar testing prior to the start of the project could account for these results.

The final component of the SDSCA was foot care. The pretest mean for the intervention group was 2.18 (SD = .224) and the posttest mean for the intervention group was 2.32 (SD = .271). There was a statistically significant difference (p = .044) between

the pretest and posttest means. This difference can be interpreted to mean that the educational intervention provided to the intervention group did in fact lead to a behavior change of increased foot care due to education.

Table 4

T-Test Summary of Diabetes Self-Care Activities Measure Pre- and Posteducational Intervention - Intervention Group

	Mean	N	Std. Deviation	Std. Error Mean
Intervention Pre-General Diet	4.2667	15	.67788	.17503
Intervention Post-General Diet	4.6667	15	.95743	.24721
Intervention Pre-Specific Diet	3.5667	15	.84233	.21749
Intervention Post-Specific Diet	4.0000	15	.80178	.20702
Intervention Pre-Diet Days	3.3333	15	1.17514	.30342
Intervention Post-Diet Days	3.533	15	1.06010	.27372
Intervention Pre-Exercise	3.1000	15	1.19821	.30938
Intervention Post-Exercise	3.2333	15	1.14746	.29627
Intervention Pre-Medications	6.8000	15	.56061	.14475
Intervention Post-Medications	7.0000	15	.00000	.00000
Intervention Pre-Blood Sugar Testing	6.5333	15	.58146	.15013
Intervention Post-Blood Sugar Testing	6.8000	15	.36839	.09512
Intervention Pre-Foot Care	2.1800	15	.22424	.05790
Intervention Post-Foot Care	2.3267	15	.27115	.07001

Diabetes self-management education is an essential element of diabetes care and helps people with diabetes maintain effective self-management throughout their life (ADA, 2015). The findings of this project coincide with that statement. This project asked the question: Will the knowledge, self-efficacy, and self-care management of African American men with type 2 diabetes increase by implementation of a diabetes self-care education program? The findings of this project suggest that the answer to that question is yes, as the knowledge, self-efficacy, and self-care management of participants

in the intervention group showed a statistically significant increase after receiving the diabetes education.

Implications

The outcomes of this project in the areas of knowledge, self-efficacy, and self-care management demonstrated the effectiveness of diabetes education. Individuals could take what they learned during this project and apply it in their lives. Heisler (2007) stated that a crucial issue for many patients with diabetes is accessing sufficient support on a regular basis for effective diabetes self-management. Participants from this study can also potentially function as support personnel for others in their community diagnosed with type 2 diabetes. The staff from this site where the project took place can take the learning and the outcomes from this project and build on them to enhance diabetes care to their clients. Care could be enhanced by incorporating the successful strategies of the project into routine care for African American men with type 2 diabetes. The findings of this project showed that diabetes education programs can increase African American men's knowledge, self-efficacy, and self-management of type 2 diabetes. This project has the potential to reduce the gap-in-practice for African American men and, therefore, provide a positive social change.

Recommendations

The results of this project showed that providing diabetes education to African American men has the potential to change behaviors that can eventually lead to better health outcomes for those with type 2 diabetes. According to Powers et al. (2015), the

number of patients who are referred to and receive diabetes self-management education are disappointingly small, despite the proven benefits and general acceptance of such training. Using this project I was able to show that this training can be provided in the clinical office setting, thus making diabetes education more available and increasing access for those patients who need it most. Integrating diabetes education into the setting of primary care provider offices has the potential to address the gap-in-practice that exists for African American men with type 2 diabetes.

Strengths, Limitations, and Recommendations

Strengths

DSME is not only a critical element of care for those with diabetes, but also has been shown to prevent or delay the complications of the disease (Haas et al., 2012). A strength of this project is that DSME was used as the intervention in this quality improvement project. Participants in the intervention group received three DSME sessions over a 3-week period. Another strength of this project was that the medical director/owner of this clinical site was fully supportive of this quality improvement initiative. This support and the success of the project has the potential to lead to the integration of type 2 diabetes prevention programs in this clinical office setting and increase the number of African American men who receive DSME.

