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Effective Management of Diabetes Mellitus Type II in a Military Treatment Facility

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This is to certify that the doctoral study by

Jozy Smarth

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
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Abstract

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Jozy M. Smarth

MSN, University of Kentucky, 1996

BSN, City College of New York, 1985

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

Walden University

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Abstract

In the United States, 34 million people have diabetes and 79 million have prediabetes. Currently, one in nine Americans are diagnosed with diabetes and it is projected that one in five will have diabetes by 2025 and one in three by 2050. The practice-focused question answered by this project addressed the question if implementing a staff education program improved staff's knowledge about self-management education and intent for providers and staff to promote a formal diabetes self-management education (DSME) program in an overseas military treatment facility. The site has 47% of empaneled beneficiaries with diabetes mellitus Type II with an elevated hemoglobin A1C greater than 7.5%. The purpose of this project was to implement staff education for primary care providers, nursing staff, combat medics, and key leadership with the intent to promote DSME. The theoretical frameworks used were the ADDIE Model (Analysis, Design, Development, Implementation, and Evaluation) and the Knowles' theory of adult learning. Nineteen of 24 staff members participated in the education. Pre- and postsurveys measured their diabetes mellitus knowledge. Statistical analysis showed that there was a significant improvement in survey results between the pre-and posttest ($p < 0.001$). Furthermore, 100% of participants responded that the class increased their knowledge of DSME and expressed their likelihood to refer patients to DSME. This statistically significant result suggests a strong impact of DSME, suggesting the potential instructional benefit of this activity and the staff's willingness to promote and refer patients to DSME thus impacting positive social change. Overall, this project aligns with the Walden mission and vision.

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Dedication

My Doctor of Nursing Practice capstone project is dedicated to two of my sisters who have bravely fought against breast cancer. They have been my motivation to pursue and achieve this personal goal. I love and admire them both beyond measure. I will continue to be a staunch advocate for vulnerable populations who have to navigate this cumbersome and complex health system.

Acknowledgments

I would like to take the time to acknowledge my DNP mentor, Dr. Melissa Rouse for her sound advice and the Committee members for their guidance and diligence in the pursuit of my goal. In addition, I would like to thank dedicated visionary leaders like Dr. Ida Montgomery and Dr. Cristóbal S. Berry-Cabán. It has been truly a blessing, having them along for this academic journey

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Section 1: Nature of the Project

Diabetes mellitus (DM) is a growing chronic health care concern. An estimated 34 million people in the United States have been diagnosed DM, with Type II DM accounting for the majority of cases (Centers for Disease Control and Prevention [CDC], 2020). Diabetes accounted for 83,564 deaths in 2017 making it the seventh leading cause of death. Uncontrolled diabetes affects multiple body systems to include renal, cardiovascular, neurological, circulatory, and vision. The estimated medical cost for DM in 2017 was $327 billion (Diabetes Research Institute, 2018). This is a substantial financial burden on the U.S. health care system.

The Institute of Medicine (2015) recommended self-management training for DM that includes nutrition therapy, physical activity, and weight management. Diabetes self-management education (DSME) programs that consist of interprofessional collaboration and initial group or individual face to face education consider health literacy and make follow up calls have been shown to have the greatest impact on glycemic control (Lee et al., 2015). Preventive measures, such as maintaining a normal weight, healthy diet, and exercise can drastically reduce Type II DM. DSME is endorsed by the American Diabetes Association (ADA, 2017).

Problem Statement

The current clinical practice gap identified in the setting where this doctor of nursing practice (DNP) project took place lacks a structured DSME program to treat DM Type II in the primary care setting. Patients who receive DSME have better self-efficacy and glycemic control resulting in reduction of secondary health complications (Chrvala et

al., 2016). Costly sequelae such as renal, cardiovascular, neuropathy, and ophthalmological disease may be averted (ADA, 2018).

I presented Healthcare Effectiveness Data and Information Set (HEDIS) data from the clinical setting where the DNP project took place that showed that out of the 240 enrolled DM patients 128 (53%) were not in compliance with the ADA A1C >7.0. This topic concerns the organization because military treatment facilities (MTF) are incentivized monetarily when their HEDIS measures are within Army Medical Command standards. The nearest military endocrinologist is located 2.5 hours drive from the current MTF. If patients cannot be effectively managed in a primary care setting, they can be referred to the economy, a practice that is standard of care for MTFs. However, there is a language barrier and incurred additional costs for the MTF and the patient. An effective DSME program that brings A1C within recommended standards benefits both patients and the organization. Upon providing the primary care staff with this data, they agreed they would voluntarily participate in an evidence based DSME class to increase their diabetes knowledge and improve patient clinical outcomes.

This gap was addressed by providing education to staff about the benefits of a DSME program. The Veterans Affairs (VA) Department of Defense (DoD) Clinical Practice Guideline (CPG) titled *The Management of Type 2 Diabetes Mellitus in Primary Care* recommended promoting self-efficacy through DSME. The VA/DoD CPG endorsed a quality DSME program to improve glycemic control and better patient clinical outcomes (U.S. Department of Veterans Affairs, 2017). Chomko et al. (2016) stated that primary care experience barriers prohibit promoting DSME programs when compared to

specialty practices like endocrinology. These barriers include lack of staff knowledge about DSME, shorter patient appointment times, resources, provider attitudes, and beliefs concerning effectiveness. The current DNP education project focused on staff development about the benefits of DSME. With staff endorsement, a DSME program will likely be more successful. A DSME program has the potential to have a positive impact that can remove access barriers, decrease healthcare cost, increase patient compliance, improve glycemic control, decrease DM associated hospitalizations, and decrease uncontrolled DM related illnesses such as neuropathy, cardiovascular disease, and kidney damage (Powers et al., 2017). The ADA (2017) published evidence that shows DSME programs result in better patient compliance, improved glycemic control and decreased hospitalizations.

Through this project, I aimed to remove access barriers by improving patient compliance and improving glucose control thereby requiring less primary care appointments. Patients that receive DSME have better self-efficacy and glucose control resulting in more infrequent secondary health complications such as renal, cardiovascular, neuropathy and ophthalmological diseases (Powers et al., 2017). Secondary heath complications can be avoided by proper management of DM. This capstone project promoted DSME for better compliance and patient clinical outcomes.

Purpose Statement

The practice-focused question for this DNP staff education project was as follows: In an overseas MTF, does implementing an education program improve staff's

knowledge about self-management education and intent for providers and staff to promote a formal DSME program?

I focused on developing a staff education program in an overseas MTF. This capstone project addressed staff education for primary care providers, nursing staff, combat medics, and key leadership with the intent to promote DSME. Once providers and staff are aware of the benefits of a DSME program and begin referring patients, it will positively impact patients by promoting self-efficacy, better glucose control, and support of a patient-centered medical home (PCMH) health care team. The staff education was designed using the ADA (2017) and Centers for Disease Control and Prevention (2018) guidelines that focused on DSME knowledge and attitudes.

