



Walden University
ScholarWorks

Walden Dissertations and Doctoral Studies

Walden Dissertations and Doctoral Studies
Collection

2015

Diabetes Self-Management Education Program

Lesa Faye Williams
Walden University

Follow this and additional works at: <https://scholarworks.waldenu.edu/dissertations>

 Part of the [Health and Medical Administration Commons](#)

This Dissertation is brought to you for free and open access by the Walden Dissertations and Doctoral Studies Collection at ScholarWorks. It has been accepted for inclusion in Walden Dissertations and Doctoral Studies by an authorized administrator of ScholarWorks. For more information, please contact ScholarWorks@waldenu.edu.

Walden University

College of Health Sciences

This is to certify that the doctoral study by

Lesa Williams

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

Review Committee

Dr. Stoerm Anderson, Committee Chairperson, Health Services Faculty
Dr. Janice Belcher, Committee Member, Health Services Faculty
Dr. Phyllis Morgan, University Reviewer, Health Services Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

Walden University
2015

Abstract

Diabetes Self-Management Education Program

by

Lesa Williams

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

Walden University

May 2015

Abstract

Diabetes is a devastating disease in American. The disease can cause chronic health comorbidities, and untreated diabetes has negative consequences for individuals and on our nation's economy. Newly diagnosed diabetics often have a lack of knowledge about the disease process. The purpose of this project was to design and implement a diabetes educational program to enhance participants' knowledge about diabetes management and self-care using the Health Belief Model. Diabetes Self-Management Education (DSME) is critical in improving patient outcomes and the prevention of diabetes related complications. Participation in a standardized diabetic educational intervention will improve patient knowledge, as measured by a reliable and valid pretest and posttest questionnaire. The objective was to develop a DSME curriculum that will be recognized and approved by the American Diabetes Association. A one group pretest /posttest method was employed with ten participants. A sample of ten participants between the age of 22 years old through 65 years old included eight women and two men all identified as African American. Upon completion of the 5-week DSME program, participants were noted to have started participating in weekly exercise or increased the number of days of exercise from 2 days to 3 days per week. Participants also noted a decrease in their systolic and diastolic blood pressure reading. Participants noted on average a 2-3 pound weight loss. Significant improvements were shown on both the knowledge scale and confidence scale of the modified Diabetes Project Participation Questionnaire. Results from this project indicated that participants applied knowledge from the DSME program to improve their own health status.

Diabetes Self-Management Education Program

by

Lesa Williams

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

Walden University

May 2015

Dedication

To my parents Fedro and Rebecca Williams, who never gave up on me even after I became a teen mom, my sister Brenda who constantly encouraged me and typed all of my papers (even with little to no notice) during my educational journey, my niece Janequa, my brothers Fedro Jr, and Anthony just for caring, my daughter Shanekah just for being you and my biggest cheerleader, and my husband Anthony for tolerating our late night bed companion, my Mac Book Pro computer. I cannot forget my late night study buddy my awesome great-niece Olivia and handsome great-nephew Troy.

Acknowledgments

I acknowledge my family, my preceptors Dr. Somi Nagaraj DNP, from Roseland Community Hospital, Cynthia Nkuku MSN from Loving Hearts Home Health Ltd. and Dr. Denise Bockwoldt PhD from Mt. Sinai Medical Center, my mentor Dr. Mary Horton-Elliott PhD, and the staff of Roseland Community Hospital for their support and assistance throughout the project process.

Thank you!

Table of Contents

List of Tables	iv
List of Figures	v
Section 1: Nature of the Project	1
Background of Problem	3
Problem Statement	3
Purpose of the Project	4
Specific Measurable Objectives to Be Achieved	5
Significance of the Project	6
Project Questions	8
Significance of the Project	8
The Diabetes Epidemic in African American Communities	8
The Efficacy of DSME in African American With Diabetes	9
The Efficacy of Translating Health Initiatives in Communities	10
Definitions of Terms	11
Assumptions and Limitations	13
Summary	14
Section 2: Literature Review	15
Diabetes Education in the Literature	15
Statistics on Diabetes	17
Group Education Strategies for Diabetes Self-Management	17
Conceptual Models	18

Section 3: Methodology	20
Ethical and Administrative Approvals.....	20
Participants.....	21
Diabetes Self-Management Education Curriculum and Methods	22
Data Collection	24
Data Analysis	25
Reliability and Validity.....	25
Threats to Validity	25
Analytical Techniques to Answer Project Questions.....	26
Project Evaluation Plan.....	26
Summary	26
Section 4: Findings, Discussion, and Implications	28
Participant Characteristics	28
Health Status	28
Knowledge and Confidence.....	29
Summary and Evaluation of Findings.....	29
Discussion.....	30
Implications for Social Change Future Research and Practice.....	31
Project Strengths and Limitations.....	32
Analysis of Self.....	33
Section 5: Scholarly Product for Dissemination.....	36
Background.....	36

Purpose.....	38
Methods.....	40
Subjects.....	40
Measures.....	40
Data Analysis.....	41
DSME Program.....	42
Results.....	44
Discussion.....	45
Conclusion.....	48
Project References.....	49
References.....	52
Appendix A: Continuum of Care Trajectory for Diabetes Project Participation	
Questionnaire.....	58
Appendix B: Continuum of Care Trajectory for Diabetes Project Participation	
Questionnaire.....	63
Appendix C: Consent to Participate in Roseland Community Hospital Diabetes	
Self-Management Education Program.....	67
Appendix D: Roseland Community Hospital Referral Form.....	71
Appendix E: Roseland Community Hospital Diabetes Management & Lifestyle	
Education Program.....	73
Appendix G: Institutional Review Board Material Approval Letter.....	101
Appendix H: Institutional Review Board Approval to Conduct Research.....	104

List of Tables

Table 1. American Diabetes Association Requirements for Accreditation of a DSME Program and the Hospital's Plan to Meet the Requirements	7
Table 2. Demographic Characteristics of the Roseland Community.....	14

List of Figures

Figure 1. Conceptual Model: Health Belief Model19

Section 1: Nature of the Project

The effects of diabetes are devastating and crippling to the American society. It causes chronic disabilities and even death on a personal level and highly negative effects to the economy. The American Diabetes Association (ADA, 2013) defined diabetes as a chronic group of metabolic disorders that contribute to abnormally high blood glucose levels. The ADA asserted that abnormally high blood glucose levels are often due to the body's inability to produce a sufficient amount of insulin, the body's cells inability to respond to insulin or both.

Diabetes is characterized by the inability of the pancreas to produce and or utilize insulin, resulting in abnormally high blood glucose levels. This project is focused on Diabetes Mellitus Type II (T2DM), also known as noninsulin dependent diabetes mellitus (NIDDM), and the education that patients need to properly self-manage this chronic health condition within their home environment. Several factors are known to predispose people to diabetes. According to data from The National Diabetes Education Program (2009), obesity, physical inactivity, race/ethnicity, and family history are the main factors that contribute to people developing T2DM.

A 2014 report from the Centers for Disease Control and Prevention (CDC, 2014) concluded that in 2012 over 29.1 million Americans or 9.3% of the population have diabetes and of those, 8.1 million adult Americans are undiagnosed. While millions of Americans have an actual diagnosis of diabetes, approximately 86 million Americans 20 years and older received a diagnosis of prediabetes (CDC, 2014). In 2012, the estimated cost of diagnosing, and treating patients in the United States with diabetes was \$245

billion, which includes \$176 billion for direct medical care and \$69 billion for loss of productivity or indirect cost (CDC, 2014).

Patients who are newly diagnosed with diabetes are often afraid. This is because they lack of knowledge about the disease and the disease process and many do not know how to effectively manage their health. This is why diabetes self-management education (DSME) is the cornerstone to controlling blood glucose levels and as a result, reducing, and/or preventing diabetes related complications. Self-care behaviors, problem-solving, and developing decision making skills developing are all goals of self-care management (National Diabetes Education Program, 2009).

In order for patients to comprehend self-care management education, all information should be presented in a comfortable environment, in a language that is familiar to both the patient and the nurse educator. The health care professional that is presenting the information should have a basic understanding of what the patient already understands about the disease and the disease process. The health care professional must also be knowledgeable about diabetes and the disease process. Without these basic prerequisites, diabetes education may not be effective. The National Institute of Health (NIH, 2009) acknowledged that best education methods should include evidenced-based psychological and behavioral techniques to improve patient outcomes. Incorporating culturally and age appropriate programs has been shown to improve outcomes and that group education is effective (NIH, 2009).

Background of Problem

The number of individuals diagnosed with diabetes increased from 1.5 million in 1958 to approximately 18.8 million in 2010. According to ADA (2014), between 2010 and 2012 the number of people newly diagnosed with diabetes actually decreased from 1.7 million to 1.9 million new cases in 2012. In the period between 2008 and 2009, more than 18,000 American youth under the age of 20 years old were diagnosed with Type I diabetes and more than 5,000 American youth under the age of 20 were diagnosed with T2DM (CDC, 2014). The CDC also noted that in 2012, more than 200,000 Americans 20 years of age and under were diagnosed with Type I or Type II diabetes. Approximately 90-95% of adults with diabetes have T2DM (National Diabetes Statistic, 2011). Between 2010-2012, 14% of Americans with diabetes required daily insulin injections for treatment of their diabetes, 14.7 % required a combination of insulin injections and oral medications, 56.9 % required oral medication for treatment of their diabetes, and 14.4% did not require oral medications or daily insulin injections (CDC, 2014). Young (2011) estimated that annually, more than 25% of the patients with diabetes require hospitalization for uncontrolled diabetes. Given these data, the need for interventions to improve diabetes outcomes is clear.

Problem Statement

DSME is an important component in improving patient outcomes and preventing diabetes-related complications (Haas et al., 2012). DSME often begins at the bedside by Certified Diabetes Educators (CDE). CDEs are registered nurses and other healthcare professionals that have extensive knowledge about diabetes, prediabetes, and how to

prevent complications of diabetes. CDEs help people with prediabetes and diabetes to understand more about the disease process and how to effectively manage it (National Certification Board for Diabetes Educators, 2014). Not every hospital or clinical setting has CDEs on staff; but, many, including the project site described in this paper, plan to have staff become certified in the near future.

Purpose of the Project

The purpose of this project was to design and implement an interdisciplinary diabetes education outpatient-program to enhance participants' knowledge about diabetes management and self-care. Roseland Community Hospital (RCH) is where the DSME program was implemented using an interdisciplinary team approach. RCH is a 110-bed capacity, nonprofit, safety net hospital located on the far Southside within the City of Chicago. The main objective of this project was to develop a DSME curriculum that will be recognized and approved by the ADA. Haas et al. (2012) defined DSME as an ongoing process of facilitating the knowledge, skill, and ability necessary for diabetes self-care. DSME incorporates the needs, goals, and life experiences of the person with diabetes and is guided by evidence-based standards (Haas et al. 2012). The ADA endorsed 10 National Standards for DSME. This project is designed to assist RCH to meet ADA Standards 3 through 10 (Table 1), which are required to receive accreditation by the ADA.

The DSME team at RCH consists of a program coordinator, registered dietician, and a registered nurse. During Week 3 of the diabetes education curriculum, a RCH registered dietician facilitated the educational session and assisted participants with

understanding how to plan healthy meals, count carbohydrates, and how to select healthy snacks. During Week 4 of the diabetes education curriculum RCH was not able to provide a licensed pharmacist, therefore each participant came to class with a list of each of their prescribed medication(s). During this session participants were given the opportunity to ask questions about their medication regimen. However, all of the participants had knowledge about the type, purpose, classification, and action of each of their medication(s). The registered dietician is a full-time employee at RCH. I was not employed by RCH but served as program coordinator and presented various topics related to diabetes education and facilitated all sessions.

Specific Measurable Objectives to Be Achieved

DSME is an important strategy that can contribute to the reduction and or prevention of diabetes related complications. Evans (2010) asserted that keeping blood glucose levels within a normal range resulted in a 76% reduction in eye disorders, a 50% reduction in renal disease, and a 60% reduction in diabetic neuropathy. The overall objectives of DSME are to provide support for informed decision-making, self-care behaviors, problem solving, and active collaboration with the health care team and to improve clinical outcomes, health status, and quality of life (Haas et al. 2012). The CDC (2011) recommendations include keeping the fasting blood glucose between 100-125mg/dl and maintaining a blood glucose level between 140 mg/dl to 199 mg/dl two hours after eating a meal. The CDC also recommended patients maintaining their HgA1c between 5.7% and 6.4%.

Significance of the Project

In 2010, 73,000 American adults above the age of 20 years old required lower extremities amputations because of complications of diabetes (CDC, 2014). Data from the National Diabetes Fact Sheet (2011) explained that having a diagnosis of diabetes increases the probability of developing kidney disease, which can lead to kidney failure. The CDC identified diabetes as the seventh leading cause of death in the United States in 2010; additionally diabetes was listed as the cause of death or the underlying cause of death on more than 200,000 death certificates. According to the CDC in 2010 American adults over the age of 20 years old with diabetes were hospitalization for heart attacks 1.8 times higher than the same age group without diabetes, and the same age group required hospitalization for cerebral vascular accident 1.5 times higher than the same age group without diabetes.

Table 1

American Diabetes Association Requirements for Accreditation of a DSME Program and the Hospital's Plan to Meet the Requirements

Theme	ADA Standards	Hospital Plan to Meet ADA Standards
1. Internal Structure	The provider(s) of DSME will document an organizational structure, mission statement, and goals.	Hospital administration will be responsible for meeting this standard.
2. External Input	The provider(s) of DSME will seek ongoing input from external stakeholders and experts in order to promote program quality.	Hospital administration will be responsible for meeting this standard.
3. Access	The provider(s) of DSME will determine who to serve, how best to deliver diabetes education to that population, and what resources can provide ongoing support for that population.	Population to be served by this project includes patients or patient representative of the hospital with a diagnosis of diabetes or pre-diabetes.
4. Program Coordination	A coordinator will be designated to oversee the DSME program. The coordinator will have oversight responsibility for the planning, implementation, and evaluation of education services.	Somi Nagaraj, DNP, will serve as the Diabetes Self Management Education Program Manager. This DNP student will serve as the program coordinator.
5. Instructional Staff	One or more instructors will provide DSME. At least one of the instructors responsible for designing and planning DSME will be a registered nurse, registered dietitian, or pharmacist with training and experience pertinent to DSME.	This DNP student will provide DSME to the participants under the direct supervision of Somi Nagaraj, DNP
6. Curriculum	A written curriculum reflecting current evidence and practice guidelines, with criteria for evaluating outcomes, will serve as the framework for the provision of DSME.	This DNP student has designed and developed an evidenced based DSME curriculum
7. Individualization	The diabetes self-management, education, and support needs of each participant will be assessed by one or more instructors.	The Continuum of Care Trajectory for Diabetes Project Participation Questionnaire Pretest will serve as a pre-educational assessment tool. This will better assist the educational team with assisting participants with developing and individualized plan of care
8. Ongoing Support	The participant and instructor(s) will together develop a personalized follow-up plan for ongoing self-management support.	Participants are required to set weekly realistic goals after each educational session, and identify a support system that will assist with diabetes self-management (diabetes support group)
9. Patient Progress	The provider(s) of DSME will monitor whether participants are achieving their personal diabetes self-management goals and other outcome(s) as a way to evaluate the effectiveness of the educational intervention(s), using appropriate measurement techniques.	Participants will discuss whether their goals were met and identify any barriers that may have contributed to goals not being met. Participants will be encouraged to discuss if the DSME curriculum is beneficial to meet their individual learning needs.
10. Quality Improvement	The provider(s) of DSME will measure the effectiveness of the education and support and look for ways to improve any identified gaps in services or service quality using a systematic review of process and outcome data	Participants that complete all five sessions DSME curriculum will be required to complete The Continuum of Care Trajectory for Diabetes Project Participation Questionnaire Posttest

Note: ADA standards adapted from Hass et al. (2012).