Limitations

There were several limitations in this project. One limitation was the time frame of 4 weeks. Was this long enough to effectively change behaviors? Most health behavior changes need to be practiced consistently over long periods of time to impact health.

Sharma and Petoss (2012) stated that evaluations should be taken at 3, 6, and 12 months after the end of the project to see if initial health behavior changes were maintained. A 12-month follow-up period was impractical for this particular quality improvement project.

Another limitation of this project was the fact that a convenience sample was recruited. Terry (2012) stated that a convenience sample may not constitute a representative sample in relation to the general public. She also stated that recall bias can be a major issue because of participants' self-reporting on the assessment tools. The sample size was also small with a total of 33 participants across an intervention and a control group, which is rather small to generalize to the general population.

Recommendations

This project has shown the potential for positive behavioral changes in African American men with type 2 diabetes. Future projects should be done using a larger sample size and a longer time frame in order to evaluate if positive behavioral changes due to receiving DSME were maintained over time. Further studies could help to identify what specific education strategies work best for this particular population. Finding working strategies is important. Health care providers can incorporate these evidence-based strategies into their primary care practice when treating this population. The overall outcome could be to decrease the gap-in-practice that exists for African American men with type 2 diabetes.

Section 5: Dissemination Plan

Introduction

According to the NIH (Glasgow et al., 2007), dissemination is the targeted distribution of information and intervention materials to a clinical practice audience with the intent to spread knowledge and the associated evidence-based interventions. Timmins (2015) stated that in the domain of nursing, dissemination is more complex because it requires the research message to reach the nurse. DNP graduates are well prepared to disseminate the findings of their projects. According to the AACN (2006) practice-focused doctoral programs (i.e., DNP programs) are designed to prepare experts in specialized advanced nursing practice. Curricular focus is on EBP, the application of high-quality research findings to the care of patients in the real world.

I disseminated the results of this project orally to the office nursing staff via a power point presentation during a monthly luncheon seminar. Local nurses from other nearby primary care offices were invited and attended. A question and answer session was available at the end of the presentation. I chose this method because it best fit the needs of the organization. Providing this same presentation to local hospitals and other primary care settings would also help to disseminate the findings of the project.

Written dissemination of the findings of this project through a peer-reviewed journal in order to reach nurses in similar practice settings would be an acceptable method of dissemination. Submitting an abstract to journals would provide a means of getting the information to nurses that might be interested in the findings of the project. A final method of disseminating the results of this project would be to use social media.

Many nursing organizations, as well as diabetes organizations, maintain sites on the web. Ultimately, the goal of nurses is to ensure that the advances achieved through research become the new standards of care.

Analysis of Self

Practitioner

I have grown as a practitioner because of this DNP program. According to Zaccagnini and White (2011), the additional education at the doctoral level enables nurse practitioners to help their patients navigate the complex healthcare environment. The leadership skills I have gained will enable me to influence and collaborate with other health care professionals and facilities to enhance treatment for type 2 diabetic patients. This project has shown that an educational intervention for African American men with type 2 diabetes can be successful. I feel better prepared to help lead the integration of diabetes prevention programs in primary care settings, thus increasing the number of at risk persons who will receive this training.

Scholar

As a scholar, my biggest growth has been in my ability to engage in evidence-based practice as a result of leadership skills obtained from the DNP program. Terry (2012) stated that this ability is what differentiates research-focused doctoral programs from the DNP program. The DNP program prepared me to translate evidence into clinical practice. I was able to develop a diabetes education program that was based on theoretical frameworks. This educational program has the potential to help reduce the health disparity experienced by African American men with type 2 diabetes.

Project Manager

The management of this DNP project was a unique learning experience. I have been involved in many projects as a team member, but never as the project manager. I was able to reflect on my leadership style, and with the help of my preceptor and instructors, also able to plan, implement, and disseminate my DNP project.

My experiences in the DNP program as well as during the DNP project have made me realize that there is always something new to learn. The strengths and weaknesses with which I entered the DNP program are not my current strengths and weaknesses. My professional growth has been enhanced by this program. I have greatly increased my leadership and communication skills. My DNP project helped me to obtain in-depth knowledge about diabetes through both literature review and collaboration with other providers. My plan is to continue to build upon these skills and become a mentor to those entering the profession of nursing.