Nature of the Project

Empirical evidence is what the health care provider observes and experiences in their clinical practice (Chrvala et al., 2016). The applicability of evidence-based practice (EBP) is that empirical evidence prompts the scholar to ask a clinical practice question. This leads to asking questions about current research and best practices. In this case, the HEDIS data, which were below expected compliance, prompting the staff education project to bring evidence to the staff with the intent to improve patient care and clinical outcomes. A literature review was conducted to analyze EBP best-practice guidelines that address issues related to poor DM compliance. Quantitative studies consist of systematic reviews that included meta-analysis and randomized control trials. The health care practitioner can appraise the current research and bring the most up to date EBP to clinical practice.

The identified practice change needed in my current practice setting was staff knowledge related to the benefits of a DSME program. The literature search and analysis support implementation of DSME for better diabetes self-efficacy, glycemic control, diet, and healthy lifestyle modifications. Scientific evidence supports DSME as a treatment modality (Powers et al., 2017). Results showed improved patient compliance, improved glycemic control and home glucose monitoring, improved medication adherence, and improved diet and exercise compliance (Strawbridge et al., 2017). Patients that participated in DSME had improved DM clinical outcomes, less hospitalizations, and increased knowledge about disease management and process. Promotion of self-efficacy behaviors was shown to increase patients' ability to effectively manage DM and be an active partner in their health care. This can save health care costs, decrease access to care barriers, and improve patient clinical outcomes (ADA, 2018).

This staff education project was reviewed and approved by an expert panel consisting of two research nurse educators with a doctor of philosophy (PhD) in nursing and two family nurse practitioners (FNP) with DNP degrees. The experts reviewed the education content and surveys and provided feedback about their relevance to the project and ability to meet course objectives. Edits were made based on their feedback. Approvals were obtained from the facility process improvement committee and Walden University institutional review board (IRB). This allowed for content review and approval before implementation.

The Michigan Diabetes Research Training Center developed a revised diabetes knowledge test (DKT2) comprised of 23 questions addressing diabetes knowledge,

attitudes, and beliefs (Fitzgerald et al., 2016). The DKT5, a true and false version of the tool was used in this project. While it consists of 20 questions, only 16 of these questions were used in the capstone. Reliability and validity were established through the Metabolism, Endocrinology & Diabetes (MEND) study with analysis of combined samples (Fitzgerald et al., 2016).

The survey was administered before and after the staff education class to assess participant intent to promote DSME program. The pre- and posttest survey data were compiled into an Excel spreadsheet and analyzed using IBM SPSS Statistics for data analysis. Descriptive statistics were used to describe the sample and inferential statistics were used to determine if there was an increase in knowledge and commitment to promote DSME. My overarching goal of this DNP capstone was to implement the latest evidence-based practice clinical DM guidelines, promote DSME, and improve patient health outcomes. Educating and promoting VA/DoD CPG on DM management increased staff knowledge about DSME effectiveness and encourage them to recommend DSME to their patients.

The target group for this project was the primary care staff in an oversees MTF DoD family practice clinic that consists of 24 providers: three medical doctors (MDs), one doctor of osteopathy (DO), three family nurse practitioners (FNPs,) one physician assistant (PA), two nurse case managers (NCMs), four registered nurses (RNs), six licensed practical nurses (LPNs), and four combat medics.

A staff education program that focused on provider knowledge, attitudes, and beliefs about DSME was voluntarily taken by the staff. A presurvey was administered at

the start of the class to assess current knowledge, beliefs, and attitudes. A postsurvey was administered at the end of the class. Ethical considerations include not explicitly naming the MTF where the DNP capstone project staff education project took place. Site approval was obtained from the MTF, and IRB approval was obtained from Walden University. Participation was voluntary and kept confidential. All data collected was deidentified and each participant was asked to create a unique code for their surveys. Pre- and postsurvey results were assessed for improvement in knowledge and intent to promote DSME. No identifiable information was collected. Completed surveys were kept in a locked file cabinet behind a locked office door accessible only by me. Data used for analysis was password protected on a secured network computer and only accessible to the DNP student.

This project aligns with the goals of the MTF for management of acute and chronic illnesses in a PCMH. The DoD/VA CPG guidelines state DSME is recommended and effective in positive patient outcomes (2017). This aligns with the MTF mission of quality health care to all beneficiaries. Educating providers and staff about the benefits of DSME will increase the likelihood that they will recommend it to their patients. An effective DSME program that brings patients' A1C within recommended standards benefits the patients and the organization (ADA, 2018). This project incorporates the evidence, procedural steps, practice problem and theoretical framework. This project aligns with the DNP essentials: evidence-based practice, improved patient outcomes, inter-professional collaboration, electronic medical record, scientific underpinning quality improvement and organizational and system leadership and the Walden staff

educational manual. This project aligns with the Walden University mission of DNP students being leaders in social change, applying critical thinking skills, synthesis of knowledge and recommending evidence-based practices that improve patient clinical outcomes.

Significance

The Military Health System (MHS) consists of 424 MTFs across the United States and world-wide (Health.mil, 2020). There are approximately 9.4 million beneficiaries enrolled in the MHS Tricare insurance program (Gimbel et al., 2017). The MTF's mission is medical readiness and care of acute and chronic illnesses of enrolled beneficiaries. Chronic illnesses, such as DM Type II, can take a financial toll on MTFs. While DM Type II is relatively low in the active-duty population, it still affects medical readiness. Service members need to know that their family members are receiving quality healthcare when they cannot be home due to training or duty assignments in austere environments defending their nation's freedom. The setting for this project is a MTF located overseas that provides care to 10,542 empaneled beneficiaries consisting of active duty service members, retirees, family members and DoD employees.

Summary

This section addressed the current clinical practice gap identified in the setting, which is a lack of knowledge about the benefits of DSME. The purpose and nature of this project are explained along with the significance of staff education and its potential impact on improving patient outcomes related to DM

In Section 2, the background, context, theories, and models will be reviewed. The role of the DNP student and project team are discussed. Section 3 discusses the sources of evidence, collection, and analysis of evidence and the impact DSME can have on improving DM clinical outcomes. Section 4 discusses the findings, implications, strengths, limitations, and effectiveness of the DNP project. Section 5 discusses the plan to disseminate information on the project; thus, facilitating the translation of evidenc into clinical practice.

Section 2: Background and Context

Introduction

In the United States 34.3 million people have diabetes and 79 million have prediabetes (CDC, 2017). To put these numbers into perspective, one in nine Americans are diagnosed with diabetes and it is projected one in five will have diabetes by 2025 and one in three by 2050 (CDC, 2017). These high numbers contribute to cardiovascular disease and mortality. In fact, cardiovascular disease is ranked the first leading cause of death with a mortality rate of approximately 655,000 annually (CDC, 2017). Diabetes is the seventh leading cause of death with about 85,000 persons annually (CDC, 2017). These numbers show how important it is to implement EBP and improve clinical outcomes. A reduction in the diabetes numbers would lead to a reduction in cardiovascular disease numbers. This project used the latest scientific evidence to educate the staff about the benefits of DSME. By referring patients to DSME, DM can be better controlled thus, affecting positive social change.

