

Interventions for African American Adults

With Type 2 Diabetes

by

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ABSTRACT

Purpose

The purpose of this project was to examine outcomes in African American adult patients with type 2 diabetes who received education and diet and exercise services compared to those who did not. Type 2 diabetes accounts for 90-95% of all diabetes cases, and is more prevalent among African Americans.¹ Diabetes was the fifth leading cause of death in the African American community.²

Methods

The project was a prospective cohort design. A population of 30 African American patients with type 2 diabetes, between the ages of 20-40, was identified in a physician's office through a review of administrative and laboratory data from the Managed Care database. Fifteen participants received education and diet and exercise services, while 15 participants did not. The intervention was two-fold with emphasis placed on pre- and post-diabetes education knowledge. Diabetes education curriculum was used in each of six sessions that included general diabetes self-care education, diet and exercise. Hemoglobin A1C (HA1C) value levels were measured at baseline and six months.

Results

The participants in the intervention group were found to have better glycemic control than the participants in the non-intervention group. The post-education survey demonstrated greater diabetes self-care knowledge than the pre-education survey.

Conclusions

Diabetes and diet and exercise education was associated with lower HA1C levels. Patients given diabetes self-care education and diet and exercise services were more likely to attain glycemic control (HA1C < 7.0%) than those who received no intervention.

Introduction

Type 2 diabetes is a special concern for African Americans. An estimated 2.7 million or 11.4% of all African Americans aged 20 years or older have diabetes.³ After adjusting for population age differences, African Americans are 1.8 times as likely to have type 2 diabetes as are Caucasians.⁴ Type 2 diabetes involves a complex, lifelong process requiring a large degree of self-management on the part of the individual. Self-management refers to behaviors that include diet, exercise, blood glucose monitoring and the use of medication aimed at achieving adequate metabolic control and preventing long-term complications.⁵ Patients with type 2 diabetes manage their condition on a day-to-day basis, through lifestyle choices, home glucose monitoring and medication. Patients, not clinicians, are responsible for the activities required for daily diabetes care, as they live with the disease 24 hours a day.

The purpose of this project was to examine outcomes in African American adult patients with type 2 diabetes, between the ages of 20-40, who received education and diet and exercise services, compared to those who did not. Racial and ethnic groups are at high risk for developing type 2 diabetes and complications of the disease in a disproportionate manner. Type 2 diabetes is two times more prevalent in adult African Americans than in the general U. S. population.⁶ African Americans are more likely to suffer from complications such as retinopathy, renal failure and neuropathy, resulting in blindness, hemodialysis, heart disease, and lower extremity amputation.⁷ Any of these complications can affect their quality of life and place them at risk for early death.⁸ In 2013, the American Diabetes Association (ADA)

suggested that ongoing diabetes self-management education (DSME) is required for those with diabetes.⁹ Researchers have found that the benefits of DSME are improved knowledge, constructive self-care behaviors, and better clinical outcomes such as lowered HA1C levels, decreased risk of major complications.¹⁰

Methods

The project was a prospective cohort design. The intervention was two-fold with emphasis placed on pre- and post-diabetes education, with a diabetes education curriculum used in each of six sessions. The education consisted of diabetes self-care education, diet, exercise and medication.

A population of 30 African American patients with type 2 diabetes, between the ages of 20-40, was identified in the physician's office through a review of administrative and laboratory data from the Managed Care database associated with the local laboratory. Diagnosis was based on evidence of one or more outpatient claims with the ADA Classification and Diagnosis, 9th Revision, 2014; Clinical Modification (ICD-9-CM) code 250 x 0, or 250. x 2, or three or more office visits or on anti-diabetes drugs. Appendix A is the Diabetes Education Code Table which details the various services and CPT codes used for the participants.

A convenience sample was used to select the participants with a diagnosis of type 2 diabetes who received medical care at the physician's office for a six-month period, agreed to participate. The data collection period was March, 2014 through September, 2014. IRB approval was obtained prior to the start of the project. Participation in the project was voluntary, and no incentives or compensation were provided. This project compared the HA1C outcomes of

African Americans diagnosed with type 2 diabetes that received education and diet and exercise services to those patients who did not.