Project Questions

1. Does DSME positively impact patient outcomes?
2. Will participation in a standardized diabetic educational intervention improve patient knowledge, as measured by a reliable and valid questionnaire?

Significance of the Project

The Diabetes Epidemic in African American Communities

The diabetes epidemic in African American communities is compounded by the population's lack of knowledge in relation to diet, diabetes self-care behaviors, and exercise. Diabetes overwhelmingly affects African American men and women more than any other ethnic or racial group. Between 2010 and 2012, approximately 13.2 % of the African American population above the age of 20 received a diagnosis of diabetes; whereas, during the same time period approximately 7.6% of the Caucasian population received the same diagnosis (CDC, 2014). The OMH (2014) citing recent data from the CDC (2013) concluded that in 2011, 20.7% of African American men were diagnosed with diabetes related visual impairment; whereas, 17.1% of Caucasian men were diagnosed with diabetes related visual impairment. Similarly, 21.4% of African American women were diagnosed with diabetes related visual impairment; whereas, 18.3% of Caucasian women were diagnosed with diabetes related visual impairment.

According to data from OMH (2014), treatment for end stage renal disease (ESRD) in 2008 was initiated for every 462 of 100,000 African American men and for every 305 of 100,000 African American women, whereas ESRD treatment was initiated

for every 171 of 100,000 Caucasian men and for every 131.2 of 100,000 Caucasian women. The OMH cited data from the CDC (2009) that concluded in 2009 every 4.5 per 1000 African Americans with diabetes required amputation of one or both lower extremities whereas every 2.3 per 1000 Caucasian Americans with diabetes required amputation of one or both extremities. Diabetes related complications are higher in the African American community. It is imperative that the African American communities receive education on diabetes management and self-care to reduce the risk of developing diabetes and to reduce or prevent the complications related to diabetes.

The Efficacy of DSME in African American With Diabetes

Tang, Funnell, Noorulla, Oh, and Brown (2012) conducted a study that included 60 participants with Type 2 diabetes, which comprised of 18 African American men and 42 African American women between the ages of 40 and 84 years. All of the participants had to have participated in a formal DSME program, and all participants were required to be under the care of a primary care provider (PCP). The study was to determine if the life style modifications that were made due to the knowledge gained from DSME program were being maintained.

Participants maintained improvement in the following areas: they noted a drop in their diastolic blood pressure from 80 mmHg to 75 mmHg, participants serum cholesterol levels dropped from 165 mg/dl to 149 mg/dl, participants reported eating a healthy diet 4 days per week instead of 3 days per week, and the participants reported monitoring their blood glucose levels 6 days per week instead of 5 days per week (Tang et al., 2012). According to Tang et al., participants did not show any significant changes in the

following areas: systolic blood pressure, HbA1c, weight, cholesterol levels (high and low density) and body mass index. Gumb (2012) in the context of enumerating the Diabetes Type 2 cases, which makes it the 6th leading cause of death, observed that this epidemic disproportionately affects African American women.

The Efficacy of Translating Health Initiatives in Communities

According to Feldstein and Glasgow (2008), the Practical, Robust Implementation and Sustainability Model (PRISM) is a comprehensive model for translating research into practice. PRISM was developed using concepts from the areas of quality improvement, chronic care, the diffusion of innovations, and measures of the population-based effectiveness of translation. PRISM evaluates how the health care program or intervention interacts with the recipients to influence program adoption, implementation, maintenance, reach, and effectiveness. The PRISM Model was used to develop the Diabetes Priority Program, which is a computer assisted quality improvement program. More than thirty primary care healthcare providers in Colorado used the program. After implementation of the Diabetes Priority Program, patient outcomes were improved in the area of patient centered self-management (Feldstein & Glasgow, 2008). The model will be useful in evaluating how the DSME program impacts the participants in order to influence its adoption as well as implementation and maintenance. It will also influence the reach and effectiveness of this program.

The key to diabetes prevention is early education within families, communities, and society. Education on healthy eating habits, exercise and healthy lifestyle should begin at an early age in the home environment. Parents, caregivers, and patients with

diabetes should attend a DSME program immediately after receiving a diagnosis of diabetes. Public as well as private schools should provide healthy breakfast and lunch and able-bodied children should be mandated to participate in physical education programs. Local governments should sponsor healthy lifestyle programs to educate the residents about chronic health conditions like diabetes, hypertension, and kidney disease. In order to communicate the importance of living a healthy lifestyle to the tween community, public service announcements (PSA) with information pertaining to healthy lifestyle and eating should be broadcasted on youth-targeted hip-hop television and radio.

This was project focused on the community of Roseland. Residents of the Roseland area, like many communities, have many barriers to living a healthy lifestyle. The two major barriers are that the community is in the middle of a food desert and has a high crime rate (Environment, Culture, and Conservation, 2011). From the end of September 2013 to the end of October 2013, more than 57 violent crimes were committed within the Roseland Community (Chicago Crime Report, 2013). In August of 2013 the first and only major grocery store opened within the Roseland Community. This community has been without a major source of fresh meats, fruits and vegetables for several years. The food desert and high crime rate can hinder the potential outcomes from DSME due to participants' inability to purchase healthy foods and fear of going outside of their home environment to exercise.

Definitions of Terms

Diabetes self-management education (DSME): The ongoing process of facilitating the knowledge, skills, and ability necessary for diabetes self-care. DSME incorporates the

needs, goals, and life experiences of the person with diabetes and is guided by evidence-based standards (Funnell et al. 2010).

Food deserts: Defined by the United States Department of Agriculture as a part of the country that lacks access to fresh fruit, vegetables, and other healthful whole foods. The American Nutrition Association (2010) explained that the majority of the food deserts are often found in lower socioeconomic and impoverished areas.

The Health Belief Model: Used to focus on the patient's perceptions of the disease and disease process, the patients' health behaviors by examining: susceptibility of the health problem, severity, benefits, barriers and cues to action (McEwen & Wills, 2011).

Lifestyle modifications: Activities and or changes that a person performs in their daily life to improve their health.

Glycosylated hemoglobin (HbA1c): A blood test that shows the average blood glucose level from the previous 3 months. The HbA1c is used to shows how well the patient is controlling their diabetes.

Certified diabetes educator (CDE): Defined by the National Certification Board for Diabetes (2014) educators as a health care professional, not limited to the professional registered nurses, who have a comprehensive knowledge of and experience in diabetes management, prediabetes, and diabetes prevention. A CDE educates and supports people affected by diabetes to understand and manage their condition. Patient outcome is the posttest score participants receive on the Continuum of Care Trajectory for Diabetes Project Participation Questionnaire upon completion of the 5 -week DSME program.

Assumptions and Limitations

One limitation of this project is the limited reach, given that the project is concentrated on the Roseland community. The Roseland community is located on the far Southside within the City of Chicago. Table 2 is a summary of the demographic characteristics of the Roseland community (City Data, 2012). The size of the population and the type of population limits generalizability across all communities in the nation. The sample population used is representative of a wider range of communities given that the sample population was chosen at random. The results are relevant to similar populations regardless of the sample size. Another possible limitation is the use of the PRISM model.

Though PRISM is a good choice of the model for this project, it is relatively a new model and some of its weaknesses may still be hidden. So far there are no defects that have been identified in this model that may have a negative effect on the realization of the objectives of this project. The other limitation is that this study is limited especially in terms of generalizability across all communities in the nation, given that the study will be based at RCH and all the participants will be from this location. No biases have been identified that can affect the outcome of this study however this will continue to be evaluated.

Table 2

Demographic Characteristics of the Roseland Community

Characteristic	<i>N</i>	%
Community population	54,000	100%
African American	52,380	97%
Non-African American	1,620	3%
% living at or below the federal poverty level		27%
Median age in years by gender	Years	
Male	33	
Female	39	
Highest completed education level	<i>N</i>	%
Associate degree	11,340	21%
High school diploma	42,120	78%
Less than high school diploma	560	1%
Mean annual income	Mean	
Resident	\$18,000	
Household	\$40,000	

Summary

The effects of diabetes are devastating to the American population, causing chronic disabilities on a personal level and highly negative effects to the economy. DSME may be the key to prevention of diabetes, improvement of patient outcomes, and decrease the cost of diabetes care. While there are difficulties with implementing and sustaining DSME outpatient program at an urban hospital like RCH, the very application of this program may be the catalyst to addressing the barriers that perpetuate the lack of knowledge and poor self-care behaviors.

Section 2: Literature Review

Medline, Cumulative Index to Nursing & Allied Health Literature (CINAHL), and Nursing and Allied Health Source were searched for papers related to DSME. The search included the following terms: *diabetes*, *diabetes education*, and *diabetes self-management*. Papers published between 2000 and 2014 were examined for relevance.

Diabetes Education in the Literature

Physicians usually invite patients with diabetes in order to undergo DSME. This aim at helping them acquires the skills and knowledge to change their behaviors and effectively deal with the ailment. Although DSME program was initiated in the 1940s, its positive bearing on diabetes outcomes was not measured until the 1990s (Mensing & Norris, 2003). Since then, healthcare research has increased scientific consideration of the benefits of DSME and the usefulness of different methods; assessments of DSME programs have established that some methods are more effective compared to others.

DSME is connected with upgraded knowledge and, to a capricious degree, decreased blood glucose, and weight levels. The most effective programs are those that show behavior change instead of merely improved knowledge (Mensing & Norris, 2003). DSME is to some extent effective to the point that patients avoid unhealthy behaviors and consecutively, lessen the negative impact of their ailment (Mensing & Norris, 2003). Diabetes educators and health care providers appreciate the complications of ensuring that patients change. Social science literature support consistently showed the complication of behavior change and the encounters allied with achieving and supporting this outcome (Mensing & Norris, 2003).

Psychologists have outlined factors to predict and explain behavior. With this understanding, they have created health behavior change models and theories to recommend more effective approaches for achieving patient obedience with behavior change recommendations (Mensing & Norris, 2003). There have been various models and theories that have existed since the 1950s (Mensing & Norris, 2003). The main acceptance has occurred and remains to occur at academic health situations and other institutes that have a study infrastructure.

The ADA, CDC, and NIH provided a wealth of information for diabetic care, diabetes education and prevention of complications. For instance, the ADA provides guidelines for healthy eating, exercising, normal blood glucose levels and hemoglobin HgA1c levels. In addition to providing these guidelines, the ADA certifies outpatient clinics that provide DSME. In order for an organization to be certified by the ADA as a DSME program, the program must comply with the ten National Standards that are approved by the ADA (see Table 1).

In a 3-year clinical trial conducted by the NIH (2011), the Diabetes Prevention Program concluded that the risk of developing diabetes was greatly reduced in patients with impaired glucose tolerance by incorporating a healthy diet and a regular exercise program. In 2010 approximately 9% of the people residing in the State of Illinois had a diagnosis of diabetes (CDC, 2012). Data from the CDC (2012) showed that approximately 33% of the adults residing within the United States have prediabetes; approximately 10% of American adults were not familiar of the term prediabetes nor were they familiar with the signs and symptoms of diabetes. According to the CDC, the

Center for Medicare and Medicaid Services (CMS) offers several programs to educate and assist Medicare recipients with evidenced based diabetes care.

Statistics on Diabetes

The ADA (2013) identified diabetes as a chronic health condition that affects the life of more than 8% of the children and adults in the United States and affects both sexes and all subgroups within the population. The ADA recommendations include process of care in the following areas: diet control to gain and maintain metabolic control, weekly exercise in order to improve and maintain glycemic control and cardiovascular fitness, minimization of alcohol intake to no more than two drinks per day, annual foot examination to assess anomalies of the toenails, skin integrity and sensation, and annual eye examination to assess for damage of the small blood vessels behind the eye (Taub, 2006). The NIH (2014) recommended diabetic patients keep their blood glucose levels between 70-100 mg/dl. When diabetic patients maintain their blood glucose levels within the recommended normal range, the risk of nerve damage, diabetic eye disorders, the need for amputation of lower extremities and progression of the disease process is reduced (Evans, 2010).

Group Education Strategies for Diabetes Self-Management

Empowerment-centered diabetes group education highlights strategies that are problem based, patient focused, culturally applicable, integrative, and evidence centered (Norris, Engelgau, & Narayan, 2001). These programs and approaches can be carried out across a range of clinical and educational settings with the goal of reacting to the unique diabetes-allied requirements of each patient. DSME is known as an essential constituent

of diabetes care (Norris et al. 2001). The aim of DSME is to assist patients gain the information, knowledge, coping skills, self-care practices, and attitudes necessary for the successful self-management of their diabetes. DSME interventions have a positive influence on diabetes-allied psychosocial and health outcomes, precisely increasing diabetes-related awareness and helping in blood glucose checking, nutritional and exercise behaviors, foot care, coping, medication taking, and glycemic control (Norris et al. 2001).

Although group-based methods have been linked with a number of advantages, for example, patient satisfaction, cost-effectiveness, and interactive learning, up to the present time, researchers have only started to examine and describe different methods to group-based DSME (Norris et al. 2001). Although the research supported the effectiveness of DSME programs all together, variability in program aims, learning format, length of intervention, outcome measures, frequency of sessions, and demographic situation of participants has meant that there is no identified prototype for the best DSME program (Norris et al. 2001).

Conceptual Models

The conceptual model used in this project was the HBM, which focused on the patient's perceptions of the disease and disease process (McEwen & Wills, 2011). A patient's perception of disease and health is a key determinant on how the patient will take care of his or her own health. The HBM may be effectively used to assist diabetic patients with self-management. The HBM is used to examine the patient's perception of health behaviors by examining: susceptibility of the health problem, severity, benefits,

barriers and cues to action (McEwen & Wills, 2011). The HBM is a psychological model that endeavors to describe and forecast health behaviors (Glanz, Rimer, & Lewis, 2002). This is done by concentrating on the beliefs and attitudes of the individual. The model was created in reaction to the miscarriage of a free TB health-screening program (Glanz et al. 2002). Since then, the HBM has been modified to investigate a range of long- and short-term health conducts, as well as the transmission of HIV/AIDS and sexual risk behaviors.

The HBM is centered on the understanding that an individual will take a health-connected action (for example, use condoms) if that person: believe that a negative health condition (that is, HIV) can be evaded, has a positive anticipation that by taking a suggested action, the person will evade a negative health disorder, and feels that he/she can effectively take a suggested health action (Glanz et al. 2002). Figure 1 visually depicts the HBM and the relationships between major concepts.