Elderman and William's (2017) cohort study revealed that DM Type II glucose control clinical outcomes are not improving with new treatment options. The National Health and Nutrition Examination Survey (NHANES) reported that of the 34.2 million people with diabetes only 50% (17.7 million) achieve an A1C < 7.0% goal. Identified barriers to DSME in primary care settings are appointment time, lack of resources and patients' unwillingness to participate (Chrvala et al., 2015). An evidence based DSME program that is structured, low cost, and promotes self-efficacy have shown positive impact on lowering A1C (ADA, 2018). Glucose control is a primary indicator of DM

Type II control and disease process (De Oliveira et al., 2016). Gimbel et al. (2017) revealed patients with DM Type II improved self-management of glucose monitoring, diet and exercise improvements, and reduction in A1C following DSME. An intraprofessional multidisciplinary healthcare team DSME approach has proven more effective in self- efficacy behaviors such as medication adherence, glucose monitoring, diet, and exercise regimen (Beck et al., 2019). Poor glucose control, medication adherence, and lack of self-efficacy are addressed by DSME. Structured DSME promotes patients' compliance, increases disease process knowledge, removes healthcare barriers, and empowers self-efficacy health behaviors.

This capstone project promotes positive social change by providing primary care providers and staff knowledge that encourages them to follow the VA/DoD CPG. A PCMH is the health care delivery model that is used at this MTF. The PCMH was adopted and implemented throughout the MHS (Gimbel et al., 2015). Implementation of PCMH in primary care MTFs allowed for intraprofessional collaboration and the patient to be the primary focus of the health care team. The PCMH includes a clinical pharmacist, registered dietician, registered nurse case managers (NCM), and a physical therapist as adjunct staff. The DoD PCMH initiative is the practice model for tri-service military treatment facilities (Bilello et al., 2018; Pope et al., 2017). The goals are to increase access to care, improve patient engagement and achieve desired health care outcomes. Patient activation and self-efficacy are necessary tenets for chronic disease management such as DM (Hadden et al., 2018).

Concepts, Models and Theories

This staff education program was designed using the ADDIE Model; the Knowles' theory of adult learning was the theoretical framework that was used to guide this project. The ADDIE Model consists of five steps that are a continuous process: analysis, design, development, implementation, and evaluation (Canvas Infrastructure, 2014). This model evaluates each step and supports staff education programs to ensure the staff members receive relevant education based on their needs and clinical practice setting. Knowles' theory of adult learning identifies six assumptions: (a) the need to know, (b) self-concept, (c) experience, (d) readiness to learn, (e) orientation to learning, and (f) motivation (Halpern & Tucker, 2014). Knowles (1988) differentiated between andragogy (the art of helping adults to learn) and pedagogy (assisting children to learn). The six assumptions and principles behind adult learning are derived from the concepts of andragogy (Knowles, 1988). Knowles assumed that adult learners, such as the staff nurses, providers, and combat medics who were the participants in this education project, learn best when they understand the reason for the education.

Relevance to Nursing Practice

This capstone project promotes nursing education and involvement by providing primary care nursing staff the tools they need to educate patients on DSME effectively. Providers will encourage and provide some level of DSME, but it is individualized to the providers' preference. Implementing a program that educates the nursing staff about DSME will positively impact patients by promoting self-efficacy, better glucose control, and a PCMH health care team. The nursing staff can initiate DSME upon screening the

patient, provide relevant handouts, and assess interest in attending a DSME class. Nursing staff members can educate patients on the available resources to help them manage their DM effectively. Engaging nursing staff on patient DSME education has improved patient compliance with medication adherence and self-care activities (ADA, 2017).

Chomko et al. (2016) identified barriers that primary care providers experience that prohibit promoting DSME programs. One of the identified barriers was a lack of staff knowledge about DSME. Nursing staff can bridge that gap and start the DSME education process when screening patients for their primary care appointment. Diabetes Mellitus patients with an A1C > 7.0 have shown improvements in A1C reduction and self-reduction and self-efficacy when a nurse case manager educates and follows them biweekly to check on home glucometer readings and lifestyle modifications (Lee et al., 2015). Nurses build strong patient rapport and trust, which make them exceptional educators. Educating patients and promoting better health outcomes is within a nurse's scope of practice. Patient-centered care involves highly trained professionals providing competent care; nurses are an essential part of the team. This DNP project incorporates the PCMH team approach and focuses on staff education concerning the benefits of DSME.

Local Background and Context

The cost of DM Type II management in the MHS is estimated to be approximately $300 million annually (DoD CPG, 2018). DSME is a viable option to reach this population, alleviate access barriers, and increase compliance. This capstone

staff education was conducted in an overseas MTF DoD family practice clinic. A review of the HEDIS revealed enrolled beneficiaries with DM Type II are not in compliance with the recommended ADA glycemic control with a HgbA1C < 7 (American Diabetes Association Diabetes Care, 2019). The VA/DOD CPG endorses a quality DSME program to improve glycemic control and improve patient outcomes (DoD CPG, 2018). The research literature consistently reveals that DSME increases patients' compliance, improves glycemic control, and decreases DM type II related hospitalizations.

The MHS project site is comprised of large medical centers and smaller outpatient clinics. The medical centers have more patient care capability to include, emergency rooms, inpatient care, and specialty care. Outpatient clinics provide primary care. They do not have emergency care, inpatient. or specialty care available. The outpatient clinics refer patients that require a higher level of care to the local economy or the nearest military medical center. The MTF that this DNP project took place in is in a stand-alone primary care clinic. The current enrolled beneficiaries are 10,542 consisting of active-duty service members, retirees, family members, and the DoD employees. This is relevant to the DNP project because enrolled beneficiaries who are unable to manage their DM in primary care must be referred to the local economy or drive 2.5 hours to the nearest military medical center to see an endocrinologist. Additionally, there is a language barrier when seeking care in the local health care system because English is not the primary spoken language. Seeking specialty care in the local economy can also incur additional health care costs. Removing these barriers and providing staff education on

DSME will encourage staff to promote DSME that will improve patient self-efficacy and improve glycemic control.

Role of the DNP Student

The role of the DNP student starts with analysis, the first step in the ADDIE model. This includes assessing the need for a clinical practice change by identifying a practice gap, conducting a review of the literature, and critically appraising the scientific data. Additionally, a needs assessment was performed that identified a need for staff education. Developing a successful staff education program involves effective communication, leadership, and the ability to understand why the practice gap is occurring. Healthcare organizations are unique in their assets, needs, culture and beliefs. The program was designed based on the latest evidence based practice (EBP), with participation from the facility's team to ensure it met the target population needs.

