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Implementation of a Diabetic Resource Toolkit in a Veterans Administration Emergency Department

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
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the review committee have been made.

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Abstract

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Abstract

Diabetes is the 7th leading cause of death in the United States. Uncontrolled diabetes and lack of self-care knowledge leads to increased emergency department (ED) visits, utilizing limited health care resources. The practice-focused question asked whether a patient-focused diabetic self-care toolkit could decrease the number of diabetes-related ED visits. The purpose of this project was to reduce the number of diabetes-related ED visits andwas supported by the social cognitive theory. The sources of evidence included the facility's ED Information System (EDIS) data and a patient survey developed by the project lead. There were 149 participants (135 males and 14 females). Before program implementation there were 3240 total ED visits with 124 diabetes-related disposition diagnoses. Post-project there were 3362 total ED visits, with 126 diabetes-related disposition diagnoses. Data collected revealed no meaningful difference between the pre-project and post-project ED diabetes related visits. However, of the 124 pre-project diabetes-related visits, 59 had a triage complaint or disposition diagnosis of medication refill, and of the 126 post-project diabetes-related visits, 33 were medication refills. Although implementation of the diabetes resource toolkit did not help to decrease diabetes related emergency department visits, it did identify that 47.58% of pre-project visits and 26.19% of post-project visits were related to medication refills, showing a 21.39% post-project decrease in medication refill visits. This identifies one potential positive impact of the toolkit implementation. The implications for positive social change from this project is the recognition that medication refills are an impacting contributor to diabetes-related ED visits and from that, nursing practice can gain new knowledge in the fight against diabetes.

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Dedication

I dedicate this body of work to my mother, Marie Barnes Thomas, who suffered with diabetes and ultimately succumbed to it. You have been and always will be the driving force in my life for all that I achieve. I love you.

Acknowledgments

Special thanks to Dr. Patricia Schweickert; without her guidance and encouragement, this may not have come to be. I would also like to thank my Thomas family who gave me encouragement when I was coming so close to finishing, but losing faith. Thank you to the late Rev. Dr. Terry Thomas of Hurtsboro, Ala. who said to me, “Strive to shake hands with your dream.”

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Section 1: Nature of the Project

Introduction

Diabetes is a critical public health concern in the United States (Washington, Andrews, & Mutter, 2013), and diabetic patients seek emergency room care at an increasing rate. The incidence and prevalence of diabetes has risen sharply since 1990 and is projected to increase another 64% between 2010 and 2025 (Rowley & Bezold, 2011). This increase is anticipated to raise medical and societal cost for diabetes treatment to half a trillion dollars a year (Rowley & Bezold, 2011). The Health Cost Institute (2016) reported that between 2012 and 2014, there was an annual increase in diabetes-related emergency department visits at the rate of 8.1%, spending nearly 16,000 per capita in 2014, over 10,000 per capita higher than for people without diabetes. One category of data collected during the project was reason for emergency department visit, this was extremely helpful in recognition of factors that lead to emergency department overutilization.

Many people with diabetes have or are at risk for developing comorbidities, including heart disease, lipid abnormalities, nerve damage, hypertension, and depression. (Haas et al., 2012). Li et al. (2013) conducted a study on the medical cost of Type 2 diabetes complications and comorbidities. When diabetic patients have multiple chronic conditions, screening, counseling, and treatment needs can far exceed the time available for patient-provider visits (Piette & Kerr, 2006). Piette & Kerr, 2006 concluded that when compared to the cost of Type 2 diabetes alone, Type 2 diabetes with comorbidities can range from 300% to 500% higher. This increase in cost has been attributed to more frequent outpatient emergency department visits (Piette & Kerr, 2006). Young, Sachais, and Jefferies (2002) revealed that patients with comorbidities had increased hospital stay cost. The costs were mostly incurred through increased length of stay where those with comorbidities had an increased length of stay of 2 days longer than those without. Kerr et al. (2007) conducted a cross-sectional observation study on diabetes and comorbidities. Kerr et al. (2007) revealed that 40% of patients with diabetes have at least three chronic diseases. Kerr et al. also revealed that patients with a greater overall number of comorbidities placed lower priority on diabetes and had worse diabetes self-management ability scores. Comorbidities can have profound effects on patients' ability to manage self-care. In addition, disabling conditions such as advanced heart failure and dementia may make standard diabetes self-care goals impossible to reach (Piette & Kerr, 2006).