Using an interdisciplinary team approach, nurse practitioners, pharmacists, Certified Diabetes Educator and dieticians provided out-patient nutrition and exercise counseling, education, resource referrals, support and consultations. The emphasis of the free diabetes support clinic was placed on pre- and post-diabetes education in the community. An ongoing curriculum was developed and each session was about health, diet and exercise and medication. The free diabetes support clinics were used to assess and educate individuals diagnosed with diabetes and/or their family members.

The first diabetes support clinic met weekly from 12:00 p.m. - 1:00 p.m. In order to accommodate the schedules of the patients, the community sessions were held on Thursdays, Fridays and Saturdays, respectively. For continuity of care, all of the clinic sessions had the same format. A different aspect of diabetes was taught each week or session, as follows:

- Week 1: Screenings assessed glucose, HA1C levels
- Week 2: Diabetes overview, definition, complications prevention and treatment
- Week 3: Lifestyle changes, nutrition treatment plan and exercise
- Week 4: Medication types, actions, purpose and side effects
- Week 5: Monitoring and measuring outcomes

Results

At baseline HA1C values were 7.0% and higher for patients in the non-education group (8.27%, n= 10) compared to patients in the education group (8.16%, n=12) (P=.024).

Significantly fewer patients in the non-education group compared to the education group had glycolic control (30.0%, n= 8 vs. 35.9%, n= 11) (P=.023). The outcome variable in this project

was glycemic control as measured by HA1C. Erythrocyte exposure to circulating blood glucose begins a reaction between the glucose and the HA1C protein amino acid on the red blood cell membrane.¹¹ At six months follow-up, 42.1% (n=12) of the patients in the education group had HA1C values less than 7.0%, compared to 33.1% (n= 10) in the non-education group (P=.001). Reductions in HA1C levels between baseline and six months were also found to be statistically significant.

Discussion

The results of this project demonstrated that diabetes self-care education and diet and exercise for patients with type 2 diabetes impact clinical results. Healthcare providers need to be aware of factors contributing to the improvement of glycemic control in the African American community. This knowledge can be used to develop population specific initiatives and interventions for African Americans.

In this project, diabetes education was associated with lower HA1C levels. Participants provided with diabetes self-care education and diet and exercise services were more likely to attain glycemic control (HA1C < 7.0%) than those who receive no intervention. Opportunities for education interventions should be incorporated where ever possible. In addition, counseling to reduce the risk of disease can be effective and is feasible in real-world settings for individuals with risks of type 2 diabetes. Improved HA1C levels were achieved by patients who received education and diet and exercise interventions compared to those who did not, at both three- and six-month follow-ups. Education, as a standard of care, for patients with diabetes is suggested in the United States, as well as internationally.¹²

Implications and Relevance for Diabetes Educators

As a direct result of feedback from the group that received education and diet and exercise services, free diabetes support clinics were implemented for individuals diagnosed with type 2 diabetes in the community. During the first visit to the free diabetes support clinics, each individual received an education packet consisting of informational brochures about diet and exercise. They were also provided a Pre-Test Survey (Appendix B) to assess their knowledge of diabetes before attending the clinics. The Diabetes Assessment Form (Appendix C), Diabetes Follow-up Assessment Form (Appendix D), and Diabetes Support Clinic Evaluation/Patient Feedback Survey (Appendix E), as well as the Post-Test Survey (Appendix F), were used to gather and track patient assessment information. The Diabetes Support Clinic Evaluation form was used for feedback from the patients concerning their clinical experience. After evaluation of the results from the pre- and post-test surveys, it was determined that there was better knowledge and understanding among those who attended all of the educational sessions. The implementation of the free support clinics will lay the ground work for further in-depth studies to assist in establishing education guidelines for the care of individuals with type 2 diabetes and will offer guidance for healthcare providers.