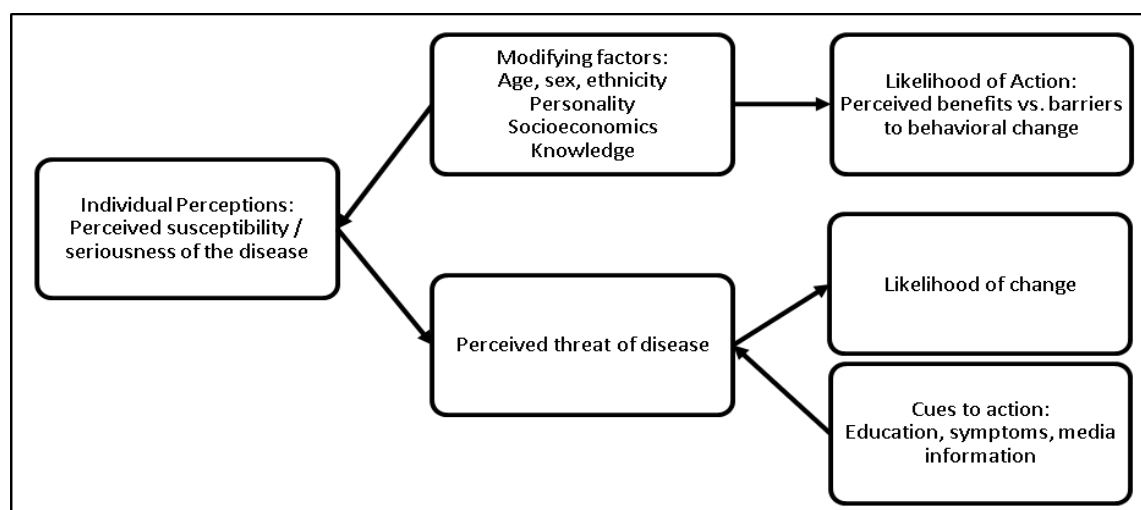


Figure 1. Conceptual Model: Health Belief Model. Adapted from University of Twente, (2014).

Section 3: Methodology

Project Design/Methods

The HBM was used to translate the DSME program into practice. HBM is a psychological model that tries to predict and explain health behaviors (Glanz et al. 2002). This was done by concentrating on the beliefs and attitudes of individuals. To maximize effectiveness, DSME content was taught by a diabetes educator and other healthcare professionals with comprehensive knowledge about prediabetes, diabetes, complications related to diabetes, diabetes medication, and how patients with diabetes or prediabetes can incorporate lifestyle modification to reduce or prevent diabetes related complications. DSME was delivered in a manner that made it easy for the patients, family members and caregivers to understand. DSME delivered in an environment that was conducive to learning and simple content was taught first, followed by the more complex content. Patients were informed about the learning objectives and the expected outcomes for each session.

Ethical and Administrative Approvals

The DSME project (including questionnaires) was approved by the Walden University Institutional Review Board (IRB). Participants were free to withdraw from the program at any time without penalty, questions or charges by verbally informing the program coordinator or program manager of their intent to withdraw, stopping attendance at the weekly sessions, or e-mailing the program coordinator or program manager of intent to withdraw. The CNO of RCH provided written administrative approval of the project before implementation.

Participants

RCH patients awaiting discharge with a diagnosis of diabetes or prediabetes on one of the inpatient units, patients that were recently seen in the emergency department for similar complaints, and patients that had recently been discharged from RCH within the last 5 days were referred to the DSME program. I served as program coordinator in my role through the DNP practicum. Patients were primarily identified through a search of the patient database 2 days per week (Tuesday and Thursday). Once identified, patients meeting program criteria were invited to participate in the DSME program. RCH nursing staff also generated referrals to the DSME program (See Appendix D).

Patients were eligible for the DSME program if they were at least 18 years old; alert; and oriented to time, place, and self. Participants must have been capable of reading and comprehending material that was presented via oral presentation and material that was printed in English at a 5th grade reading level. All participants resided in the state of Illinois; male and nonpregnant female patients were included. All participants had diagnosis of diabetes or prediabetes.

The first cohort of $n = 6$ patients was formed using the strategy outlined above. A second cohort of $n = 4$ patients, all identified from inpatient care units, was formed to meet the needs of participants who were not able to attend the Tuesday day sessions. The first cohort met on Tuesday morning between 10 AM to 12 PM for 5 weeks. The second cohort met on Thursday evenings from 4 PM to 6 PM for 5 weeks. All 10 participants completed all 5 weeks of the education sessions. Rickheim, Weaver, Flader, and Kendall (2002) suggested group sizes for education should consist of two to 20 participants with

an average of 10 participants per group. Rickheim et al. noted that educating more than eight participants in a group setting does not allow for proper individualization when necessary.

Participants in the DSME program were offered free healthy snacks before, during, or after each educational session. The healthy snacks included a selection of fresh fruits, salads, or sandwiches. Participants were offered a reminder telephone call 24 hours before each educational session, and free shuttle bus service to RCH and back to their home; however, each participant was responsible for calling RCH to arrange for pick-up. I assisted participants with arranging transportation back to the participant's home at the end of each education session.

Diabetes Self-Management Education Curriculum and Methods

Prior to this project, the Roseland community did not have a formal DSME program. Patients who are newly diagnosed with diabetes, prediabetes or those who require diabetes education are referred to other DSME programs outside of the Roseland community. The RCH DSME curriculum (Appendix E) was presented by an interdisciplinary team in the RCH outpatient diabetes clinic. The small group format was used to deliver DSME education. According to Steinsbekk et al. (2012), DSME in small groups is a less expensive method of providing diabetes education. Small group format allows diabetic patients to meet and have discussions with other diabetic patients. Steinsbekk et al. noted the outcomes of a randomized controlled study which evaluated group based DSME; the researchers found that participants of group based DSME program showed improvement in their lifestyle, and psychosocial outcomes.

During the 5-week DSME curriculum, participants were provided with a printed handout of the week's topics for discussion. Weekly sessions began with each participant identifying and discussing their Specific, Measurable, Attainable, Realistic Timed (SMART) goal from the previous week. Participants had the option of participating or not participating in this discussion. I provided information using lecture methods and followed up using open group discussion ending with 10-15 minutes question and answers. Upon completion of each weekly education session, participants were encouraged to write a SMART goal that would be discussed at the beginning of the next educational session in the 5-week sequence of DSME sessions.

While RCH staff nurses are responsible for initiating diabetes education at the bedside, a common observation is that patients are given several printed pages of diabetes information to read prior to discharge but assessments of reading ability, comprehension, or impact are often not carried out or documented. Currently, diabetes education at RCH includes teaching the patient how to prepare and self-inject insulin, signs and symptoms of hyper/hypoglycemia, and how to treat hyper/hypoglycemia. The RCH diabetes education curriculum is designed to meet the needs of patients at RCH outpatient diabetes clinic. The DSME curriculum described in this paper was designed to meet the needs of RCH patients, but modifications to meet the needs of any community needing a diabetes education curriculum are possible. The DSME curriculum includes the following topics, by week:

- Week 1: What is diabetes?
- Week 2: Complications of diabetes

- Week 3: Survival skills and food basics for planning healthy meals
- Week 4: Importance of medications
- Week 5: Living healthfully with diabetes

Data Collection

The Diabetes Project Participation Questionnaire was developed by the Diabetes Initiative, Focus on Diabetes Project at the Center for African American Health in Denver, Colorado (Diabetes Initiative, 2009). The Diabetes Project Participation Questionnaire consists of 25 demographic and general questions, five health behavior questions and eight closed-end, knowledge questions. The Diabetes Project Participation Questionnaire was used to collect data for the project. During the education sessions, each question was read aloud and patients were provided with verbal instructions prior to answering the questionnaire. The Diabetes Project Participation Questionnaire was used to measure the participants' knowledge and confidence about diabetes self-management. The questionnaire was modified and adapted for use at RCH DSME program by eliminating three questions specifically related to patients residing in Denver, Colorado. The modified version contained 21 questions that included nine demographic questions, five question related to health behavior, and seven knowledge questions. The questionnaire was administered pre and post DSME.

Once collected, data were entered into a password-protected computer database with hospital-grade security controls. Only the project leader and site supervisor have access to the confidential data. In order to maintain a high level of confidentiality upon completion of the data entry process, all coded original questionnaires were stored in a

locked file cabinet in RCH Diabetes Clinic. RCH does not have an IRB; therefore, an application was submitted and approved by Walden University IRB. The Walden University IRB approval number for this study is 08-28-14-0311900.

Data Analysis

Reliability and Validity

The Diabetes Project Participation Questionnaire has been endorsed and accepted by experts at the Robert Wood Johnson Foundation as part of the Diabetes Initiative (Robert Wood Johnson Foundation, 2009). The Diabetes Project Participation Questionnaire was endorsed by Robert Wood Johnson Foundation subject matter experts to be used in national quality improvement projects (Robert Wood Johnson Foundation, 2009). There are no published reliability data on the Diabetes Project Participation Questionnaire; but, review and endorsement by RWJF suggests sufficient utility for use in a small scale educational program such as the one described in this paper.

Threats to Validity

The Diabetes Project Participation Questionnaire was adapted and modified from the Diabetes Initiative Focus on Diabetes Project at the Center for African American Health for use at RCH DSME program. Two possible threats to validity have been identified. The first is inappropriate use of The Diabetes Project Participation Questionnaire. The Diabetes Project Participation Questionnaire was developed and used by the Focus on Diabetes project at The Center for African American Health in Denver Colorado with support from the Robert Wood Johnson Foundation beginning in 2002 ending in 2009 (Diabetes Initiative, 2009). Currently there are no published data related

to reliability and validity of the Diabetes Project Participation Questionnaire. Second, there is a risk of overstating the generalizability of these findings beyond the population. Due to the small participant pool in this project, this risk is minimized.

Analytical Techniques to Answer Project Questions

Descriptive statistics were used to describe participants' demographic and personal characteristics. The self-report knowledge and confidence items were compared from the pre to post DSME periods using a simple paired Student's *t* test. de Winter (2013) examined both power and Type I error rates when using a *t* test with extremely small samples and found that with moderate or larger effect sizes, *t* tests can be used without substantially increasing the Type I error rate, with groups as small as 2-5 subjects. Thus, paired *t* tests were used cautiously due to the small sample size available in this project. IBM SPSS v. 22 (IBM Corporation, Oak Park, IL) was used for the data analysis.

Project Evaluation Plan

The effectiveness of the DSME program was evaluated using a one group pretest/posttest method described previously.

Summary

Over the course of 5 weeks, participants were provided with DSME content in a nonrestrictive environment, in an easy-to-understand manner and in small group sessions. Quantitative data were collected and analyzed with the assistance of a doctorally prepared data analyst. Data from the Diabetes Project Participation Questionnaire were analyzed for the extent to which the DSME program increased participant's diabetes management,

life-style modification and self-care knowledge and behaviors. Evaluation of the DSME program occurred utilizing the one group pretest/posttest method.

Section 4: Findings, Discussion, and Implications

Participant Characteristics

A total of $N = 10$ patients participated in the 5-week DSME program. All of the participants lived in the community and had a family history of Type 2 diabetes. All of the 10 or 100% of participants had been discharged from RCH acute care unit within seven days of the referral. The participants all identified as African American and 80% ($n = 8$) were female. Sixty percent ($n = 6$) were between 55 and 65 years old with the remainder of patients aged 22-54 years. All subjects ($N = 10$) reported having finished high school and two subjects reporting an associate's degree as their highest degree. Two of the participants were employed full-time and had private health insurance; the other participants were on Social Security disability and received supplemental security income and were insured by Medicare/Medicaid. Most ($n = 6$) of the participants were diagnosed with T2DM within the last 3 years. All participants reported being under the care of a primary care provider for their T2DM. This demographic profile aligns closely to the general characteristics of resident of the Roseland Community.

Health Status

Blood pressure measurements from the pre DSME period revealed mean systolic and diastolic values of 136 ($SD = 19$) mmHg/78.3 ($SD = 9$) mmHg, respectively. The mean weight was 220.5 ($SD = 43.3$) pounds and participants reported exercising a median of 2 times per week. In the post DSME period, mean systolic and diastolic values of 133 ($SD = 18$) mmHg/75.8 ($SD = 8$) mmHg, respectively. The mean participant weight reported in the post-DSME period was 216.7 ($SD = 43$) pounds, reflecting an

approximate four pound mean weight loss from pre to post DSME; participants reported exercising a median of 3 times per week in the post DSME period. Participants reported a median frequency of blood glucose checks improving from 2 to 4 from the pre to post DSME period.

Knowledge and Confidence

Using a scale where 1 = *poor* and 5 = *excellent*, participants self-reported their knowledge of diabetes-related topics such as overall diabetes care, ways to cope with stress, medication management, and the importance of exercise both pre and post DSME. Scores on the knowledge portion of the study questionnaire improved significantly from $M = 3.18$ ($SD = .94$) to $M = 3.95$ ($SD = .65$) from the pre to post DSME period ($t = 3.76$, $df = 9$, $p = .004$). Using an extent of agreement scale where 1 = *not confidence at all* and 10 = *fully confident*, participants provided estimates of their confidence on items such as confidence in managing one's blood sugar levels, knowing when to contact their primary care provider (PCP), and exercising at least three times per week. Scores on the confidence scale of the study questionnaire improved significantly from $M = 5.61$ ($SD = 3.2$) to $M = 7.65$ ($SD = 1.7$) from the pre- to post-DSME period ($t = 2.45$, $df = 9$, $p = .037$).

Summary and Evaluation of Findings

This DNP Project involved development and implementation of a DSME curriculum consistent with requirements from the American Diabetes Association. A 5-week curriculum was developed and 10 participants completed the program. Participants met once a week for 2 hours for 5 weeks, during each session participants were given a

printed copy of the weekly objective and the topic of discussion for that week. From the pre to post DSME period, program participants experienced improvements in blood pressure readings, weight, exercise frequency, and frequency of blood glucose checks. Statistically significant improvements on both the knowledge scale and the confidence scale of the modified Diabetes Project Participation Questionnaire were also noted. Despite the small pool of participants, these data provide beginning evidence that participants of the DSME program benefited from involvement in the DSME program. Participation in the DSME program provides the participants with the knowledge to make better self-care decisions, which is the foundation for improved patient outcomes.

Discussion

DSME has many benefits, including increased glycemic control, decreased need for hospitalization, and reduced direct medical costs (Kent et al., 2013). In order for a DSME program to be effective, the diabetes educator must have a clear understanding of the patient's perception of the disease and the disease process. Having that understanding of the patient's perception can assist the diabetes educator develop an individualized plan of care that the patient can adhere to. Use of the HBM was helpful in delivering the 5-week DSME program. The interdisciplinary team was able to focus on each participant perception of diabetes along with their self-care behaviors; therefore, the HBM was effective and the most appropriate for this program. The HBM can assist diabetes educators and patients with developing an individual plan of care.

Diabetic patients who do not receive diabetes education risk are four times higher of developing diabetes related complications; additionally, an estimated 80% of adults

with diabetes lack the required knowledge to manage the disease in their own environment (Kent et al., 2013). Kent et al. noted that patients that participated in DSME programs/training were more likely to see an optometrist for an annual dilated eye examination, have an annual foot examination, HbA1c testing, and received annual preventive influenza vaccination.