To create a positive impact and produce a sustainable program, it is imperative to receive feedback from the primary care staff. The development and design phases involve engagement of key organizational stakeholders, formulation of an inter-professional team and evaluation of program education goals and SMART objectives that are:

S: Specific: Well defined and clear to team members and stakeholders

M: Measurable: States what was measured to gauge impact, improvement, or program success

A: Attainable: Goals and objectives were reasonable considering resources and time

R: Relevant: Objectives must align with goals, mission, and vision

T: Time-bound: Consider resources and program length and when objectives need to be accomplished, tie objectives to a time (Moore et al., 2014)

Continuous feedback loop design and planning for continuous feedback and evaluation is an intricate process that must include the stakeholders, target population and inter-professional team. Program timeline was flexible to incorporate necessary changes. Program development is a continuous cycle of planning, implementation, evaluation and changes. Effective communication, thorough planning and engaged leadership assisted in making the program successful. The mission statement and program intent guided necessary changes and implementation. The implementation phase of the ADDIE model was the conduct of the class for the staff. It also included the pre- and post-survey to measure improvement in knowledge and to discern if the goal was met.

The DNP student is a change agent, patient advocate and driven by evidence to influence better patient clinical outcomes and achieve organizational goals. The DNP student is an effective leader of change and a passionate EBP champion. Transformational leadership is needed to inform practice and make changes. The DNP initiated the change, informed why the change was needed, articulated the impact on patient care, staff and organizational goals, financial burden and created SMART objectives.

Role of the Project Team

The project team consisted of myself, the primary care medical director, the MTF process improvement department and the nurse case manager. I conducted the MTF needs assessment, engaged organizational leadership, developed the staff education

DSME intervention, evaluated staff knowledge about DSME and made recommendations based on data analysis. I worked collaboratively with the team to gain insight into current staff DSME knowledge and scheduled staff education class. The primary care medical director's role is to disseminate information at staff meetings, concerning the importance of DSME and voluntary attendance at the upcoming class. The process improvement team reviewed the class for content, learning objectives and approved it for implementation. The nurse case manager provided resources about DSME and patients who are not meeting the ADA recommended A1C < 7.0. The inter-professional team brought different perspectives and expertise to the DNP project. I disseminated the capstone results and recommendations to the team after data analysis.

Summary

Translating evidence into practice is critical to improve patient care and outcomes. This section addressed models, theories, background and context, the roles of the DNP student and interprofessional project team. Section 3 discusses the sources of evidence, collection and analysis of evidence and the impact the education about DSME can have on improving DM clinical outcomes. A synthesis of the current scientific literature and DSME programs is presented.

Section 3: Collection and Analysis of Evidence

Introduction

After identifying a practice gap in a primary care clinic in an MTF, I created a project team to help design an education class to improve staff knowledge about DSME. The goal is that with more education, staff will recommend and promote DSME for their patients with DM. DSME can improve patient engagement and achieve desired health care outcomes (ADA 2018). Patient activation and self-efficacy are necessary for chronic disease management such as DM (Hadden et al., 2018). The clinical site where the education was done has been identified to have deficiencies in DM patients meeting goals for A1C. Referring more patients to DSME can improve patient outcomes and bring patients into compliance with A1C recommended standards.

Practice Focused Question

The practice-focused question for this DNP staff education project was designed using the population, intervention, comparison, and outcome (PICO) format. Each component was addressed when formulating the practice focused question: In an overseas military treatment facility, does implementing a staff education program improve staff's knowledge about self-management education and intent for providers and staff to promote a formal diabetes self-management education (DSME) program? De Olivera et al. (2016) revealed that staff education about DSME promoted patient self-efficacy and DSME attendance. Patients are more likely to attend DSME if their primary care provider recommends the education. Patients trust their primary care provider and nurses to make the best medical decisions and recommendations concerning their current health status.

Evidence Generated

A literature review was conducted. Quantitative studies consist of systematic reviews that included meta-analysis and randomized controlled trials. I appraised the current research and bring the most up-to-date EBP to clinical practice. This can save health care costs, decrease access to care barriers and improve patient clinical outcomes. A review of the literature was conducted using the Cumulative Index of Allied Health (CINAHL), Cochrane Library, PubMed, Google Scholar, and Ovid. Key words and phrases *included diabetes mellitus Type II, diabetes self-management education, primary care management diabetes, diabetes education,* and*patient-centered medical home (PCMH)*. The search focused on peer reviewed evidence-based and research articles. Inclusion criteria included articles in the English language, published in 2015 or after, subjects 18 years of age or older, and full text articles. Exclusion criteria were any articles not in full text, not written in the English language, published prior to 2015, and on subjects younger than 18. The search yielded 89 articles. Title and abstract review left 56 articles for full review; 15 excluded and 12 were inaccessible. The final 29 articles were evaluated and graded using Johns Hopkins nursing evidenced-based practice level and quality of evidence. The VA/DoD (2017) Diabetes CPG systematic literature review was included in search and review.

Chronic disease management can be overwhelming for patients. Patients with DM have to monitor their glucose, take oral medications or give themselves insulin, monitor dietary intake and activity modification, check their feet and skin, and have routine eyes exams and routine health care visits (Miller et al., 2014). This can be overwhelming for

patients, and they often experience hopelessness and feelings out of control due to information overload or lack of understanding of DM process. Lee et al. (2016) conducted a study that focused on patient self-efficacy behaviors and glycemic control. The authors revealed that empowering patients, education on DM, provider education, and recommending DSME program had a greater effect on patients' compliance to treatment plan and glycemic control. After a patient is diagnosed with DM, it provides an opportunity for the health care staff to deliver education and support. In a qualitative study conducted by Hanley et al. (2015) found that patients who received initial DSME, follow up calls and support through the health care staff were more likely to achieve optimal glycemic control. Patient education and health care staff involvement and support were shown to positively affect patient outcomes, thus reducing hospitalizations (Beck et. al, 2019).

The ADA (2019) reported on the standards of medical care to improve patient outcomes that included DSME and education for health care staff to promote and support patient self-efficacy. Edelman and Polonsky (2017) conducted a meta-analysis and revealed the issue with poor glycemic control is related to medication adherence. The authors reported lack of provider knowledge about DSME, provider lack of referral to DSME and lack of providers promoting self-efficacy through DSME all contributed to poor patient outcomes and poor glycemic control. Although DSME has proven to increase patient compliance and promote better clinical outcomes, many providers lack knowledge or resources concerning DSME.

This DNP project aimed to address the staff knowledge, attitudes, and beliefs concerning the effectiveness of DSME. The staff education class included an overview of the ADA (2019) treatment guidelines and the CDC (2018) DM guidelines. Providing the latest clinical practice guidelines and scientific evidence closes the knowledge gap for the primary care staff and encourages them to educate and promote DSME to their DM patients.

Participants, Procedures, Protections

The target population for this project was the primary care staff in an oversees MTF DoD family practice clinic that consists of 24 providers: three MDs, one DO, three FNPs, one PA, two NCMs, four RNs, six LPNs, and four combat medics.

A staff education program that focuses on provider knowledge, attitudes, and beliefs about DSME was voluntarily taken by primary care staff. A presurvey was administered at the start of the class to assess current knowledge, beliefs, and attitudes. A postsurvey was administered at the end of the class. Ethical considerations include not explicitly naming the MTF where the DNP capstone project staff education project was undertaken.