This project supported results from previous studies that education, diet and exercise can improve clinical results in patients with type 2 diabetes. Patients who do not receive appropriate health education, diet and exercise services could miss an opportunity to achieve improved glycemic control. Education is likely the best intervention to help African Americans avoid the highly preventable complications associated with this disease.

There is convincing evidence that diabetes complications can be reduced through adequate self-care behaviors. Some researchers have found abnormally high HA1C levels (> 8%) among African Americans in their study.¹³ One reason for this may be that African Americans find self-care challenging because they must follow a complex daily regimen that requires them to make lifestyle changes concerning diet, exercise, medication management, blood glucose level monitoring and stress management. To address this problem, it is critical to further clinical understanding of factors that positively or negatively affect self-care behaviors in African Americans who have diabetes. Such understanding may promote the development of appropriate policies and interventions, helping to narrow the health disparities gap and promoting type 2 diabetes health and well-being in this group. Ongoing DSME should help those diagnosed with diabetes.

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Appendices

- A. Pre-Test Survey
- B. Diabetes Education Code Table
- C. Diabetes Assessment Form
- D. Diabetes Follow-Up Assessment Form
- E. Diabetes Support Clinic Evaluation/Patient Feedback Survey
- F. Post-Test Survey
- G. Statement of Original Work

Appendix A

PRE-TEST SURVEY

TRUE OR FALSE

1. When a person with diabetes feels very thirsty, is urinating frequently, feels tired, he/she may have high blood glucose or hyperglycemia.
2. When a person is experiencing a low blood sugar reaction, where they are sweaty, shaky and tired, you should give them a cup of orange juice with added sugar.
3. It is important to soak the feet if someone has diabetes.
4. Persons with diabetes are allowed to walk to the bathroom barefoot when the bathroom is very close.
5. As long as a person with diabetes does not eat sugar or foods containing sugar his/her blood glucose will be controlled.
6. It is very important that the frail senior person with diabetes eat enough food to provide adequate nutrition.
7. Eating the same amount of food at each meal with snacks at the same times each day helps control blood glucose for the person with diabetes.
8. Sugar-free foods are foods for the person with diabetes.
9. Persons with diabetes should never exercise if their blood glucose level is over 240.
10. Persons with diabetes should continue to exercise even if they are tired and short of breath.

Appendix B

**DIABETES EDUCATION CODE TABLE
(DIET, EXERCISE & MEDICATIONS)**

<u>CATEGORY</u>	<u>CPT CODE</u>	<u>DURATION</u>	<u>SUMMARY</u>
DIABETES EDUCATION	C0108- C0109	30 Minutes	Diabetes Outpatient Self- Management
	S9455	45-60 Minutes	Diabetes Management Program, Group Session; What is your Hemoglobin A1C? What is your Target?
HEALTH EDUCATION SPECIFIED TO MEDICATION	98960 - 98962	30 Minutes	Oral Diabetes Medication (Pills, Meal Planning, Exercise, Carbohydrate Counting)
	99071	30-45 Minutes	Education Supplies provided by the Doctor's Office
	S9445 - S9446	30 Minutes	Nurse Practitioner Services in a Group Setting
NUTRITION/DIET COUNSELING/EXERCISE	97802	30 Minutes	Medical Nutrition Therapy
	50315	45 Minutes	American Diabetes Association Recommends At least 150 minutes of Aerobic Exercise each Week. (It can be broken into 30- minute sessions 5 days a week.) Exercising every day is ideal!
OTHER CODES THAT CAN BE CONSTRUED AS HEALTH EDUCATION IN A PATIENT WITH DIABETES	99607	15 Minutes	Medical Therapy Management by a Pharmacist
	S0315	45-60 Minutes	Diabetes Management Program; Follow-Up Visit to Provider
	S0317	30 Minutes	Exercise Classes
	S9460	30 Minutes	Health & Behavior Interventions, Face-To-Face, Group (2 or more patients)

Appendix C

DIABETES FOLLOW-UP ASSESSMENT FORM

Date: _____

NAME: _____

HA1C: _____

Appendix D

DIABETES FOLLOW-UP ASSESSMENT FORM

Date: _____

NAME: _____

**What changes have you made as a result of participating in the
Diabetes Support Clinic?**

Appendix E

**Diabetes Support Clinic Evaluation/
Patient Feedback Survey**

Thank you for allowing our team to help you learn about and manage your diabetes. Please give us your feedback on the clinic. We will use your feedback to improve our services.