Implications for Social Change Future Research and Practice

In 2011, the American Association of Diabetes Educators hosted a reducing risks symposium. During this symposium, an interdisciplinary panel of 11 thought leaders examined current knowledge about the reduction and prevention of diabetes-related risks and translated evidence into diabetes care and self-management education. The panel called for an increase in research on best practices regarding timely follow-up for patients, effective utilization of data within diabetes registries, and exploring the use of cost-effective technologies such as mobile health communication (e.g., cell phones, smart phones, computers) to increase adherence (Kent et al., 2013). This project involved establishing referral with at-risk patients and providing a DSME curriculum aimed at improving participants' health outcomes.

People with diabetes often have many barriers to implementing behaviors that may reduce their risk of developing complications related to diabetes. Barriers may include: long wait time for healthcare appointments, lack of adequate insurance coverage, and poor health literacy (Kent et al., 2013). Kent et al. remind clinicians that for DSME to be successful, patients require empowerment and a multidisciplinary healthcare team that works in collaboration with the patient. There is a clear need for effective, ongoing

DSME programs at RCH and in communities across the United States.

Project Strengths and Limitations

Through this project I gained a broadened knowledge base about multiple diabetes-related topics. I was able to observe and communicate with diabetes educators to learn different methods of providing diabetes education in a manner that patients can understand. This project also provided me with the opportunity to learn about the different treatment and adjunctive treatment methods. The DSME participants also benefited from their increased knowledge and understanding of diabetes, complications related to diabetes, and ways to identify, reduce, and/or prevent complications related to diabetes. Participants also gained knowledge of self-care behaviors and learned ways to use this newly acquired knowledge to implement positive lifestyle modifications. Through the setting of goals, participants were able to implement behavior changes and though the sample size was small, some noticeable changes in health status were observed over the course of the DSME program.

Limitations of the project include a small sample size that lacked racial and gender diversity. All participants lived within the Roseland area, and all were fluent with the English language. The participants were mostly female, with only two male participants in the group. It is unknown whether the education curriculum would be effective if translated into a different language or used with more racially diverse participants. Because all participants had a minimum of a high school education, it is unknown if the education curriculum would be effective for people that lack a high school education.

Recommendations include implementing and testing the DSME curriculum in rural communities, and with participants from diverse racial backgrounds and various educational levels. In future offerings, more effort to recruit and encourage men to participate is needed. Developing a formal following up plan that may include a follow-up telephone call 1 month and 3 months after completions of the 5-week DSME program and a face-to-face meeting 6months after completion of the DSME program may also help with long-term health behavior change. Additional recommendations include assessing visual acuity and literacy in support of selecting appropriate printed materials.

Rubin, Moshang, and Jabbour (as cited in Young, 2011) assessed 48 nurses knowledge of standardized diabetic care. The majority of the nurses that participated in the study showed a substantial knowledge deficit related to normal fasting blood glucose levels, types of insulin, peri-operative care of patients with diabetes, and how to treat patients with hypoglycemia. Patients that were cared for by these nurses were at greater risk of adverse outcomes, whereas patients that were cared for by nurses with diabetes education had improved outcomes. Research is needed to examine how healthcare facilities, nurse managers and nursing administrators can best provide nursing staff with the necessary in-services and resources on DSME which can be presented at the bedside in a manner easily understood by patients, caregivers, and family members with a goal of improving patient outcomes.

Analysis of Self

My area of expertise is diabetes education. Using my expertise, passion, and skills gained through the DNP program, I developed and implemented a 5-week DSME

curriculum for adults with a diagnosis of T2DM or prediabetes. I used community health resources to gain knowledge about the area with the highest concentration of residents with prediabetes and T2DM. These same resources gave entry into a safety net community hospital where the DSME program could be offered. The participants had no previous diabetes education and most were newly diagnosed with the condition.

As a scholar, I identified evidence-based methods for providing diabetes education, presentation of diabetes education content, and provided education using a theoretical framework. Developing and implementing a DSME program for this underserved area has the potential to impact the health of people living in this community. As a scholar, I presented and evaluated efficacy of the formal 5-week DSME curriculum and found improvements in several areas.

As a practitioner, patient education is an integral part of my practice. I developed a partnership with the Chief Nursing Officer (CNO) and nurse educator to determine the greatest unmet needs for this population. The CNO and nurse educator expressed a need for a formal DSME curriculum and program. This partnership gave entry to a relationship with the nursing staff. The nursing staff referred all patients with a diagnosis of diabetes or pre-diabetes that met inclusion criteria to this DNP student. As a practitioner, I used all methods available to protect the confidentiality of each participant. As a project developer, it was necessary to understand a person's perception of a disease and their lack of knowledge. Therefore I had to put myself in the role of a patient who had just received a diagnosis of diabetes. It was essential that I gained knowledge related to all aspects of diabetes. I also had to communicate and observe professionals with extensive knowledge

about diabetes. These experiences assisted me with developing, and implementing a diabetes education program that has the potential to improve outcomes for all recipients. Finally, I had to gain the trust of each participant and provide a teaching environment that encouraged and allowed each participant to be engaged in the teaching learning process.

As a professional, I sought and obtained in-depth knowledge about diabetes through study and collaboration. I developed multiple in-depth relationships with other nursing professionals and developed communication avenues that permitted my observation of their practice. I determined the information on diabetes education, which required dissemination to this needy population and delivered that education effectively. I will share the results of my project with nursing staff, nursing education, the community, medical director, and hospital administration. Continuing my professional pursuits, I will continue the learning process and pursue a certification as a diabetes educator.

Section 5: Scholarly Product for Dissemination

Background

Diabetes is a serious and deadly condition whose effects are devastating and crippling to the American society. Diabetes is a major cause of chronic disabilities and even death on a personal level and highly negative effects to the economy. According to the CDC (2014) diabetes cost the United States taxpayers and insurance companies over \$245 billion annually. This amount includes approximately \$176 billion for direct medical care and \$ 69 billion for indirect costs like loss of productivity.

Obesity, physical inactivity, race/ethnicity, and family history are the main factors that contribute to people developing Type 2 Diabetes Mellitus (T2DM; The National Diabetes Education Program, 2009). In 2012, over 29 million Americans or 9.3% of the population had a diagnosis of diabetes however of that 29 million approximately 8 million Americans were undiagnosed (CDC, 2014). Data from the ADA (2014) suggested that between 2010 and 2012 the number of people with a new diagnoses of diabetes decreased from 1.9 million to 1.7 million new cases. Between 2008 and 2009, more than 18,000 Americans under the age of 20 years old were diagnosed with Type 1 diabetes and more than 5,000 Americans under the age of 20 were diagnosed with T2DM (CDC, 2014).

Diabetes affects resident across the State of Illinois. In 2011 more than 800,000 residents in the State of Illinois had a diagnosis of diabetes additionally another 500,000 Illinoisan had diabetes but were unaware or had not been diagnosed (Illinois Department

of Public Health [IDPH], 2012). The IDPH (2014) concluded that in 2010 the average cost of treating a person residing in the State of Illinois was over \$6000.00 per person. The IDPH Emergency Medical Services Data Reporting System (2011) reported that more than 21,000 residents of the State of Illinois required hospitalization because of uncontrolled diabetes. The previously mentioned data provides evidence for widespread DSME programs.

Diabetes is affecting many adults Chicagoans residing in the small community of Roseland. Between 2010 and 2011 approximately 700 residents of the Roseland community were hospitalized in a Chicago area hospital due to diabetes or complications related to diabetes (Data Catalog, 2014). In 2011 Roseland Community Hospital (RCH) admitted more than 1300 patients via the emergency department for uncontrolled diabetes or complications related to diabetes. In 2012 admission rate for this same group more than doubled to more than 3000 patients (Roseland Community, 2013).

According to CDC (2014), in 2010 an estimated 73,000 American adults over the age of 20 years old required amputation of one or both lower extremities, during that same year of 2010 American adults over the age of 20 years old with diabetes were hospitalized for heart attacks at a rate of 1.8 times higher than adults in the same age group without diabetes; additionally, the same age group required hospitalization for cerebral vascular accident at a rate of 1.5 times higher than the same age group without diabetes. The CDC identified diabetes as the seventh leading cause of death in the United States; diabetes is listed as the cause of death or the underlying cause of death on more than 200,000 death certificates.

According to Kent et al., (2013) patients that participated in diabetes self-management education programs/training were more likely to see an optometrist for an annual dilated eye examination, have an annual foot examination, HbA1c testing, and received annual preventive influenza vaccination. Diabetic patients who do not receive diabetes education risk are four times higher of developing diabetes related complications. Additionally, an estimated 80% of adults with diabetes lack the required knowledge to manage the disease in their own environment (Kent et al., 2013). Evans (2010) reported that keeping blood glucose levels within a normal range resulted in a 76% reduction in eye disorders, a 50% reduction in renal disease, and a 60% reduction in diabetic neuropathy.

Diabetes affects African American men and women more than any other ethnic or racial group. Between 2010 and 2012, over 13% of African American adults over the age of 20 received a diagnosis of diabetes, whereas during the same time period, only 7.6% of the Caucasian population received the same diagnosis (CDC, 2014). Lack of knowledge in relation to diet, diabetes self-care behaviors and exercise in the African American communities contributes to an epidemic of diabetes and diabetes related complications.

Purpose

The purpose of this project was to design and implement an interdisciplinary outpatient diabetes education program that could enhance participants' knowledge about diabetes management and self-care. The RCH DSME program followed the guidelines of the National Diabetes Education Program (NDEP) and ADA Standards 3 through 10 during the development and implementation of the DSME program and curriculum. The

interdisciplinary DSME team included a program coordinator, registered dietician, and a registered nurse. The main objective of this project was to develop a DSME curriculum that could be recognized and approved by the American Diabetes Association. Haas et al. (2012) defines diabetes self-management education as an ongoing process of facilitating the knowledge, skill, and ability necessary for diabetes self-care. The American Association of Diabetes Educators (2011) described DSME as a collaborative process through which people with or at risk for diabetes gain the knowledge and skills needed to modify behavior and successfully self-manage the disease and its related condition. DSME incorporates the needs, goals, and life experiences of the person with diabetes and is guided by evidence-based standards (Haas et al. 2012).

Haas (2012) suggested that the objectives for DSME are to provide support for informed decision-making, self-care behaviors, problem solving, and active collaboration with the health care team and to improve clinical outcomes, health status, and quality of life. DSME is an important strategy that contributes to the reduction and or prevention of diabetes related complications. Other benefits of DSME include increased glycemic control, decreased need for hospitalization, and reduced direct medical costs (Kent et al., 2013).

This project was guided by the following two questions

1. Does DSME positively impact patient outcomes?
2. Will participation in a standardized diabetic educational intervention improve patient knowledge, as measured by a reliable and valid questionnaire?

Methods

Subjects

RCH patients awaiting discharge with a diagnosis of diabetes or prediabetes on one of the inpatient units, patients that were recently seen in the emergency department for similar complaints, and patients that had recently been discharged from RCH within the last 5 days were referred to the DSME program. Patients were primarily identified through a search of the patient database two days per week (Tuesday and Thursday). Once identified, patients meeting program criteria were invited to participate in the DSME program. RCH nursing staff also generated referrals to the DSME program. Patients were eligible for the DSME program if they were at least 18 years old, alert and oriented to time, place and self. Participants must have been capable of reading and comprehending material that was presented via oral presentation and material that was printed in English at a 5th grade reading level. All participants resided in the State of Illinois; male and non-pregnant female patients were included. All participants had diagnosis of diabetes or pre-diabetes. Ten ($N = 10$) participants voluntarily participated in the 5-week DSME program. Participants included 2 men and 8 women, all African American residing in the Roseland or Greater Roseland Community.

Measures

The Diabetes Project Participation Questionnaire was used to measure the participants' knowledge and confidence about diabetes self-management. The Diabetes Project Participation Questionnaire was developed by the Diabetes Initiative, Focus on Diabetes Project at the Center for African American Health in Denver, Colorado

(Diabetes Initiative, 2009). The Diabetes Project Participation Questionnaire consists of 25 demographic and general questions, five health behavior questions and eight closed-end, knowledge questions. The questionnaire was modified and adapted for use at RCH DSME program by eliminating three questions specifically related to patients residing in Denver, Colorado. The modified version contained 21 questions that included nine demographic questions, five question related to health behavior, and seven knowledge questions. The questionnaire was administered pre and post DSME.

The Diabetes Project Participation Questionnaire was endorsed and accepted, by experts at the Robert Wood Johnson Foundation as part of the Diabetes Initiative (Robert Wood Johnson Foundation, 2009). The Diabetes Project Participation Questionnaire was endorsed by Robert Wood Johnson Foundation subject matter experts to be used in national quality improvement projects (Robert Wood Johnson Foundation, 2009). Currently there is no published reliability data on the Diabetes Project Participation Questionnaire however the endorsement by RWJF suggests sufficient utility for use in a small-scale educational program such as the one described in this paper.

Data Analysis

Descriptive statistics were used to describe participants' demographic and personal characteristics. The self-report knowledge and confidence items were compared from the pre to post DSME periods using a simple paired Student's *t* test. de Winter (2013) examined both power and Type I error rates when using a *t*-test with extremely small samples and found that with moderate or larger effect sizes, *t* tests can be used, without substantially increasing the Type I error rate, with groups as small as two to five

subjects. Thus, paired *t* tests were used cautiously due to the small sample size available in this project. IBM SPSS v. 22 (IBM Corporation, Oak Park, IL) was used for the data analysis.

DSME Program

When selecting a conceptual model to guide development of the DSME, it was important and necessary to invest time thinking about how useful the model would be in producing improved patient outcomes. The HBM has been used to understand health behavior change and maintenance (Glanz et al. 2002). The HBM has been used in the United States by several researchers to identify and explain diabetes self-care behaviors. The HBM was also used in countries outside of the United States to investigate self-care behaviors in people with diabetes example Tan (2004) used the HBM in a sample of 128 Chinese individuals with a diagnosis of T2DM. Tan (2004) found that subjects who believed diabetes was a serious health condition and had less deterrents were more likely to participate in diabetes-related preventive care behaviors.

During the 5-week DSME curriculum, participants were provided with a printed handout of the week's topics for discussion. Weekly sessions began with each participant identifying and discussing his or her Specific, Measurable, Attainable, Realistic Timed (SMART) goal from the previous week. Participants had the option of participating or not participating in this discussion. I provided information using lecture methods and followed up using open group discussion ending with 10-15 minutes question and answers. Upon completion of each weekly education session, participants were encouraged to write a SMART goal that would be discussed at the beginning of the next

educational session in the 5-week sequence of DSME sessions. The DSME curriculum includes the following topics, by week:

- Week 1: What is diabetes?
- Week 2: Complications of diabetes
- Week 3: Survival skills and food basics for planning healthy meals
- Week 4: Importance of medications
- Week 5: Living healthfully with diabetes

Adult Learning Theory (Knowles, 1984) was used throughout the implementation process of the DSME program. Knowles's learning theory asserts that the person providing the education must have an understanding of what the adult needs to learn. Knowles' five assumptions related to adult learners include *self-concept*, *adult learner experience*, *readiness to learn*, *orientation to learning*, and *motivation to learn*. Powers, Carstensen, Colon, Rickheim, and Bergenstal (2006) used the HBM, Knowles's adult learning theory along with other models to develop Type 2 Diabetes BASICS curriculum. Powers et al. explained the curriculum is an evidence-based education program that has been used in education programs to help reduce hemoglobin A_{1c} and body weight in people with T2DM.