Site approval was obtained from the MTF and IRB approval was obtained from Walden University. Participation was voluntary and kept confidential. Data were deidentified and each participant was asked to create a unique code for their surveys. Pre- and postsurvey results was assessed for improvement in knowledge and intent to promote DSME. No identifiable information was used. Completed surveys were kept in a locked file cabinet behind a locked office door accessible only by me. Data used for analysis was

password protected on a secured network computer and only accessible to the DNP student.

Analysis and Synthesis

My intended outcome for this project was to determine if an educational intervention about the benefits of DSME increased knowledge and intent for providers to promote DSME. The pre- and postsurvey data was compiled into a spreadsheet and imported into SPSS. Descriptive statistics were used to describe the sample and inferential statistics were used to determine if there was an increase in knowledge and intent to promote DSME. A paired *t* test was used to analyze data and compare the staffs' knowledge on pre- and postsurvey.

Summary

Section 3 defined the practice focused question and presented sources of evidence. Analysis and synthesis were presented. Section 4 will discuss the findings, implications, strengths, limitations, and effectiveness of the DNP project. Recommendations for future clinical practice change will be presented and evaluated.

Section 4: Findings and Recommendations

Introduction

The identified gap in knowledge was the lack of a formal DSME program and providing patient education on DM management. Chomko et al. (2016) stated that primary care providers experience barriers that prohibit promoting DSME programs compared to endocrinology practices. These barriers include staff knowledge, shorter patient appointment times, scarce resources, provider attitudes, and beliefs on DSME effectiveness. Self-efficacy behaviors of glucose monitoring, diet, and exercise have correlated with improved compliance and reduction in A1C following DSME (Gimbel et al., 2015). This DNP project was aimed at educating primary care staff and assessing their current knowledge concerning DSME. The intervention was a class given with a pre- and posttest.

The DNP student obtained IRB approvals from the DoD Human Research Protection Office (HRPO), and Walden University. Command and critical leadership were presented the DNP project, and approval was granted to implement the staff education class. The staff education class was advertised via flyers, emails, EBP lunch and learn, and leadership. The class was voluntary and offered during clinic training days, lunchtime and staff administrative time. Light refreshments were provided, and the staff were encouraged to be interactive. Discussions and questions were encouraged during and after the class. Positive feedback was given after class by clinic staff that attended. Staff stated: “I didn’t know the DoD CPG recommended DSME for DM management,” “I learned a lot about how DSME increases compliance,” and “As the medical director, I

think our patients would benefit from implementing a DSME program. Thank you for doing this project." This feedback reinforced that the staff education class met the learning objectives and was well received by the audience.

Findings and Implications

A pre-posttest analysis was done using SPSS. The primary care staff consists of 24 staff members; 19 out of the 24 staff (79%) participated in the education class and 100% of those that attended completed pre- and posttests. Participants' mean score for the pretest (16.6%) significantly predicted participants' mean score for the posttest (17.9%; $p < 0.001$). This statistically significant result suggests a strong impact of DSME, suggesting the instructional benefit of this activity.

On the pretest, eight items were answered incorrectly more often than correctly. The two items that were most often answered incorrectly were, "The diabetes diet is a healthy diet for most people" and "Unsweetened fruit juice raises blood glucose levels," with 31.6% of participants answering incorrectly. Three items were answered correctly in both the pre-and posttest: "9. Regular exercise can help reduce high blood pressure," "12. Wearing shoes a size bigger than usual helps prevent foot ulcer," and "14. Numbness and tingling may be symptoms of nerve disease." See Table E1. There was a significant difference in survey results between the pre-and posttest ($p < 0.001$). Post-hoc analysis with Wilcoxon signed-ranks tests was conducted with a Bonferroni correction applied. Consequently, the adjusted significance value was set at 0.003. This adjustment revealed differences between pre-posttest were concentrated in Questions 3, 4, 12, and 15.

Participants were also asked, “17. Before this education, did you know DSME was recommended by the American Diabetes Association and the DoD Diabetes in Primary Care CPG?” Before this education class, 15 participants (78.9%) were aware. Furthermore, 100% of participants responded that the class increased their knowledge of DSME and expressed intent that they were likely to refer their patients to DSME.

Recommendations

The findings of the DNP project support educating primary care staff on DSME programs to increase knowledge and willingness to recommend DSME to their DM patients. This project addressed the DSME knowledge deficit in the primary care setting. Barriers patients encounter when making additional appointments to endocrinologists consist of multiple appointments, cost, and distance. Patients prefer to see their primary care provider as opposed to an endocrinologist, with whom they have an established relationship, know their medical conditions, and provide acute and chronic health issues.

Findings were shared with clinic leadership with a recommendation to establish a formal DSME program. An interprofessional team that helps the primary care provider manage the patient would increase DSME education. The clinic had a clinical doctor of pharmacy, a registered dietitian, and nurse case managers. Recommendations include having the nursing staff educate patients about DSME, informing the provider if the patient is interested in DSME, placing a referral to DSME, the nurse case manager reviewing the consult then contacting the patient, and scheduling them for DSME. The clinical pharmacist will regulate medication as indicated by A1C and glucose readings. The dietician will educate on diet and exercise modification to achieve optimal glucose

control. The nurse case manager will call patients, educate, support, and ensure they have appropriate follow up with the team and the primary care provider.

An interprofessional team is collaborative and patient-centered (Mahoney et al. 2017). This approach also alleviates appointment time constraints, scarce resources, and provider attitudes on DSME. The MHS has adopted the patient-centered medical home model of health care delivery throughout their healthcare facilities. The MHS' goals are to increase access to care, improve patient engagement and achieve desired health care outcomes. This program provides interprofessional collaboration, increases access, and aligns the patient at the center of the care team. Implementation of a DSME program can increase patient compliance, lower A1C, and improve DM HEDIS measures.

Contribution of the Doctoral Project Team

My mentor provided constructive feedback, guidance and ensured the relevance of the project. She was available for telephone conferences and provided expertise on EBP steps and procedures. The DNP chair provided oversight and approval of the proposal and project. The chair reviewed the project to ensure it met the American Association of Colleges of Nursing (AACN) DNP essentials. The chair guided the proposal and recommended necessary changes. Committee members provided feedback and support. Committee members made recommendations and helped to guide and develop the DNP project. The expert panel consisting of two research nurse educators with a PhD in nursing and two FNP with DNP degrees reviewed the education content and surveys before the education was presented and provided feedback about their relevance to the project and ability to meet course objectives.

I was responsible for conducting a systematic literature review, identifying practice gaps and developing a DNP project that addressed the practice gap. I had to gain institutional support, collaborate with other allied health professionals, design a staff education class, and inform key stakeholders about the project. I also delivered the education. I was receptive to feedback from the mentor, committee, and chair. My role was to be a professional and a transformative leader implementing an evidence-based staff education project that improved staff knowledge and intent for providers and staff to promote a formal DSME program. This will ultimately improve patient outcomes.

Strengths and Limitations of the Project

Strengths

My project addressed a gap in clinical practice in a military family practice clinic. The systematic literature review revealed DSME increases patient compliance, glucose control, and DM management. The clinic had the interprofessional resources to collaborate and offer DSME but lacked a formal DSME program. My project addressed the staff's DSME knowledge and attitudes. Results supported organizing and teaching a DSME class, improved participants' confidence, diabetes knowledge, and skills, and provided a valuable service that will improve patient care and outcomes at a military medical clinic.