Questions	Strongly Agree 5	Agree 4	Neutral 3	Disagree 2	Strongly Disagree 1
1. Overall The clinic met my expectations.					
2. The program content was relevant to my needs.					
3. The instructors communicated clearly.					
4. The instructors answered my questions well.					
5. The instructors were knowledgeable.					
6. The classroom environment was conducive to Learning.					
7. I would recommend the clinic to my family and friends.					

My favorite part of the clinic was: _____

What I would change or add to the clinic is:

Comments:

Appendix F

POST-TEST SURVEYS

TRUE OR FALSE

11. When a person with diabetes feels very thirsty, is urinating frequently, feels tired, he/she may have high blood glucose or hyperglycemia.
12. When a person is experiencing a low blood sugar reaction, where they are sweaty, shaky and tired, you should give them a cup of orange juice with added sugar.
13. It is important to soak the feet if someone has diabetes.
14. Persons with diabetes are allowed to walk to the bathroom barefoot when the bathroom is very close.
15. As long as a person with diabetes does not eat sugar or foods containing sugar his/her blood glucose will be controlled.
16. It is very important that the frail senior person with diabetes eat enough food to provide adequate nutrition.
17. Eating the same amount of food at each meal with snacks at the same times each day helps control blood glucose for the person with diabetes.
18. Sugar-free foods are foods for the person with diabetes.
19. Persons with diabetes should never exercise if their blood glucose level is over 240.
20. Persons with diabetes should continue to exercise even if they are tired and short of breath.

APPENDIX G STATEMENT OF ORIGINAL WORK

Academic Honesty Policy

Capella University's Academic Honesty Policy ([3.01.01](#)) holds learners accountable for the integrity of work they submit, which includes but is not limited to discussion postings, assignments, comprehensive exams, and the dissertation or capstone project.

Established in the Policy are the expectations for original work, rationale for the policy, definition of terms that pertain to academic honesty and original work, and disciplinary consequences of academic dishonesty. Also stated in the Policy is the expectation that learners will follow APA rules for citing another person's ideas or works.

The following standards for original work and definition of *plagiarism* are discussed in the Policy:

Learners are expected to be the sole authors of their work and to acknowledge the authorship of others' work through proper citation and reference. Use of another person's ideas, including another learner's, without proper reference or citation constitutes plagiarism and academic dishonesty and is prohibited conduct. (p. 1)

Plagiarism is one example of academic dishonesty. Plagiarism is presenting someone else's ideas or work as your own. Plagiarism also includes copying verbatim or rephrasing ideas without properly acknowledging the source by author, date, and publication medium. (p. 2)

Capella University's Research Misconduct Policy ([3.03.06](#)) holds learners accountable for research integrity. What constitutes research misconduct is discussed in the Policy:

Research misconduct includes but is not limited to falsification, fabrication, plagiarism, misappropriation, or other practices that seriously deviate from those that are commonly accepted within the academic community for proposing, conducting, or reviewing research, or in reporting research results. (p. 1)

Learners failing to abide by these policies are subject to consequences, including but not limited to dismissal or revocation of the degree.

Statement of Original Work and Signature

I have read, understood, and abided by Capella University's Academic Honesty Policy ([3.01.01](#)) and Research Misconduct Policy ([3.03.06](#)), including the Policy Statements, Rationale, and Definitions.

I attest that this dissertation or capstone project is my own work. Where I have used the ideas or words of others, I have paraphrased, summarized, or used direct quotes following the guidelines set forth in the *APA Publication Manual*.

Learner name
and date

Annette Caple, May 11, 2015

Mentor name
and school

Dr. JoAnn Manty, School of Nursing and Health Sciences