Application of the principles from Knowles's theory in the current DSME program can be illustrated in several ways. Participants were given an opportunity to verbally express their feelings about their overall health status, how they felt about living with diabetes and their desire to make health related decisions (self-concept), participants also spoke openly about having family members living with complications of diabetes

and their desire not to have any complications of diabetes (adult learner experience) participants were referred to the DSME program, however the decision to participate was totally voluntary based on the participant desire to learn to improve their own health (readiness to learn) participants lack of knowledge and self-care behaviors often result in diabetes related complications, all of the participants had recently been discharged from one of the acute care units at the host hospital, each participant made a conscious decision to “do what it takes” to control/care for their diabetes (orientation to learning), finally participants made a variety of statement related to their personal reason for seeking diabetes education such as, “I want live, “I do not want to be on dialysis,” and “I do not want to go blind” (motivation to learn).

Results

Participants included two men and eight women, all African American residing in the Roseland or Greater Roseland Community. Each participant answered the Continuum of Care Trajectory for Diabetes Project Participation Questionnaire prior to and upon completion of the 5-week DSME program. The Continuum of Care Trajectory for Diabetes Project Participation Questionnaire consists of knowledge, behavior, and confidence questions. Results of the questionnaire prior to the 5-week DSME program: blood pressure measurements revealed mean systolic and diastolic values of 136 ($SD = 19$) mmHg / 78.3 ($SD = 9$) mmHg, respectively, mean weight was 220.5 ($SD = 43.3$) pounds and participants reported exercising a median of 2 times per week. In the post-DSME period, mean systolic and diastolic values of 133 ($SD = 18$) mmHg / 75.8 ($SD = 8$) mmHg, respectively. Upon completion of the 5-week DSME program, the mean

participant weight reported was 216.7 ($SD = 43$) pounds, reflecting an approximate four pound mean weight loss from pre to post DSME; participants reported exercising a median of three times per week in the post DSME period. Additionally, participants reported a median frequency of blood glucose checks improving from two to four from the pre to post DSME period.

The Continuum of Care Trajectory for Diabetes Project Participation

Questionnaire also included questions related to knowledge and confidence. The questionnaire used a scale where 1 = *poor* and 5 = *excellent*, participants self-reported their knowledge of diabetes-related topics such as overall diabetes care, ways to cope with stress, medication management, and the importance of exercise both pre and post DSME. Scores on the knowledge portion of the study questionnaire improved significantly from $M = 3.18$ ($SD = .94$) to $M = 3.95$ ($SD = .65$) from the pre to post DSME period ($t = 3.76$, $df = 9$, $p = .004$). Using an extent of agreement scale where 1 = *not confidence at all* and 10 = *fully confident*, participants provided estimates of their confidence on items such as confidence in managing one's blood sugar levels, knowing when to contact their PCP, and exercising at least three times per week. Scores on the confidence scale of the study questionnaire improved significantly from $M = 5.61$ ($SD = 3.2$) to $M = 7.65$ ($SD = 1.7$) from the pre- to post-DSME period ($t = 2.45$, $df = 9$, $p = .037$).

Discussion

From the pre to post DSME period, participants of the 5-week DSME program experienced improvements in blood pressure readings, weight, exercise frequency, and

frequency of blood glucose checks. Statistically significant improvements on both the knowledge scale and the confidence scale of the modified Diabetes Project Participation Questionnaire were also noted. Participant persistence throughout the DSME program was also good, with no participants failing to complete the program. This DSME implementation project was concentrated on the Roseland Community and involved a small number of participants, so the results must be interpreted with caution. Also, though PRISM was a good choice of the model for this project, it is relatively a new model, which means some of its weaknesses may still be hidden. Other limitation is that this study was limited especially in terms of generalizability across all communities in the nation, given that the study was based at RCH and all the participants were from the same community and hospital location.

Kent et al. (2013) identified the following as barriers that may prevent or limit an individual with diabetes from implementing behavior that may reduce their risk of developing complications related to diabetes: long wait time for healthcare appointments, lack of adequate insurance coverage, and poor health literacy. Kent et al. reminded clinicians that for diabetes self-management education to be successful, patients require empowerment and a multidisciplinary healthcare team that works in collaboration with the patient. Three barriers were identified during the 5-week DMSE program. The first barrier was lack of transportation to the host site. When subjects lacked transportation, attending DSME sessions was a significant challenge. A second barrier was poor health literacy. Though materials were provided at appropriate levels, health-learning materials can still be difficult to understand. The third barrier was time and date of the DSME

class.

Recommendations for change to improve participation in DSME programs include: providing free transportation to and from the host site at times convenient to the participants and secondly, consideration of developing in-home DSME. Many healthcare organizations provide free transportation to and from the host site, but DSME classes are often offered early morning or midafternoon. This was a problem for working adults, adults that had young children in school and for older adults. Therefore providing in-home DMSE is a simple yet economical solution to resolve all of the mentioned barriers. In-home DMSE has the potential to increase participation with a goal of improving patient outcomes. In-home DSME allows participants an opportunity to schedule education at a time that is convenient for them and it allows for family participation. Educators that provide in-home DSME would have an opportunity to assess the participant living environment, teach participants about the foods in their home, and make recommendations for healthy food choices using foods that are readily available. In-home DSME would allow the educator an opportunity to assess for hazards that may cause foot injuries, additionally recommendations could be made for exercise within the participants home environment. Providing in-home DSME will not eliminate health literacy however participants may feel more comfortable asking questions in their own living environment.

In order to improve patient outcomes along with healthy eating, exercise, and lifestyle modification participants should be educated on stages of hypertension and how to self-monitor their own blood pressure. This additional information may be

overwhelming; but, is necessary for improved patient outcomes. Other implication for social change may include providing expedited assessment for bariatric surgery for patients that are newly diagnosed with diabetes that have a body mass index at or above 35 kg/m² (Bostock-Cox, 2015).

Conclusion

This project involved development and implementation of a DSME curriculum consistent with requirements from the American Diabetes Association. A 5-week curriculum was developed and 10 participants completed the program. Participants met once a week for 2 hours for 5 weeks, during each session participants were given a printed copy of the weekly objective and the topic of discussion for that week. From the pre to post DSME period, program participants experienced improvements in blood pressure readings, weight, exercise frequency, and frequency of blood glucose checks. Statistically significant improvements on both the knowledge scale and the confidence scale of the modified Diabetes Project Participation Questionnaire were also noted. Despite the small pool of participants, these data provide beginning evidence that participant of the DSME program benefited from involvement in the DSME program. Participation in the DSME program provides the participants with the knowledge to make better self-care decisions, which is the foundation for improved patient outcomes.

Project References

- American Association of Diabetes Educators (2011). *The art and science of diabetes self-management education desk reference*. Chicago, IL: Author.
- American Diabetes Association. (2014). *Diabetes statistics*. Retrieved from <http://www.diabetes.org/diabetes-basics/diabetes-statistics/>
- Bostock-Cox, B (2015). The diabetes year in review. *Practice Nurse* 45(1) 28-32.
- Centers for Disease Control and Prevention (2014). *National diabetes statistics report, 2014*. Retrieved from: <http://www.cdc.gov/diabetes/pubs/statsreport14/national-diabetes-report-web.pdf>
- Data Catalog (2014). *Public Health Statistics- Diabetes hospitalizations in Chicago, 2000-2011*. Retrieved from <https://catalog.data.gov/dataset/public-health-statistics-diabetes-hospitalizations-in-chicago-2000-2011>
- de Winter, J.C.F. (2013). Using the student's *t*-test with extremely small sample sizes. *Practical Assessment, Research and Evaluation*, 18(10), 1-12.
- Diabetes Initiative, A National Program of the Robert Wood Johnson Foundation. (2009). Retrieved from <http://www.diabetesinitiative.org/resources/tools/ToolsAssessmentInstruments.summary10-DENpre.html>
- Evans, M. M. (2010). Evidence-based practice protocol to improve glucose control in individuals with Type 2 diabetes mellitus. *MedSurg Nursing* 19(6), 317-22.
- Glanz, K., Rimer, B.K., & Lewis, F.M. (2002). *Health behavior and health education. Theory, research and practice*. San Francisco, CA: Wiley & Sons.

- Haas, L., Maryniuk, M., Beck, J., Cox, C., Duker, P., Edwards, ... Youssef, G. (2012). National standards for diabetes self-management education and support. *Diabetes Care*, 35, 1-9. doi:10.2337/dc12-1707
- Illinois Department of Public Health (2014). *Chronic Disease Burden Update*, 3(5). Retrieved from http://www.idph.state.il.us/pdf/Chronic_Disease_Cost_Calculator_July_2014_Issue_5.pdf
- Illinois Department of Public Health (2012). *EMS reporting system*. Retrieved from <http://app.idph.state.il.us/emsrpt/ind-hosp.asp>
- Illinois Department of Public Health (2012). *The burden of diabetes in Illinois. Prevalence, mortality, and risk factors 2012*. Retrieved from http://www.idph.state.il.us/diabetes/pdf/8-27-12_Diabetes_Burden.pdf
- Kent, D., D'Eramo-Melkus, G., Stuart, P. M., McKoy, J. M., Urbanski, P., Boren, S. A., . . . Lipman, R. (2013). Reducing the risks of diabetes complications through diabetes self-management education and support. *Population Health Management*, 16(2), 74-81. doi:10.1089/pop.2012.0020
- Pappas, C. (2013). The adult learning theory andragogy of Malcolm Knowles. Retrieved from <http://elearningindustry.com/the-adult-learning-theory-andragogy-of-malcolm-knowles>
- Powers, M., Carstensen, K., Colon, K., Rickheim, P., & Bergenstal, R., (2006). Diabetes BASICS: Education, innovation, revolution. *Diabetes Spectrum* 19 (2), 90-98.

Robert Wood Johnson Foundation (2008). Survey identifies health issues in six Chicago communities, leads to targeted interventions. Retrieved from

<http://www.rwjf.org/reports/grr/043026.htm>

Roseland Neighborhood in Chicago (2014). Retrieved from <http://www.city->

[data.com/neighborhood/Roseland-Chicago-IL.html#top](http://www.city-data.com/neighborhood/Roseland-Chicago-IL.html#top)

Tan, MY. (2004). The relationship of health beliefs and complication prevention

behaviors of Chinese individuals with type 2 diabetes mellitus. *Diabetes Research and Clinical Practice* 66, 71-77.

References

- American Association of Diabetes Educators (2011). *The art and science of diabetes self-management education desk reference*. Chicago, IL: Author.
- American Diabetes Association. (2013). Economic cost of diabetes in the U.S in 2012. Retrieved from http://professional.diabetes.org/News_Display.aspx?TYP=9&CID=91943&loc=ContentPage-statistics
- American Diabetes Association. (2014). *Diabetes statistics*. Retrieved from <http://www.diabetes.org/diabetes-basics/diabetes-statistics/>
- Bostock-Cox, B (2015). The diabetes year in review. *Practice Nurse* 45 (1) 28-32.
- Bryman, A. (2008). *Social research methods*. (3rd ed.). London, UK: Oxford University Press.
- Burns, N., & Grove, S. (2009). *The practice of nursing research: Appraisal, synthesis, and generation of evidence* (6th ed.). St. Louis, MO: Saunders Elsevier.
- Centers for Disease Control and Prevention (2010). *Diabetes public health resources*. Retrieved from <http://www.cdc.gov/diabetes/atlas/countyrank/atlas.html>
- Centers for Disease Control and Prevention. (2011). *National diabetes fact sheet*. Retrieved from: <http://www.cdc.gov/diabetes/pubs/factsheet11.htm>
- Centers for Disease Control and Prevention (2014). *National diabetes statistics report, 2014*. Retrieved from: <http://www.cdc.gov/diabetes/pubs/statsreport14/national-diabetes-report-web.pdf>

Chicago Crime Report –Roseland (2013). Retrieved from

<http://crime.chicagotribune.com/chicago/community/>

Data Catalog (2014). *Public health statistics- Diabetes hospitalizations in Chicago, 2000-*

2011. Retrieved from <https://catalog.data.gov/dataset/public-health-statistics-diabetes-hospitalizations-in-chicago-2000-2011>

de Winter, J.C.F. (2013). Using the student's *t*-test with extremely small sample sizes.

Practical Assessment, Research and Evaluation, 18(10), 1-12.

Diabetes and African Americans (2014). Retrieved from

<http://minorityhealth.hhs.gov/omh/browse.aspx?lvl=4&lvlid=18>

Diabetes Initiative, A National Program of the Robert Wood Johnson Foundation. (2009).

<http://www.diabetesinitiative.org/resources/tools/>

ToolsAssessmentInstruments.summary10-DENpre.html

Environment, Culture, and Conservation (2011). Engaging Chicago's diverse

communities in the Chicago climate action plan: Community # 6: Roseland's African-American community. Retrieved from

[http://fieldmuseum.org/sites/default/files/DOE%20Roseland%20Report%20FINA](http://fieldmuseum.org/sites/default/files/DOE%20Roseland%20Report%20FINAL)

L

Evans, M. M. (2010). Evidence-based practice protocol to improve glucose control in

individuals with Type 2 diabetes mellitus. *MedSurg Nursing 19*(6), 317-22.

Feldstein, A. C., & Glasgow, R. E. (2008). A practical, robust implementation and

sustainability model (PRISM) for integrating research findings into practice. *Joint*

- Commission Journal on Quality and Patient Safety*, 34(4), 228-243. Retrieved from: http://medqi.bsd.uchicago.edu/documents/SustainabilityQIJCJQPS4_08.pdf
- Funnell, M., Brown, T., Childs, B., Haas, L., Hosey, G., Jensen, B., ... Weiss, M. (2010). National standards for diabetes self-management education. *Diabetes Care*, 33(1) 89-96. doi:10.2337/dc10-S089
- Glanz, K., Rimer, B.K. & Lewis, F.M. (2002). *Health behavior and health education. Theory, research and practice*. San Francisco, CA: Wiley & Sons.
- Gumb, J., (2012). Relationship between diabetes self-management education and self-care behaviors among African American women with Type 2 diabetes. *Journal of Cultural Diversity*, 19 (1), 18-22.
- Haas, L., Maryniuk, M., Beck, J., Cox, C., Duker, P., Edwards, ... Youssef, G. (2012). National standards for diabetes self-management education and support. *Diabetes Care*, 35, 1-9. doi:10.2337/dc12-1707
- Illinois Department of Public Health (2014). *Chronic Disease Burden Update*, 3(5). Retrieved http://www.idph.state.il.us/pdf/Chronic_Disease_Cost_Calculator_July_2014_Issue_5.pdf
- Illinois Department of Public Health (2012). *EMS reporting system*. Retrieved from <http://app.idph.state.il.us/emsrpt/ind-hosp.asp>
- Illinois Department of Public Health (2012). *The burden of diabetes in Illinois. Prevalence, Mortality, and Risk Factors 2012*. Retrieved from http://www.idph.state.il.us/diabetes/pdf/8-27-12_Diabetes_Burden.pdf

Kent, D., D'Eramo-Melkus, G., Stuart, P. M., McKoy, J. M., Urbanski, P., Boren, S. A.,

... Lipman, R. (2013). Reducing the risks of diabetes complications through diabetes self-management education and support. *Population Health Management, 16*(2), 74-81. doi:10.1089/pop.2012.0020

Llewellyn, C., & McLean, R. (2001). *The facts about diabetes*. London, UK: Belitha.