Limitations

This DNP project was implemented in a small, stand-alone overseas medical home. There was good staff participation with 19 out of 24 (79%) attending the class. However, in a military medical center located in the United States, the patient-centered

medical home would be twice this size. This is seen as a limitation because the project addressed the needs of a smaller family practice staff, and there would be more challenges to complete a staff education class, if there was a larger team. Evidence supported better outcomes with DSME, but there is a lack of military treatment facilities implementing DSME programs. Military dependents and beneficiaries face more challenges because they must move every two to three years to another military base. This disrupts the continuity of care, provides changes, and increases stressors. This population needs medical needs addressed and continuity of care.

Section 5: Dissemination Plan

Dissemination of the DNP project facilitates the translation of evidence into clinical practice. Dissemination allows other health care professionals to review the DNP project and evaluate if a change is likely to occur in their particular clinical practice. The DNP-prepared nurse promotes better patient outcomes by disseminating their professional work. Walsh (2010) reported barriers to disseminate evidence-based practice in primary care: Poor facilities, understanding statistics, previous education, unable to implement, clarity of research reporting, time, and poor cooperation from peers. These barriers pose challenges and require SWOT analysis before dissemination (QIO, 2016).

I intend to disseminate my DNP project findings at the American Association of Nurse Practitioners (AANP) National Conference. This forum aligns with AANP primary care clinical practice topics. Limitations associated with a podium presentation are time constraints and the presenter not effectively communicating the project implications to practice. The limitations can be mitigated by rehearsing the presentation and preparing for questions. The strengths of a podium presentation are the interactions with the audience that allows the presenter to answer questions and network with peers.

A poster presentation is another avenue to disseminate project results. Poster presentations allow others, at their convenience, to view the DNP project, findings, discussion, and implications. Posters are displayed at professional conferences, health fairs, and primary care clinics. Posters can reach a larger audience. Limitations include the inability of the author to answer questions and the lack of interaction with the audience.

Dissemination is part of the American Association of Colleges of Nursing (AACN, 2006) essentials of doctoral education for advanced nursing practice. Essential VII addresses population health and clinical prevention. *Healthy People 2020* addresses chronic disease management and diabetes mellitus education. My DNP project recommends DSME for better patient outcomes and lowers A1C. My scholarly work promotes best practices, improving health care delivery and health wellness and promotion.

Analysis of Self

As a retired Army officer, I have had the opportunity to participate in advanced leadership training. Arbinger training "Mindset Change and Leader Development" is a 3-day training course adopted by the Army. Participating in this training allowed me to be self-aware, emotionally intelligent, and an effective communicator. These skills were essential in my academic pursuit of my DNP. Achieving my educational goals was challenging professionally and personally. I had to adapt and overcome, manage my expectations, and remind myself why I started this journey. I began this DNP program to learn how to improve health care delivery and improve clinical outcomes. I have achieved this goal: my knowledge and professional practice have benefitted from this journey. As a board-certified advance practice registered nurse and family nurse practitioner, I owe it to my patients to deliver high-quality medical care.

I have spent countless hours reviewing DSME and DM management peer-reviewed research articles. I conducted a needs assessment on how I could positively impact the practice gap. The DNP essentials guided my project from the PICO,

implementation, findings, and dissemination. Professional DNP prepared nurses have an obligation to continue to advance their knowledge and improve health outcomes.

These activities informed my professional clinical nurse practitioner practice by educating staff and DM patients on DSME as a viable option to achieve optimal glucose control. Promoting self-efficacy in chronic disease processes, such as DM, give patients the ability to have control over their behaviors and treatment plan (Young et al., 2020). As a scholar, I increased my knowledge and ability to critically appraise the current peer reviewed research thus allowing me to incorporate evidence-based practice into my clinical and professional practice. Clinically, I have incorporated DSME into my treatment plans. Professionally, I have educated the staff and peers on the ADA DM guidelines and recommendation for DSME. I educated the importance of DSME and improved patient outcomes. Being the project manager enabled me to use my leadership skills, effective communication, self-awareness and collaboratively work with other healthcare professionals. This DNP project solidified my long-term goals of advancing nursing practice, delivering high-quality healthcare and promoting evidence-based practice. I was not always comfortable during my academic pursuit of my DNP, but I do believe it is necessary to come out of your comfort zone to learn and grow professionally.

This scholarly journey allowed me to self-reflect, be flexible, and receive constructive criticism. Encountered challenges were gaining key stakeholders support, formulating an interprofessional team, and obtaining DoD IRB approval. It was frustrating when delays occurred, but I had to remind myself that I wanted this project to have rigor that informs and changes clinical practice. All these steps were necessary to

complete the project. Solutions for encountered challenges included scheduling many meetings to ensure key stakeholders had multiple opportunities to attend and adjusting to their busy schedules by doing desk side presentation. Formulating the interprofessional team and clearly delineating roles was a challenge due to work schedules and patient care obligations. This was mitigated by coordinating schedules, sending out agendas, ensuring meetings had objectives and were concise and productive. Obtaining the DoD IRB approval was a challenge due to process and review. This was mitigated by being proactive in filing out all required forms and sending email correspondence to check on the approval status. Completion of this project has energized my professional and scholarly journey. It showed me that evidence-based practice can improve quality of care and not only positively impact patient outcomes but also educate healthcare staff.

Summary

This DNP project aimed to implement the latest evidence-based practice clinical DM guidelines, promote DSME, and improve patient health outcomes. Educating and promoting VA DoD CPG on DM management increased staff knowledge about DSME effectiveness and encouraged them to recommend DSME to their patients. The results support that a DSME staff education class improved DSME knowledge and intent to recommend to DM patients. These findings positively impact nursing practice, PCMH, and DM in a military medical clinic. Registered nurses educate patients on acute and chronic medical issues. This project incorporated the nurses into the interprofessional patient-centered care team. It allowed nurses to work “at the top” of their license and scope of professional practice.

Recommendations include future projects and research on more extensive military treatment facilities for the feasibility of incorporating DSME staff education. Smaller military medical clinics that lack specialists would benefit from this project. Project findings indicated increased staff knowledge and intent to refer to DSME.

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Appendix A: Pretest

Here are 16 statements about diabetes. Please read each statement and then indicate whether you think it is true or false by putting a circle around either TRUE or FALSE. If you do not know the answer, please put a circle around DON'T KNOW.