Summary

In this DNP project I evaluated the effectiveness of a diabetes self-management education intervention for African American males with type 2 diabetes. The literature showed that diabetes self-care management is recognized as an essential component for optimal health outcomes for type 2 diabetics. The literature also showed a need to improve the self-care practices of African American men with type 2 diabetes. The findings of this project showed that not only did providing diabetes education to African American men have the potential to change behaviors that can eventually lead to better health outcomes for those with type 2 diabetes, but also that this training could be

provided in the clinic office setting. This project has the potential for positive social change by increasing the number of African American men at risk of diabetes who receive diabetes education.

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Appendix A: The Summary of Diabetes Self-Care Activities Measure (SDSCA)

The Summary of Diabetes Self-Care Activities

The questions below ask you about your diabetes self-care activities during the past 7 days. If you were sick during the past 7 days, please think back to the last 7 days that you were not sick.

Diet

1. How many of the last **seven days** have you followed a healthful eating plan?

☐0 ☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

2. On average, over the past month, how many **days per week** have you followed your eating plan?

☐0 ☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

3. On how many of the last **seven days** did you eat five or more servings of fruits and vegetables?

☐0 ☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

4. On how many of the last **seven days** did you eat high fat foods such as red meat or full-fat dairy products?

☐0 ☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

Exercise

5. On how many of the last **seven days** did you participate in at least 30 minutes of physical activity? (Total minutes of continuous activity, including walking).

☐0 ☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

6. On how many of the last **seven days** did you participate in a specific exercise session (such as swimming, walking, biking) other than what you do around the house or as part of your work?

☐0 ☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

Blood Sugar Testing

7. On how many of the last **seven days** did you test your blood sugar?

☐0 ☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

8. On how many of the last **seven days** did you test your blood sugar the number of times recommended by your health care provider?

☐0 ☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

Foot Care

9. On how many of the last **seven days** did you check your feet?

☐0 ☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

10. On how many of the last **seven days** did you inspect the inside of your shoes?

☐0 ☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

Smoking

11. Have you smoked a cigarette - even one puff - during the past **seven days**?

☐0 No

☐1 Yes → 11b. If yes, how many cigarettes did you smoke on an average day?

Number of cigarettes: _____

Self-Care Recommendations

1a. Which of the following has your health care team (doctor, nurse, dietician, or diabetes educator) advised you to do? **Please check all that apply.**

- ☐ 1 Follow a low-fat eating plan
- ☐ 2 Follow a complex carbohydrate diet
- ☐ 3 Reduce the number of calories you eat to lose weight
- ☐ 4 Eat lots of food high in dietary fiber
- ☐ 5 Eats lots (at least 5 servings per day) of fruits and vegetables
- ☐ 6 Eat very few sweets (for example: desserts, non-diet sodas, candy bars)
- ☐ 7 Other (specify): _____
- ☐ 8 I have not been given any advice about my diet by my health care team

2a. Which of the following has your health care team (doctor, nurse, dietician, or diabetes educator) advised you to do? **Please check all that apply.**

- ☐ 1 Get low level exercise (such as walking) on a daily basis.
- ☐ 2 Exercise continuously for at least 20 minutes at least 3 times a week.
- ☐ 3 Fit exercise into your daily routine (for example, take stairs instead of elevators, park a block away and walk, etc.)
- ☐ 4 Engage in specific amount, type, duration and level of exercise.
- ☐ 5 Other (specify): _____
- ☐ 6 I have not been given any advice about exercise by my health care team

3a. Which of the following has your health care team (doctor, nurse, dietician, or diabetes educator) advised you to do? **Please check all that apply.**

- ☐ 1 Test your blood sugar using a drop of blood from your finger and a color chart.
- ☐ 2 Test your blood sugar using a machine to read the results.
- ☐ 3 Test your urine for sugar.
- ☐ 4 Other (specify): _____
- ☐ 5 I have not been given any advice either about testing my blood or urine sugar level by my health care team

4a. Which of the following medications for your diabetes has your doctor prescribed? **Please check all that apply.**

- ☐ 1 An insulin shot 1 or 2 times a day
- ☐ 2 An insulin shot 3 or more times a day
- ☐ 3 Diabetes pills to control my blood sugar level
- ☐ 4 Other (specify): _____
- ☐ 5 I have not been prescribed either insulin or pills for my diabetes

Diet

5a. On how many of the last **seven days** did you space carbohydrates evenly through the day?