McEwen, M., & Wills, E. (2011). *Theoretical basis for nursing* (3rd ed.). Philadelphia, PA: Lippincott, Williams & Wilkins.

Medline Plus. (2013). *HbA1c*. Retrieved from

<http://www.nlm.nih.gov/medlineplus/ency/article/003640.htm>

Mensing, R., & Norris, L. (2003). Group education in diabetes: Effectiveness and implementation. *Diabetes Spectrum, 16*, 96-103,

National Certification Board for Diabetes Educators, (2014). Retrieved from

<http://www.ncbde.org/>

National Diabetes Education Program (2011). *The Diabetes Epidemic among African American*. Retrieved from http://www.ndep.nih.gov/media/fs_africanam.pdf

National Diabetes Education Program (2011). *Diabetes prevention program fact sheet*.

Retrieved from <http://ndep.nih.gov>

National Diabetes Education: Professional guiding principles for diabetes care (2012).

Retrieved from

<http://ndep.nih.gov/publications/PublicationDetail.aspx?PubId=108#page6>

- National Institute of Diabetes and Digestive and Kidney Diseases. (2011). *National diabetes statistics*. Retrieved from <http://www.diabetes.niddk.nih.gov/dm/pubs/statistics/#fast>
- National Institute of Health. (2014). *Blood sugar test-blood*. Retrieved from <http://www.nlm.nih.gov/medlineplus/ency/article/003482.htm>
- Norris, L., Engelgau, M., & Narayan, K. (2001). Effectiveness of self-management training in type 2 diabetes: A systematic review of randomized controlled trials. *Diabetes Care*, 24, 561-587. doi:10.2337/diacare.24.3.561
- Pappas, C. (2013). The adult learning theory andragogy of Malcolm Knowles. Retrieved from <http://elearningindustry.com/the-adult-learning-theory-andragogy-of-malcolm-knowles>
- Powers, M., Carstensen, K., Colon, K., Rickheim, P., & Bergenstal, R., (2006). Diabetes BASICS: Education, innovation, and revolution. *Diabetes Spectrum*, 19(2), 90-98.
- Rickheim, P., Weaver, T., Flader, J. & Kendall, D (2002). Assessment of group versus individual diabetes education. *Diabetes Care*, 25(2), 269-274.
- Rimer, B.K., & Lewis, F.M. (2002). *Health behavior and health education: Theory, research and practice*. San Fransisco, CA: Wiley & Sons.
- Robert Wood Johnson Foundation (2008). Survey identifies health issues in six Chicago communities, leads to targeted interventions. Retrieved from <http://www.rwjf.org/reports/grr/043026.htm>

- Roseland Neighborhood in Chicago. (2014). Retrieved from <http://www.city-data.com/neighborhood/Roseland-Chicago-IL.html#top>
- Steinsbekk, A., Rygg, L., Lisulo, M., Rise, M., & Fretheim, A. (2012). Group based diabetes self-management education compared to routine treatment for people with type 2 diabetes mellitus. A systematic review with meta-analysis. *BMC Health Services Research*. Retrieved from <http://www.biomedcentral.com/1472-6963/12/213>
- Tan, MY. (2004). The relationship of health beliefs and complication prevention behaviors of Chinese individuals with type 2 diabetes mellitus. *Diabetes Research and Clinical Practice* 66, 71-77.
- Tang, T., Funnell, M., Noorulla, S., Oh, M., & Brown, M. (2012). Sustaining short-term improvements over the long-term: Results from a 2-year diabetes self-management support intervention. *Diabetes Research and Clinical Practice* 95, 85-92.
- Taub, M., (2006). Concordance of provider recommendations with American Diabetes Association's guidelines. *Journal of the American Academy of Nurse Practitioners* 18, 124-133.
- Young, J. (2011). Educating staff nurses on diabetes: Knowledge enhancement. *MedSurg Nursing* 20(3), 143-150.

Appendix A: Continuum of Care Trajectory for Diabetes Project Participation

Questionnaire

Pretest

(Office Use Only)

All information will be kept CONFIDENTIAL ID# _____

1. Name: _____ Date of Birth: _____

2. Address: _____ City: _____ State: _____ Zip _____

3. Phone: _____ Email address _____

4. Name of Emergency Contact Person _____

Relationship of emergency contact person _____

Emergency contact person phone number _____

5. Which best describes your race/ethnicity?

_____ White or Caucasian

_____ Black or African American

_____ Asian

_____ Native Hawaiian or other Pacific Islander

_____ American Indian or Alaska Native

_____ Other (Please describe)

6. Are you currently employed? Yes _____ No _____ Retired _____

7. Do you have diabetes? Yes _____ No _____ if yes what type? Type 1 ___ Type 2 ___

8. If you do not have diabetes are you a: Friend ___ Family member ___ Caregiver of an individual with diabetes ___?

9. What year were you diagnosed with diabetes? _____

10. During the last 12 months, have you participated in diabetes educational program?

Yes _____ No _____

Health Status

11. Date: _____ Height: _____ Weight: _____ Blood Pressure: _____

12. Do you currently have a primary care healthcare provider? Yes ___ No ___

13. If yes, how long have you been seeing the provider?

_____ Less than 6 months

_____ 6 months -1 year

_____ 1-2 years

_____ 3-5 years

_____ More than 5 years

14. Are you currently receiving medical care for your diabetes? Yes ___ No ___

15. Have you had a Hemoglobin A1c within the last 6 months? Yes ___ No ___

16. Do you smoke? Yes ___ No ___

17. Has your healthcare provider ever told you that your cholesterol is high?

Yes ___ No ___

18. Has your healthcare provider ever told you that you have high blood pressure?

Yes ___ No ___

19. In the last year, have you had:

A foot exam Yes ___ No ___

An eye exam Yes ___ No ___

A "flu" shot Yes ___ No ___

A dental exam Yes ___ No ___

A urine test for protein Yes ___ No ___

20 How would you rate your overall health? Excellent ___ Good ___ Fair ___ Poor ___

21. Who is the person that helps you ***the most*** in taking care of your diabetes?

___ Spouse ___ Nurse ___ Family member ___ Health care provider ___ Other

Diabetes Knowledge:

Please circle one answer for each line:

22. How do you rate your understanding of:	Poor	Good	Excellent
a. Overall diabetes care	1	2 3 4 5	
b. Ways to cope with daily stress	1	2 3 4 5	
c. Planning meals to control blood sugar	1	2 3 4 5	
d. The role of exercise in diabetes care	1	2 3 4 5	
e. Medication you are taking	1	2 3 4 5	
f. How to use the results from blood sugar monitoring	1	2 3 4 5	
g. The effect of diet, physical activity, and medication on your blood sugar	1	2 3 4 5	
h. Signs and symptoms of high blood sugar and low blood sugar	1	2 3 4 5	
i. How to prevent and treat high blood sugar	1	2 3 4 5	
j. How to prevent and treat low blood sugar	1	2 3 4 5	
k. Ways to prevent/reduce long term complications of diabetes	1	2 3 4 5	
l. The importance of taking care and protecting your feet	1	2 3 4 5	

How sure are you?

Having diabetes may mean you have to do different tasks and activities to manage your health. *Please circle the number that corresponds with your confidence that you can do the task.*

How confident are you that you can

23. Do all of the necessary things to manage your diabetes on a regular basis?

Not confident at all 1 2 3 4 5 6 7 8 9 10 Fully Confident

24. Keep stress and worry from interfering with your daily activities?

Not confident at all 1 2 3 4 5 6 7 8 9 10 Fully Confident

25. Follow your meal plan when you have to prepare or share food with people that are not diabetic?

Not confident at all 1 2 3 4 5 6 7 8 9 10 Fully Confident

26. Make appropriate food choices when you are hungry or want a snack?

Not confident at all 1 2 3 4 5 6 7 8 9 10 Fully Confident

27. Exercise at least 15 to 30 minutes 4 to 5 days a week?

Not confident at all 1 2 3 4 5 6 7 8 9 10 Fully Confident

28. Decide when changes in your health mean you should visit your healthcare provider?

Not confident at all 1 2 3 4 5 6 7 8 9 10 Fully Confident

Health Behavior:

29. How often do you check your blood sugar?

_____ 1-2 times a day _____ 3-4 times a day

_____ 1-3 times a week _____ I do not check my blood sugar

30. Last week how often did you follow your schedule for checking your blood sugar?

I did not follow the schedule Most of the time All of the time

31. What type of meal plan have you been asked to follow to manage your diabetes?

Small frequent meals Counting Carbohydrate s

The Plate Method Other (please specify) _____

32. During the past week, how often did you follow your meal plan?

I did not follow the schedule Most of the time All of the time

33. During the past week, how many times did you exercise at least 15 -30 minutes?

I did not exercise at all 1-2 times a week

3-4 times a week 5 days or more

(Adapted from the Diabetes Initiative, Focus on Diabetes Project at the Center for African American Health in Denver, CO with support from the Robert Wood Johnson Foundation in Princeton NJ.)

Appendix B: Continuum of Care Trajectory for Diabetes Project Participation

Questionnaire

Posttest

(Office Use Only)

All information will be kept CONFIDENTIAL ID# _____

1. Name: _____ Date of Birth: _____
2. Address: _____ City: _____ State: _____ Zip _____
3. Phone: _____ Email address _____
4. Do you have diabetes? Yes ____ No ____ If yes what type? Type 1 ____ Type 2 ____
5. If you do not have diabetes are you a: Friend ____ Family member ____ Caregiver of a person with diabetes ____
6. What year were you diagnosed with diabetes? _____

Health Status

7. Date: _____ Height: _____ Weight: _____ Blood Pressure: _____
8. Do you currently have a primary care healthcare provider? Yes ____ No ____
9. Are you currently receiving medical care for your diabetes? Yes ____ No ____
10. Have you had a Hemoglobin A1c within the last 6 months? Yes ____ No ____

Diabetes Knowledge:**Please circle one answer for each line:**

11. How do you rate your understanding of:	Poor	Good	Excellent
a. Overall diabetes care	1	2 3 4 5	
b. Ways to cope with daily stress	1	2 3 4 5	
c. Planning meals to control blood sugar	1	2 3 4 5	

d. The role of exercise in diabetes care	1 2 3 4 5
e. Medication you are taking	1 2 3 4 5
f. How to use the results from blood sugar monitoring	1 2 3 4 5
g. The effect of diet, physical activity, and medication on your blood sugar	1 2 3 4 5
h. Signs and symptoms of high blood sugar and low blood sugar	1 2 3 4 5
i. How to prevent and treat high blood sugar	1 2 3 4 5
j. How to prevent and treat low blood sugar	1 2 3 4 5
k. Ways to prevent/reduce long term complications of diabetes	1 2 3 4 5
l. The importance of taking care and protecting your feet	1 2 3 4 5

How sure are you?

Having diabetes may mean you have to do different tasks and activities to manage your health. *Please circle the number that corresponds with your confidence that you can do the task.*

How confident are you that you can

12. Do all of the necessary things to manage your diabetes on a regular basis?

Not confident at all **1 2 3 4 5 6 7 8 9 10** Fully Confident

13. Keep stress and worry from interfering with your daily activities?

Not confident at all **1 2 3 4 5 6 7 8 9 10** Fully Confident

14. Follow your meal plan when you have to prepare or share food with people that are not diabetic?

Not confident at all **1 2 3 4 5 6 7 8 9 10** Fully Confident

15. Make appropriate food choices when you are hungry or want a snack?

Not confident at all 1 2 3 4 5 6 7 8 9 10 Fully Confident

16. Exercise at least 15 to 30 minutes 4 to 5 days a week?

Not confident at all 1 2 3 4 5 6 7 8 9 10 Fully Confident

17. Decide when changes in your health mean you should visit your healthcare provider?

Not confident at all 1 2 3 4 5 6 7 8 9 10 Fully Confident

Health Behavior:

18. How often do you check your blood sugar?

_____ 1-2 times a day _____ 3-4 times a day

_____ 1-3 times a week _____ I do not check my blood sugar

19. Last week how often did you follow your schedule for checking your blood sugar?

___ I did not follow the schedule ___ Most of the time ___ All of the time

20. What type of meal plan have you been asked to follow to manage your diabetes?

___ Small frequent meals ___ Counting Carbohydrate s

___ The Plate Method ___ Other (please specify) _____

21. During the past week, how often did you follow your meal plan?

___ I did not follow the schedule ___ Most of the time ___ All of the time

22. During the past week, how many times did you exercise at least 15 -30 minutes?

___ I did not exercise at all ___ 1-2 times a week ___ 3-4 times a week ___ 5 days or

more

(Adapted from the Diabetes Initiative, Focus on Diabetes Project at the Center for African American Health in Denver, CO with support from the Robert Wood Johnson Foundation in Princeton NJ.)

Appendix C: Consent to Participate in Roseland Community Hospital Diabetes Self-
Management Education Program

Program Manager:

Dr. Somi Nagaraj DNP

Program Coordinator:

Lesia Williams MSN

██████████

I _____ have been asked to participate in Roseland Community Hospital Diabetes Self-Management Education program.

Purpose:

I understand the purpose of the Diabetes Self-Management Education program is to enhance my knowledge related to diabetes management and self-care so that I can manage diabetes in my own home.

Participants:

I understand that participants may include male and or female adults 18 years old and above that are, family members, or caregivers of a person that have a diagnosis of pre-diabetes or diabetes.

Duration and Location:

I understand the Diabetes Self-Management Education program consist of a five-week program that will include meeting one day per week for 2 hours. I understand during week 1 & 5; I will be asked to complete The Diabetes Project Participation Questionnaire. I understand that children under the age of 18 years old are not allowed to

attend leaning sessions. I understand Roseland Community Hospital provides free shuttle bus service to Roseland Community Hospital and back to my home. I understand that I am solely responsible for calling Roseland Community Hospital and making transportation arrangements. I understand a registered nurse, a registered dietician, or a licensed pharmacist will conduct education sessions. Education sessions will be held at Roseland Community Hospital in the outpatient diabetes clinic.

Procedure:

I understand participation the Roseland Community Hospital Diabetes Self-Management Education program requires an initial assessment of my, weight, and blood pressure. I understand that participation requires a weekly assessment of my blood pressure and weight. I understand each week different diabetes related topic will be discussed.

Risk/Discomforts:

I understand that talking about potential complications related to diabetes may cause some fear and discomfort. I also understand that the exercise can be tedious and time consuming. I am also aware that I will be provided with an assistant if I cannot read and understand the questionnaire, and that I will choose whether to accept or not to be assisted. I also understand that attempts will be made in order to ensure that I have no problem in reading and understanding the questionnaire, especially by use of large fonts, and that I can ask questions at any time during or after the session.

Benefits:

I understand that participating in Roseland Community Hospital Diabetes Self-Management Education program may help to improve my knowledge about diabetes management and self-care by providing me with the knowledge and skills to manage my condition in my own home.