1. The diabetes diet is a healthy diet for most people.	TRUE / FALSE / DON'T KNOW
2. Glycosylated haemoglobin (HbA1c) is a test that measures your average blood glucose level in the past week.	TRUE / FALSE / DON'T KNOW
3. A pound of chicken has more carbohydrate in it than a pound of potatoes.	TRUE / FALSE / DON'T KNOW
4. Orange juice has more fat in it than low fat milk.	TRUE / FALSE / DON'T KNOW
5. Urine testing and blood testing are both equally as good for testing the level of blood glucose.	TRUE / FALSE / DON'T KNOW
6. Unsweetened fruit juice raises blood glucose levels.	TRUE / FALSE / DON'T KNOW
7. A can of diet soft drink can be used for treating low blood glucose levels.	TRUE / FALSE / DON'T KNOW
8. Using olive oil in cooking can help lower the cholesterol in your blood.	TRUE / FALSE / DON'T KNOW
9. Exercising regularly can help reduce high blood pressure.	TRUE / FALSE / DON'T KNOW
10. For a person in good control, exercising has no effect on blood sugar levels.	TRUE / FALSE / DON'T KNOW
11. Infection is likely to cause an increase in blood sugar levels.	TRUE / FALSE / DON'T KNOW
12. Wearing shoes a size bigger than usual helps prevent foot ulcers.	TRUE / FALSE / DON'T KNOW
13. Eating foods lower in fat decreases your risk for heart disease.	TRUE / FALSE / DON'T KNOW
14. Numbness and tingling may be symptoms of nerve disease.	TRUE / FALSE / DON'T KNOW
15. Lung problems are usually associated with having diabetes.	TRUE / FALSE / DON'T KNOW
16. When you are sick with the flu you should test for glucose more often.	TRUE / FALSE / DON'T KNOW

Appendix B: Posttest

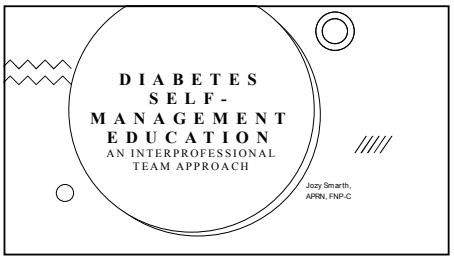
Here are 16 statements about diabetes. Please read each statement and then indicate whether you think it is true or false by putting a circle around either TRUE or FALSE. If you do not know the answer, please put a circle around DON'T KNOW.

1. The diabetes diet is a healthy diet for most people.	TRUE / FALSE / DON'T KNOW
2. Glycosylated haemoglobin (HbA1c) is a test that measures your average blood glucose level in the past week.	TRUE / FALSE / DON'T KNOW
3. A pound of chicken has more carbohydrate in it than a pound of potatoes.	TRUE / FALSE / DON'T KNOW
4. Orange juice has more fat in it than low fat milk.	TRUE / FALSE / DON'T KNOW
5. Urine testing and blood testing are both equally as good for testing the level of blood glucose.	TRUE / FALSE / DON'T KNOW
6. Unsweetened fruit juice raises blood glucose levels.	TRUE / FALSE / DON'T KNOW
7. A can of diet soft drink can be used for treating low blood glucose levels.	TRUE / FALSE / DON'T KNOW
8. Using olive oil in cooking can help lower the cholesterol in your blood.	TRUE / FALSE / DON'T KNOW
9. Exercising regularly can help reduce high blood pressure.	TRUE / FALSE / DON'T KNOW
10. For a person in good control, exercising has no effect on blood sugar levels.	TRUE / FALSE / DON'T KNOW
11. Infection is likely to cause an increase in blood sugar levels.	TRUE / FALSE / DON'T KNOW
12. Wearing shoes a size bigger than usual helps prevent foot ulcers.	TRUE / FALSE / DON'T KNOW
13. Eating foods lower in fat decreases your risk for heart disease.	TRUE / FALSE / DON'T KNOW
14. Numbness and tingling may be symptoms of nerve disease.	TRUE / FALSE / DON'T KNOW
15. Lung problems are usually associated with having diabetes.	TRUE / FALSE / DON'T KNOW
16. When you are sick with the flu you should test for glucose more often.	TRUE / FALSE / DON'T KNOW

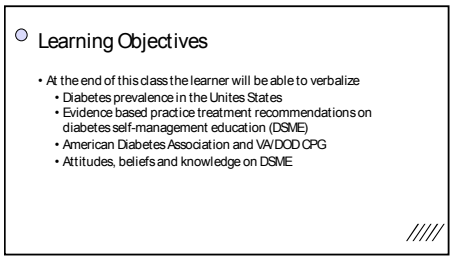
The next three questions pertain to the staff education and diabetes self-management education. Please circle YES or NO to answer each question.

17. Prior to this education class did you know DSME was recommended by the American Diabetes Association and the VA/DoD Diabetes in Primary Care CPG?	YES NO
18. Did this staff education class increase your knowledge on DSME?	YES NO
19. Are you more likely to refer your diabetes patients to DSME?	YES NO

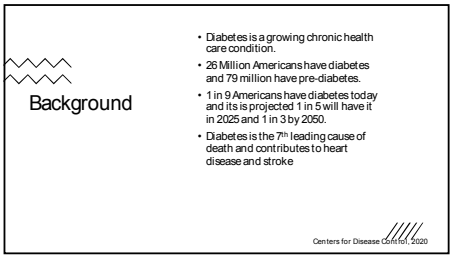
Appendix C: Staff Education Class Content



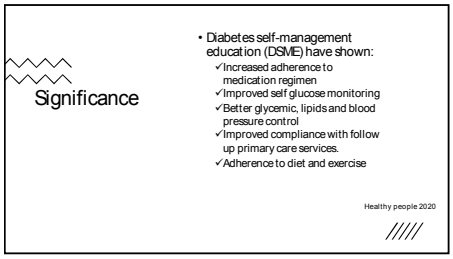
1



2



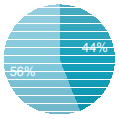
3



4

Barriers

- DSME underutilized therapy in primary care diabetes management



American Diabetes Association, 2017

5

The research shows:

People with Diabetes	Providers	EBP Approach
• Don't follow through on referral • Are overwhelmed at diagnosis • Not aware of DSME resources • Believe they can handle it on their own	• Know importance of DSME, but don't refer or initiate discussion with patients. • Time constraints that do not allow for follow up with patients or to encourage attendance	• Recommend DSME to all newly diagnosed patients and annually. • Interprofessional team approach • Streamline referral process • PCMH involved in education process

American Diabetes Association, 2017

6

Treating patients with Diabetes

Promote	Provide	Enable	Don't overwhelm
• Promote patient-centered medical home (PCMH)	• Provide American Diabetes Association (ADA) patient DSME educational materials	• Enable patients to help themselves	• Don't overwhelm the patient, balance priorities and goals

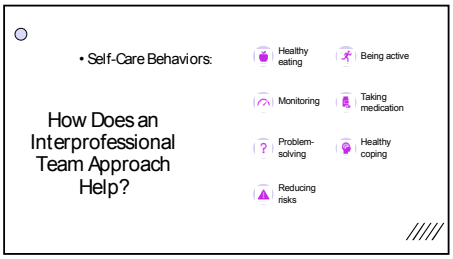
7

EBP Approach

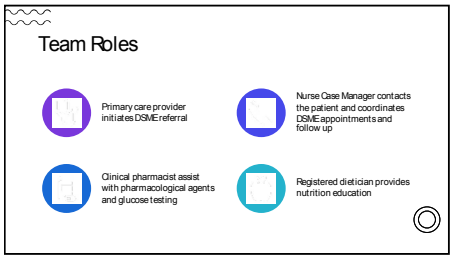
- Implemented Veterans Affairs, Department of Defense Clinical Practice Guidelines (VA/DoD CPG): The Management of Diabetes is a Primary Care Setting. Formal DSME program recommended for management.
- Interprofessional DSME team and streamline referral process to decrease referral barriers