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7

Medications

6a. On how many of the last **seven days** did you take your recommended insulin injections?

☐ I do not use insulin injections. ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7

7a. On how many of the last **seven days** did you take your recommended number of diabetes pills?

☐ I do not use diabetes pills. ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7

Foot Care

8a. On how many of the last **seven days** did you wash your feet?

☐0 ☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

9a. On how many of the last **seven days** did you soak your feet?

☐0 ☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

10a. On how many of the last **seven days** did you dry between your toes after washing?

☐0 ☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

Smoking

11a. At your last doctor's visit, did anyone ask about your smoking status?

☐0 No
☐1 Yes

12a. If you smoke, at your last doctor's visit, did anyone counsel you about stopping smoking or offer to refer you to a stop-smoking program?

☐0 No
☐1 Yes
☐2 Do not smoke

13a. When did you last smoke a cigarette?

☐1 More than two years ago or never smoked
☐2 One to two years ago
☐3 Four to twelve months ago
☐4 One to three months ago
☐5 Within the last month
☐6 Today

Appendix B: The Diabetes Knowledge Test (DKT)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

* Correct answer

Appendix C: Self-Efficacy for Diabetes

Self-Efficacy for Diabetes

We would like to know how confident you are in doing certain activities. For each of the following questions, please choose the number that corresponds to your confidence that you can do the tasks regularly at the present time.

1. How confident do you feel that you can eat your meals every 4 to 5 hours every day, including breakfast every day?

not at all confident | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | totally confident

2. How confident do you feel that you can follow your diet when you have to prepare or share food with other people who do not have diabetes?

not at all confident | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | totally confident

3. How confident do you feel that you can choose the appropriate foods to eat when you are hungry (for example, snacks)?

not at all confident | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | totally confident

4. How confident do you feel that you can exercise 15 to 30 minutes, 4 to 5 times a week?

not at all confident | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | totally confident

5. How confident do you feel that you can do something to prevent your blood sugar level from dropping when you exercise?

not at all confident | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | totally confident

6. How confident do you feel that you know what to do when your blood sugar level goes higher or lower than it should be?

not at all confident | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | totally confident

7. How confident do you feel that you can judge when the changes in your illness mean you should visit the doctor?

not at all confident | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | totally confident

8. How confident do you feel that you can control your diabetes so that it does not interfere with the things you want to do?

not at all confident | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | totally confident

Scoring

The score for each item is the number circled. If two consecutive numbers are circled, code the lower number (less self-efficacy). If the numbers are not consecutive, do not score the item. The score for the scale is the mean of the six items. If more than two items are missing, do not score the scale. Higher number indicates higher self-efficacy.

Characteristics

Tested on 186 subjects with diabetes.

No. of items	Observed Range	Mean	Standard Deviation	Internal Consistency Reliability	Test-Retest Reliability
8	1-10	6.87	1.76	.828	NA

Source of Psychometric Data

Stanford English Diabetes Self-Management study. Study reported in Lorig K, Ritter PL, Villa FJ, Armas J. Community-Based Peer-Led Diabetes Self-Management: A Randomized Trial. The Diabetes Educator 2009; Jul-Aug;35(4):641-51.

Comments

This 8-item scale was originally developed and tested in Spanish for the Diabetes Self-Management study. For internet studies, we add radio buttons below each number. There is another way that we use to format these items, which takes up less space on a questionnaire, shown also in the PDF document. This scale is available in Spanish.

References

Unpublished.

Self-Management Resource Center
711 Colorado Avenue
Palo Alto CA 94303
(650) 242-8040
smrc@selfmanagementresource.com
www.selfmanagementresource.com