Confidentiality:

I understand that my identity and all identifying information will be kept confidential. I understand that all information will be kept in a secure password protected database. I am aware that results from this study will be sent to the Robert Wood Johnson Foundation, and that my identity along with any identifying information will be excluded.

Payments:

I understand that I will not be charged any fee for any of the education sessions. I understand that RCH will offer free healthy snacks before during or after each educational session.

Right to Withdraw:

I understand that I do not have to participate in Roseland Community Hospital Diabetes Self-Management Education program, and my refusal to participate will involve no penalty or loss of rights to which I am entitled. I may withdraw from Roseland Community Hospital Diabetes Self-Management Education program at any time without fear of losing any services or benefits to which I am entitled.

Signatures:

I have read the entire consent and completely understand my rights as a participant. I voluntarily consent to participate in Roseland Community Hospital Diabetes Self-Management Education program. I have been informed that I will receive a copy of this consent should I have any questions contact Dr. Somi Nagaraj DNP, at 773.995.3011 or by email snagaraj@roselandhospital.org

_____	_____
Signature of Participant	Date
_____	_____
Signature of Witness	Date
_____	_____
Program Coordinator	Date

Appendix D: Roseland Community Hospital Referral Form

Diabetes Self-Management Education Program

Date: _____

Patient Name: _____ DOB _____ Address: _____

Telephone Number:

H - _____ C- _____

Referring Provider/Nurse: _____

Telephone Number:

Office - _____ Fax- _____

Recent Labs:

HbA1c _____ Date: _____

Blood Glucose: _____ Date: _____

Total Cholesterol: _____ Date: _____

Triglycerides: _____ Date: _____

Diabetes Diagnosis:

Pre-diabetes _____

Type 1 _____ Controlled _____ Uncontrolled

Type 2 _____ Controlled _____ Uncontrolled

Current Treatment:

Diet & exercise _____

Oral medication _____

Insulin _____

Education needed:

Comprehensive self-management skills

Group _____ Individual _____

Appendix E: Roseland Community Hospital Diabetes Management & Lifestyle
Education Program
Curriculum

The purpose of Roseland Community Hospital Diabetes Management & Lifestyle Education Program is to assist the residents of the Greater Roseland Community with diabetes self-management skills and education to properly manage their diabetes in the home environment.

1. Diabetes self-management and lifestyle education will be conducted in a small group format every Tuesday from 10am-12 noon and Thursday from 4pm until 6 pm for five weeks. Individual sessions are available upon request.
2. Participants will have their blood pressure and weight checked and recorded every week.
3. The diabetes education coordinator will review your record for a current HbA1c, cholesterol levels, and fasting blood sugar level.
4. Participants will meet in a small group with a variety of healthcare professionals to discuss a variety of topics that are necessary to help you control your diabetes. That will include:

Week 1- What is diabetes?

Week 2- Complications of diabetes

Week 3 -Survival skills & Food basics & planning healthy meals

Week 4-The importance of medications

Week 5- Living healthy with diabetes

5. Participants are expected to make a **SMART** goal every week.

Goal: I will drink plenty of fluid every day

Specific – I will drink water everyday

Measurable- I will drink 2 liters of water everyday

Attainable- Is 2 liters of water per day too much?

Realistic- Can I really drink 2 liters of water every day?

Timed- I will allow myself 7 days to increase my water intake to 2 liters per day

Controlling your Diabetes!

Week 1: What is Diabetes?

Learning Objectives:

- Define diabetes
- Types of diabetes
- Normal blood sugar level & HbA1C
- Signs/symptoms of high blood sugar & low blood sugar
- Treatment for high blood sugar & low blood sugar
- Participant will make one *SMART* goal

Diabetes Mellitus Type 1 also known as insulin dependent diabetes mellitus (IDDM). IDDM is an autoimmune disease that occurs when the insulin producing cells in the pancreas stop producing insulin or the body does not produce enough insulin. Patients with Type 1 diabetes will require daily insulin injections and some may require a combination of insulin injections and oral anti-diabetic medications.

Type 1 diabetes most often occurs in children and teens, but adults also prone to developing Type1 diabetes.

Risk factors for developing Type 1 diabetes

- Family history
- Autoimmune disorder i.e. thyroid disease
- Ethnicity (Caucasians are prone to Type 1 diabetes)
- History of exposure to childhood viruses (rubella, cytomegalovirus, and Epstein-Barr virus).

Signs and symptoms of Type 1 diabetes may include any or all of the following:

- Excessive thirst
- Frequent urination
- Extreme hunger
- Unexplained weight loss
- Feeling tired
- Tingling or burning pain in the feet, legs, hands

- Blurred vision
- Confusion
- Itchy dry skin
- Frequent or recurring infections
- Slow healing wounds

Diagnosing Type 1 diabetes

Type 1 diabetes has a quick onset, and most patients are diagnosed in a hospital emergency department or in their healthcare provider office.

Type 1 diabetes can be diagnosed by the following laboratory blood results.

- A1C above 6.5%
- Fasting blood sugar level of 126 mg/dl
- Random blood sugar of 200mg/dl

Treatments for Type 1 diabetes

- Daily insulin injection(s)
- Some patients may require oral medications in along with insulin injection(s)
- Low carbohydrate diet
- Daily exercise
- Weight control/loss

Type 2 diabetes is the most common type of diabetes. The majority of people with Type 2 diabetes still produce insulin, but the insulin that is being produced does not work properly and is not able to help the body's cells use sugar for energy.

Risk factors for developing Type 2 diabetes

- Overweight or body mass index of 25 or more
- Heredity (having 1st generation family members with Type 2 diabetes)
- Ethnicity (African Americans are affected more than any other ethnic group)
- Hypertension
- Elevated cholesterol levels
- Sedentary lifestyle
- Having pre-diabetes

Signs and symptoms of Type 2 diabetes are the same as Type 1 diabetes. Diagnosing Type 2 diabetes is the same as Type 1 diabetes.

Treatments for Type 2 diabetes

Type 2 diabetes may be controlled and treated by:

- Regular monitoring of blood sugar level
- Diet (low carbohydrate, low sodium, low fat)
- Exercise (4-5 days per week for 15-30 minutes)
- Some patient may require oral anti-diabetes medications
- Weight loss/control

Normal blood sugar range:

- 70-130mg/dl
- 2 hours after eating 70-180mg/dl

Normal glycosylated hemoglobin (HbA1c)

- Under 7% for diabetic patients
- Under 6.5% for patients with pre-diabetes

High blood sugar occurs when your blood sugar is above 200 mg/dl.

Signs & symptoms of high blood sugar:

- Skin is flushed, hot and dry
- Rapid, weak pulse
- Drowsiness, loss of consciousness
- Low blood pressure
- Rapid, deep respirations
- Breath has sweet, fruity odor

Treatment may include:

- Checking urine for ketones (if positive do not exercise)
- If prescribed administer short or rapid acting insulin (if not call healthcare provider)
- Hydration with water
- Walk or exercise if urine is negative for ketones

- Reduce stress
- Recall foods that were eaten

Low blood sugar occurs when the blood sugar level is below 70mg/dl.

Signs & symptoms of low blood sugar:

- Tremors (shaking)
- Fast heartbeat (palpitations)
- Blurred vision
- Sweating
- Hunger
- Irritability
- Headache
- Weakness
- Confusion
- Loss of consciousness
- Convulsion

Treatment for low blood sugar may include:

- If patient is conscious give 2-3 pieces of hard candy or ½ can of soda or orange juice, glucose tablets (2 tablets =30 grams of carbohydrates). Recheck sugar level after 15 minutes
- If patient is unconscious call emergency medical service (do not give anything by mouth), monitor respiration, and maintain airway

I Will Take Control of My Diabetes

Example **SMART** Goal: I will drink plenty of fluid every day

Specific – I will drink water everyday

Measurable- I will drink 2 liters of water everyday

Attainable- Is 2 liters of water per day too much?

Realistic- Can I really drink 2 liters of water every day?

Timed- I will allow myself 7 days to increase my water intake to 2 liters per day

MY SMART goal for Week 1:

I met my SMART goal:

Yes _____. How? _____

No _____. Why not? _____

Diabetes Learning Group

Controlling your Diabetes

Week 2: Complications of Diabetes

Learning Objectives:

- Participant will be able to identify the cause, and symptoms of three diabetes related complications.
- Participant will be able to list three activities to reduce/prevent diabetes related complications.
- Participant will be able to identify factors that increase their risk of developing diabetes related complications.
- Participant will be able to identify three reasons to call their healthcare provide
- Participant will make one *SMART* goal.

Complications related to Diabetes Type 1 & 2 can affect:

- Circulation and sensation to your feet, which can lead to amputation of one or both lower extremities (diabetes is the leading cause of non-traumatic amputation).
- Your vision, which can lead to blindness (leading cause of blindness)
- Your heart resulting in diabetic heart disease, which may lead to a heart attack or a stroke (diabetes is a major cause of heart disease and stroke)
- Your kidneys leading to kidney failure then dialysis

Diabetic nerve damage also known as diabetic neuropathy can occur when your blood sugar level remains abnormally high. Neuropathy can affect the sensation in your feet, and cause poor circulation to both lower extremities.

Risk factors for developing diabetic neuropathy

- Poorly or uncontrolled blood sugar levels
- Abnormally high blood sugar levels

Common signs and symptoms of diabetic neuropathy may include any of the following:

- Numbness or decreased ability to feel pain
- Inability to feel change in temperature especially in the feet and toes
- Super sensitively to touch
- Muscle weakness and difficulty walking
- Frequent urinary tract infection
- GI problems (constipation, diarrhea or both)
- Erectile dysfunction in men
- Vaginal dryness in women
- Increased or decreased sweating
- Delayed emptying of the stomach (gastroparesis)

Diagnosing diabetic neuropathy may include:

- Diagnosis is based on the patients physical symptoms, medical history, and a physical examination by a healthcare provider
- Nerve conduction testing

Treatment for diabetic neuropathy may include:

- Keeping blood sugar level within a normal range
- Oral anti-seizure medications to help reduce the pain
- Oral antidepressants to help reduce pain
- Oral antispasmodic or anticholinergic medications
- Topical anesthetic agents
- Oral medications to treat erectile dysfunction
- Vaginal lubricant to reduce vaginal dryness

Diabetic eye disorder is a group of disorders affect the eyes. The first and second are disorders that can affect people with or with diabetes and the last one affect only people with diabetes:

- Glaucoma is an eye disorder that causes an increase in fluid pressure inside the eye that often leads damage of the optic nerve and eventually loss of vision.
- Cataract is an eye disorder that causes a white opaque film to cover the lens of the eye.
- Diabetic retinopathy is an eye disorder that causes damage and or changes to the small blood vessels in the retina. Diabetic retinopathy usually affect both eyes, it is the most common diabetic eye disorder and the most common cause of blindness in adults in the United States.

Risk Factors for developing diabetic eye disorders

- Age, race, or having a previous diagnosis of glaucoma. Having a diagnosis of diabetes increase the risk of developing glaucoma. Adult patients with diabetes have double the risk of having glaucoma than adults without diabetes.

- Age, high blood sugar levels, and or high blood pressure. Adults with diabetes are prone to developing cataracts in one or both eyes at an early age.
- High blood sugar levels are the most common cause of diabetic retinopathy.

Signs and symptoms of diabetic eye disorders

- Glaucoma with open-angle glaucoma initially there is no symptoms, but as the disorder progresses the patient may experience loss of vision. Depending on the type of glaucoma the patient may experience any of the following symptoms:
 - headaches, eye pain, blurring of the vision, tearing of the eyes, a white halo around lights, and loss of vision
- Cataracts signs and symptoms often include the inability to focus and or blurred vision in the affected eye.
- Diabetic retinopathy initially there are no symptoms, after the disorder has progressed there will be impaired or loss of vision.

Diagnosing diabetic eye disorders

- Glaucoma and cataracts can be diagnosed by reviewing the health history, a physical examination and one or more of several diagnostic eye examinations.
- An eye doctor best diagnoses diabetic retinopathy by a dilated eye examination, measuring the eye pressure, and or testing the vision.

Treatment for diabetic eye disorders

Treatment will be based on the type of eye disorder.

Diabetic Heart Disease (DHD) may include one or more the following heart disease:

- Coronary heart disease occurs when there is a build-up of plaque inside the coronary artery
- Heart failure occurs when the heart do not have enough power to pump enough blood throughout the body to meet the body's needs.
- Diabetic cardiomyopathy occurs when the structure and function of the heart has been damaged.

Risk factors for developing DHD

- Diabetes
- High blood pressure
- High cholesterol
- Obesity/overweight
- Smoking

Signs and symptoms of DHD

Coronary heart disease signs and symptoms may include chest pain, feeling sick to the stomach, shortness of breath, dizzy, tired, and or excessive sweating.

Heart failure signs and symptoms may include shortness of breath or trouble breathing, feeling very tired, swelling of lower extremities and or the abdomen.

Diabetic cardiomyopathies initially there are no symptoms, but as the disease progresses the patient may experience shortness of breath, a strong harsh cough, and or swelling of lower extremities.

Diagnosing DHD

Any one or a combination of the following test maybe used to diagnosis DHD.

- Measuring and monitoring the blood pressure
- Blood work to check cholesterol, sugar, fat and protein levels
- Urinalysis
- Chest X-ray
- EKG
- Cardiac stress test

Treatment for DHD

- Maintaining blood sugar level within a normal range
- Maintaining blood pressure within a normal range
- Lowering cholesterol level and maintaining within a normal range
- Eating healthy (low fat, salt, and sugar foods)
- Stop or do not start smoking
- Being physically active

Kidney disease occurs when the blood sugar level is constantly high. The high levels of sugar forces the kidneys to have to work extra hard to properly filter waste products from the blood.

Risk factors for developing kidney disease

- High blood pressure
- High or uncontrolled blood sugar
- Genetic predisposition

Signs and symptoms of kidney disease

- Initially the patient will not have any noticeable signs or symptoms

- As the disease progresses the patient will start experiencing a build-up of fluid in the lower extremities, confusion, loss of appetite, and or the inability to sleep

Diagnosing kidney disease

- Laboratory blood and urine test

Treatment for kidney disease

- Maintaining blood sugar level within a normal range
- Maintaining blood pressure within a normal range
- Dialysis if the kidneys completely fail
- Kidney transplantation if patient is a candidate

When to notify your healthcare provider

Call your healthcare provider when:

- Your blood sugar is above 300 or below 70
- You have a temperature of 100.4 F or higher
- You have been vomiting for 6 hours or more
- You have had diarrhea for 6 hours or more
- You have an injury to your feet or any body part
- Your appetite has been poor for more than 24 hours

It is very important for you to keep a record of your blood sugar results. Write the results in a logbook or in a notebook along with the date, time. If your results are abnormal write down what may have caused the abnormal results. Always take your logbook and blood sugar machine with you when you have an appointment with your healthcare provider.

I will control my diabetes. Diabetes will not control me!!!!!!

MY SMART goal for Week 2:

I met my SMART goal:

Yes _____. How? _____

No _____. Why not? _____

Diabetes Learning Group

Controlling your Diabetes!