VA/DoD CPG, 2017

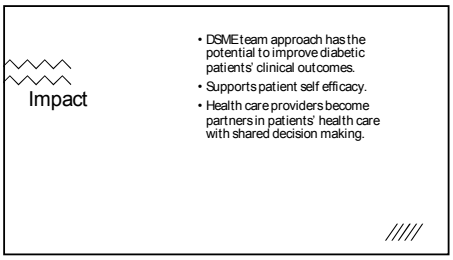
8


• Self-Care Behaviors:
How Does an Interprofessional Team Approach Help?
Healthy eating
Being active
Monitoring
Taking medication
Problem-solving
Healthy coping
Reducing risks

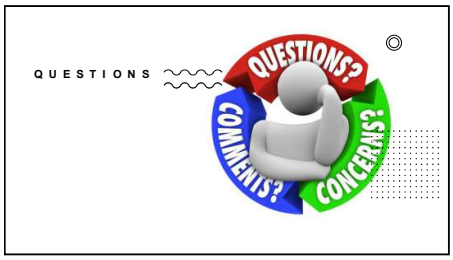
9


Team Roles
Primary care provider initiates DSME referral
Nurse Case Manager contacts the patient and coordinates DSME appointments and follow up
Clinical pharmacist assist with pharmacological agents and glucose testing
Registered dietician provides nutrition education

10


Impact
• DSME team approach has the potential to improve diabetic patients' clinical outcomes.
• Supports patient self efficacy.
• Health care providers become partners in patients' health care with shared decision making.

11


QUESTIONS
QUESTIONS?
COMMENTS?
CONCERNS?

12

References

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Appendix D: Department of Defense Human Research Protection Office Approval

DEFENSE HEALTH AGENCY
7700 ARLINGTON BOULEVARD, SUITE 5101 FALLS CHURCH, VIRGINIA 22042-5101

September 22, 2021

MEMORANDUM FOR: MS. JOZY MERIZIER SMARTH

SUBJECT: Human Research Protection Official Review – Concurrence with Exempt Research Involving Human Subjects Determination

DHQ #: DHQ-21-2029 EIRB # for Current Action: 942425 Title: Effective Management of Diabetes Mellitus Type II in a Military Treatment Facility **Principal Investigator:** Ms. Jozy Merizier Smarth

The Component Office for Human Research Protections (COHRP), Defense Health Agency (DHA) Office of Research Protections (ORP) has reviewed the documents submitted for the above- referenced project. The undersigned Human Research Protection Official concurs with the Walden IRB's determination that the activity meets the criteria for 32 CFR 219.104(d)(2)(iii). If your study involves the use of data or biospecimens, then this approval alone does not authorize access to requested items. The final decision to release the requested data or biospecimens was made by the manager of the repository, and this determination is only one factor the manager will consider.

You must promptly notify the undersigned or this office of the following per DoDI 3216.02: IRB-approved changes to human subject research (HSR) that involve changes to key investigators or institutions; decreased benefit or increased risk to subjects in greater than minimal risk research as defined in Part 219 of Title 32; addition of vulnerable populations, or DoD-affiliated personnel as subjects

1. Transfer of HSR oversight to a different IRB
2. Notification by any federal body, State agency, official governing body of a Native American or Alaskan native tribe, other entity, or foreign government that the non- DoD institution's DoD-supported HSR is under investigation

3. Any problems involving risks to subjects or others (UPIRTSOs) or any serious or continuing noncompliance pertaining to DoD-supported HSR and actions taken to mitigate the events within 24 hours of reporting it to your primary IRB
4. Any suspension or termination of IRB approval within 24 hours
5. The results of the IRB's continuing review, if required
6. Change in status when a previously enrolled human subject becomes pregnant, or when the researcher learns that a previously enrolled human subject is pregnant, and the protocol was not reviewed and approved by the IRB in accordance with Subpart B, Subpart 46 of Title 45, CFR
7. Change in status when a previously enrolled human subject becomes a prisoner, and the protocol was not reviewed and approved by the IRB in accordance with Subpart C, Subpart 46 of Title 45, CFR
8. A DoD-supported study's closure

Please note if the project involves a survey or focus group, then you may still need to submit your survey to Washington Headquarters Services (WHS) for approval and licensing under DoDI 8910.01 and/or to another agency (*e.g.,* Office of Management and Budget) for approval. You should contact these agencies for additional information prior to starting your study.

Please keep a copy of this letter in your records. Should you have any questions, please feel free to contact the undersigned at DHA.HRPP@mail.mil.

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Weina, Peter J. COL, MC, USA
Director, Office of Research Protections, DHA

Table E1. Revised Michigan Diabetes Scale

Revised Michigan Diabetes Scale Results (N = 19)

Question	otal Correct Answers Pretest	ercent	otal Correct Answers Posttest	ercent	Percent Difference	re/Post *p* values
The diabetes diet is a healthy diet r most people	13	0.68	19	1.00	31.58	0.02
Glycosylated haemoglobin IbgA1c) is a test that measures your erage blood glucose level in the past eek	19	1.00	18	0.95	-5.26	0.32
A pound of chicken has more rbohydrate in it than a pound of otatoes	19	1.00	17	0.89	-10.53	<0.001
Orange juice has more fat in it than w fat milk	16	0.84	15	0.79	-5.26	<0.001
Urine testing and blood testing are oth equally as good for testing the vel of blood glucose	19	1.00	18	0.95	-5.26	0.32
Unsweetened fruit juice raises blood ucose levels	13	0.68	18	0.95	26.32	0.10
A can of diet soft drink can be used r treating low blood glucose levels	17	0.89	15	0.79	-10.53	0.32
Using olive oil in cooking can help wer the cholesterol in your blood	15	0.79	19	1.00	21.05	0.06
Exercising regularly can help duce high blood pressure	19	1.00	19	1.00	0.00	1.00
). For a person in good control, ercising has no effect on blood gar levels	17	0.89	19	1.00	10.53	0.16
. Infection is likely to cause an crease in blood sugar levels	18	0.95	19	1.00	5.26	0.32
2. Wearing shoes a size bigger than ual helps prevent foot ulcer	15	0.79	15	0.79	0.00	0.00
3. Eating foods lower in fat decreases ur risk for heart disease	15	0.79	18	0.95	15.79	0.08
4. Numbness and tingling may be mptoms of nerve disease	19	1.00	19	1.00	0.00	1.00
5. Lung problems are usually sociated with having diabetes	14	0.74	19	1.00	26.32	0.00
6. When you are sick with the flu you ould test for glucose more often	17	0.89	19	1.00	10.53	0.16