Week 3: Survival Skills & Food basics & planning healthy meals (Meeting with the Registered Dietitian)

Learning objectives

- Participant will be able to state their target blood sugar range
- Participant will be able to demonstrate how to and when check blood sugar level
- Participant will be able to identify what to do if blood sugar is too high or too low, and how to prevent high or low blood sugar levels.
- Participant will be able to identify 3 foods that will raise their blood sugar and 3 foods that will not raise their blood sugar.
- Participant will be able to make the connection between the food they eat and their blood sugar level.
- Carbohydrate smart
- Participant will be able to build a “Healthy Plate”.

What is the normal target blood sugar level?

- Between 70-130 mg/dl if you did not eat or drink anything for at least 8 hours
- Between 70-180 mg/dl 2 hours after you eat

What do I need to check my blood sugar level?

- A glucometer (machine to check blood sugar) and the strips that go with the machine. Together they measure and tell you your blood sugar level.
- Lancets and lancing device (to stick my finger to get a drop of blood)
- Soap and water or an alcohol wipe
- Control solution when you open a new bottle of test strips (to make sure the machine is working right)



These tools will help you to monitor your blood sugar level, so that you will know when your blood sugar level is high or low. How often should I check my blood sugar? Your healthcare provider will advise you on how many times a day or week to check your blood sugar level. But here are a few good times to check your and record your sugar level.

- If you are fasting check your sugar before you brush your teeth or before you eat
- Before your main three meals of the day (breakfast, lunch and dinner)
- 2 hours after you eat breakfast, lunch and dinner
- Before you go to bed

Sometime you may have to check your blood sugar level more often if:

- You are on insulin
- Have an infection

- You are sick or feel like you are getting sick
- Pregnant
- What should I do when my blood sugar is too high? If your blood sugar is over 200 I should: Drink water or any sugar free fluid.
- If you are on insulin it may be necessary to take an extra insulin injection. Before you decide to take extra insulin call your health care provider. If you have a insulin sliding scale use it.
- Recheck your blood sugar within 4 hours, if it has not gone down call your healthcare provide. If your symptoms are getting worse call your healthcare provider.

What should I do when my blood sugar is too low? If your blood sugar is fewer than 70 I should:

- Drink or eat at least 15 grams of sugar (i.e. a ½ cup of juice or take 4 glucose tablets)
- Wait 15 minutes and recheck your blood sugar. If your blood sugar is still below 70 after waiting 15 minutes call your healthcare provider.
- If your blood sugar is over 70, eat a snack to help keep your blood sugar in a normal range

Foods that will raise your blood sugar include:

- Most carbohydrates (rice, pasta, milk, yogurt, fruits and fruit juices, sweet desserts, etc.)

Foods that will not raise your blood sugar very much include:

- Most proteins and fats (lean beef and pork, poultry, eggs, fish, beans, cheese, nuts, butter, etc.)

Making the connection between food and your blood sugar

- When you eat carbohydrates your body breaks the carbohydrate down into sugar to use for energy. All of the cells in your body use the sugar for energy.
- After you eat any food your pancreas releases insulin. The insulin travels to your blood, then picks up the sugar and takes it to your cells; simply put insulin is the

key that opens the doors to your cells to allow the sugar from the blood into the cell.

- Without enough insulin to move the sugar into the cell, the sugar keeps piling up in the blood and will cause high blood sugar

Carbohydrate smart

Since most carbohydrate will raise my blood sugar, is it ok for me to eat them?

Yes, you can still eat carbohydrates, because your body needs them to function. Eat smart, plan ahead, and eat 3 meals each day around the same time.

How many carbohydrates should I eat with each meal?

1st you need to learn foods that are carbohydrates, then you will be able to know how many carbohydrates you can safely have with each meal;

Rules of Thumb:

- No more than 3 carbohydrates with each meal
- 3 meals per day
- No more than 1 carbohydrate for each snack
- 1-2 snacks per day

Helpful hints if you are sick

- ✓ Remember if you are sick your blood sugar may go up
- ✓ Continue taking your medication as it was prescribed (unless your healthcare provider tells you to stop)
- ✓ Check your blood sugar every 4 hours
- ✓ Keep yourself hydrated so drink plenty of fluids (water, broth, sugar-free beverages)
- ✓ If you cannot eat solid food you still need a source of energy so it is important that you drink fluids that contain carbohydrates (regular popsicle, jello, or ½ cup of regular soda)

I Have Diabetes It Does Not Have Me!!!!!!

MY SMART goal for Week 3:

I met my SMART goal:

Yes _____. How? _____

No _____. Why not? _____

Diabetes Learning Group

Controlling your Diabetes!

Week 4: The importance of medication (Meeting with a pharmacist)

Learning Objectives:

- Participant will be able to identify the types of insulin and the role of insulin in the body.
- Participant will explain when to take medication in relation to food.
- Participant will be able to identify how to properly store and dispose of medications.
- Participant will be able identify and explain the types and action of diabetes medications they are taking.
- Participant will make one *SMART* goal.

The role of insulin in your body

Insulin is the *key* that opens the door so the sugar that is in your blood can move from the blood into the cells and be used for energy.

Types of insulin

	Type of insulin	Onset	Peak	Duration
Regular	Short acting	30 minutes	2-5 hours	5-8 hours
Lispro, Novolog, Humalog, Apidra	Rapid acting	5-15 minutes	45-90 minutes	3-4 hours
NPH	Intermediate	1-3 hours	6-12 hours	16-25 hours
Combination: 70/30, (NPH&	Intermediate	1-3 hours	6-12 hours	16-25 hours

Humalog 75/25) , {NPH & Novolog 70/30 mix}				
Levemir	Long acting	0.8-2 hours	No Peak	Up to 24 hours
Lantus	Long acting	1-1.5 hours	No peak	24 hours

When should I take my medication? Check with your healthcare provider for the best time to take your oral medications. The time you take your insulin injection is based on several factors like: your blood sugar, when you eat, and what you will eat.

How should I store and dispose of medication?

Oral medication should be kept in a cool dry place. Insulin should be stored in a refrigerator or in a cool dry place. Proper disposal of discontinued medication will vary based on where you live. You should not flush medication down the toilet or dump medication in the sink. Check with your town for medication drop off days. Insulin syringes must be put in a Sharps container or in a puncture proof container. Check with you town about proper disposal of used needles. Know your diabetes medication

Fill in your oral diabetes medication on the chart below. Discussion with the pharmacist.

Drug Class	How the medication works
Name of your medication _____	
Name of your medication _____	
Name of your medication _____	

Name of your medication _____	
Name of your medication _____	

Fill in your injectable medications on the chart below:

Name of your medication _____	
Name of your medication _____	

I AM SMARTER THAN DIABETES!!!!!!!

MY SMART goal for Week 4:

I met my SMART goal:

Yes _____. How? _____

No _____. Why not? _____

Diabetes Learning Group

Controlling your Diabetes!

Week 5: Living healthy with diabetes

Learning Objectives:

- Participants will be able to identify the purpose of the A1C test and know their target level
- Participant will be able to identify two steps they will take to help their diabetes using the ABC's of diabetes
- Participants will be able to state their cholesterol and blood pressure target levels
- Participants will be able to properly demonstrate how to examine their own feet, and state how often they should examine their feet.
- Participants will be able to list four benefits of exercise related to diabetes
- Participant will make one **SMART** goal.

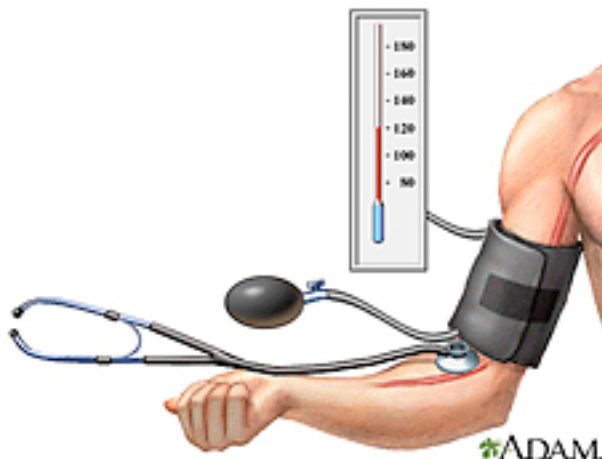
ABC's for Controlling Diabetes

A = A1C is a blood test that measures your and averages your blood sugar level during the past 3 month. Keeping your A1C under 7% can help delay or prevent diabetes related complications.

The percent for your A1C is like the average blood sugar level.

A1C Level	Average Daily Blood Sugar
6%	126
7%	154
8%	183
9%	212
10%	240
11%	269
12%	298

B =Blood pressure control. Your blood pressure goal should be less than 140/80 mm/Hg. Keeping your blood pressure below 140/80mm/Hg reduces your risk of having a heart attack, stroke, kidney disease, and or diabetic eye disease. Your healthcare provider will check your blood pressure with each visit, and may want you to check your blood pressure at home.



C = Cholesterol control. High cholesterol level means you have a build-up of fat that in “clogging” your arteries.

Cholesterol Control Goals	
Total Cholesterol	Below 200 mg/dl
Triglycerides	Below 150 mg/dl
LDL Cholesterol (unhealthy cholesterol)	Below 100 mg/dl Below 70 MG/dl if you have heart disease
HDL Cholesterol (healthy cholesterol)	Above 40 mg/dl for men Above 50 mg/dl for women

Smart tips to lower your blood pressure and cholesterol

- Do not add salt to your food
- Exercise at least 30 minutes 4-5 days a week
- Lose or maintain a normal weight

If you have medications for blood pressure and or cholesterol, take them as ordered.

D = Dental care. High blood sugar can cause damage to your small blood vessels inside of your mouth. The damaged blood vessels can cause tooth decay and tooth loss.

Therefore you should brush your teeth two times a day, floss daily and see your dentist at least one time a year.



E = Eye exam. High blood sugar can damage the small blood vessels in your eyes. The damage can cause you to lose your eyesight, or have problems seeing. Poorly managed diabetes is the leading cause of blindness. *Request a dilated eye exam one time a year.*



F = Foot exam. Check your feet every day, have your healthcare provider to check your feet on every visit. **Always wear shoes to protect your feet.**



G = Glucose monitoring. Checking your blood sugar will help you to know how well you are managing your blood sugar.

H = Health maintenance. Get your annual flu shot and check with your healthcare provider about a pneumonia vaccine.

Benefits of Exercise

- Helps to lower blood sugar
- Helps to improve sleep
- Helps make bones stronger
- Helps with weight loss/control
- Lowers blood pressure
- Lowers cholesterol level
- Helps you with burning fat and calories
- Helps to strengthen your heart and lungs



- ✓ Before starting any exercise program always check with your healthcare provider.
- ✓ Check your blood sugar before and after exercising.

I Know What Have To Do, Now let's do it!!!!!!

MY SMART goal for Week 5:

I met my SMART goal:

Yes _____. How? _____

No _____. Why not? _____

Appendix G: Institutional Review Board Material Approval Letter

From: **IRB** <IRB@waldenu.edu>
Date: Thu, Aug 28, 2014 at 5:01 PM
Subject: IRB Materials Approved - Lesa Williams
To: "Lesla Williams (lesa.williams@waldenu.edu)" <lesa.williams@waldenu.edu>
Cc: dnp <dnp@waldenu.edu>, Irina McKeehan <irina.mckeehan@waldenu.edu>, IRB <IRB@waldenu.edu>

Dear Ms. Williams,

This email is to notify you that the Institutional Review Board (IRB) confirms that your study entitled, "American Diabetes Association Accreditation Process for Roseland Community Hospital Diabetes Self-Management Education Program" meets Walden University's ethical standards. Our records indicate that you will be analyzing data provided to you by Roseland Community Hospital as collected under its oversight. Since this study will serve as a Walden doctoral capstone, the Walden IRB will oversee your capstone data analysis and results reporting. The IRB approval number for this study is 08-28-14-0311900.

This confirmation is contingent upon your adherence to the exact procedures described in the final version of the documents that have been submitted to IRB@waldenu.edu as of this date. This includes maintaining your current status with the university and the oversight relationship is only valid while you are an actively enrolled student at Walden University. If you need to take a leave of absence or are otherwise unable to remain actively enrolled, this is suspended.

If you need to make any changes to your research staff or procedures, you must obtain IRB approval by submitting the IRB Request for Change in Procedures Form. You will receive confirmation with a status update of the request within 1 week of submitting the change request form and are not permitted to implement changes prior to receiving approval. Please note that Walden University does not accept responsibility or liability for research activities conducted without the IRB's approval, and the University will not accept or grant credit for student work that fails to comply with the policies and procedures related to ethical standards in research.

When you submitted your IRB materials, you made a commitment to communicate both discrete adverse events and general problems to the IRB within 1 week of their occurrence/realization. Failure to do so may result in

invalidation of data, loss of academic credit, and/or loss of legal protections otherwise available to the researcher.

Both the Adverse Event Reporting form and Request for Change in Procedures form can be obtained at the IRB section of the Walden web site:

<http://researchcenter.waldenu.edu/Application-and-General-Materials.htm>

Researchers are expected to keep detailed records of their research activities (i.e., participant log sheets, completed consent forms, etc.) for the same period of time they retain the original data. If, in the future, you require copies of the originally submitted IRB materials, you may request them from Institutional Review Board.

Please note that this letter indicates that the IRB has confirmed your study meets Walden University's ethical standards. You may not begin the doctoral study analysis phase of your doctoral study, however, until you have received the **Notification of Approval to Conduct Research** e-mail. Once you have received this notification by email, you may begin your study's data analysis.

Both students and faculty are invited to provide feedback on this IRB experience at the link below:

http://www.surveymonkey.com/s.aspx?sm=qHBJzkJMux43pZegKImdiQ_3d_3d

Sincerely,

Libby Munson

Research Ethics Support Specialist

Office of Research Ethics and Compliance

Email: irb@waldenu.edu

Fax: [626-605-0472](tel:626-605-0472)

Phone: [612-312-1341](tel:612-312-1341)

Office address for Walden University:

100 Washington Avenue South

Suite 900

Minneapolis, MN 55401

Information about the Walden University Institutional Review Board, including instructions for application, may be found at this link:

<http://researchcenter.waldenu.edu/Office-of-Research-Ethics-and-Compliance-IRB.htm>

Appendix H: Institutional Review Board Approval to Conduct Research

From: **IRB** <IRB@waldenu.edu>
Date: Thu, Aug 28, 2014 at 5:01 PM
Subject: Notification of Approval to Conduct Research - Lesa Williams
To: "Lesa Williams (lesa.williams@waldenu.edu)" <lesa.williams@waldenu.edu>
Cc: "Irina McKeehan (irina.mckeehan@waldenu.edu)" <irina.mckeehan@waldenu.edu>, dnp <dnp@waldenu.edu>, IRB <IRB@waldenu.edu>

Dear Ms. Williams,

This email is to serve as your notification that Walden University has approved BOTH your doctoral study proposal and your application to the Institutional Review Board. As such, you are approved by Walden University to conduct research.

Please contact the Office of Student Research Administration at dnp@waldenu.edu if you have any questions.

Congratulations!

Libby Munson

Research Ethics Support Specialist, Office of Research Ethics and Compliance

Leilani Endicott

IRB Chair, Walden University

Information about the Walden University Institutional Review Board, including instructions for application, may be found at this link:
<http://researchcenter.waldenu.edu/Office-of-Research-Ethics-and-Compliance-IRB.htm>