Veterans Affairs health care is an integrated health care system that provides universal coverage and limits the effect of systems-level factors such as insurance status; this allows more focus on the patient-level factors that drive emergency department use (Doran, Raven, & Rosenheck, 2013). These factors include patients who do not have regular sources of care, patients who are dissatisfied with their provider, patients with disruptions in care, and patients who have perceived barriers to accessing care (Enard & Ganelin, 2013). In 2010, approximately 12.1 million adults visited the emergency department with diabetes-related complaints, translating to 9.4% of all emergency department visits for adults (Washington et al., 2013). Most (57.9%) of the patients seen for emergency department visits for diabetes related problems were treated and discharged to back to their home (Washington et al., 2013). This indicates that many of these diabetes-related emergency department visits may have been avoided through effective self-care. In Enard and Ganelin's (2013) study, community health workers were instituted as emergency department navigators. They were instituted to promote proper utilization of primary care and prevent or reduce primary care-related emergency department use. The primary care-related emergency department was defined as those for whom medical care was not required within 12 hours; those who required immediate medical care but could have been treated safely and effectively in a primary care setting; or those who required immediate medical care, but the emergent nature of the condition was potentially preventable or avoidable with timely and appropriate primary care (Enard & Ganelin, 2013).

Higher health literacy is associated with lower emergency department utilization (Schumacher et al., 2013). Dunford (2008) conducted a study on emergency department patients to determine their health literacy score. Dunford determined that those patients with higher health literacy scores had fewer health problems than those with lower health literacy scores. Dunford also stressed that providers who do not recognize patients with low health literacy are more likely to prescribe regimens that exceed the individual's capacity and this may contribute to poor health outcomes. Limited health literacy is a barrier for understanding health information and has been identified as a risk factor for overuse of the emergency department (Schumacher et al., 2013). Two significant findings from Schumacher et al., (2013) included results showing that patients with low literacy had the potential for preventable hospital admissions and that those with low health literacy preferred emergency department use over primary care. Among primary care patients with Type 2 diabetes, inadequate health literacy is independently associated with worse glycemic control (Schillinger et al., 2002). Because of the importance of health literacy and the time constraints in the emergency department, the Single Item Literacy Screener (SILS) was used to assess patient health literacy. The SILS is a single item question intended to identify adults in need of help with printed material: "How often do you need to have someone help you when you read instructions, pamphlets or other written material from your doctor or pharmacy?" (Morris, MacLean, Chew, & Littenberg, 2006).

Staff and educators can help to empower diabetics by providing them with self-management education and resources to impact the rising cost of diabetes in the emergency department setting. Diabetes self-management education (DSME) is a critical part of care for all people with diabetes (Haas et al., 2012). DSME is the ongoing process of facilitating the knowledge, skill, and ability necessary for prediabetes and diabetes self-care. Guided by evidence-based standards, DMSE incorporates the needs, goals, and life experiences of the person with diabetes or prediabetes (Haas et al., 2012). The overall objectives of DSME are to provide education to support 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). To manage self-care of their diabetes, DSME is an ongoing effort to facilitate the necessary knowledge, skill, and ability. The diabetes resource toolkit incorporates self-management. Elements of the toolkit empower the patient with tools such as the diabetes log book, medication log, and nutrition meal planner to help self-manage their diabetes.

The standards of DSME emphasize that the person with diabetes is at the center of the entire diabetes education and support process (Haas et al., 2012). DSME is supported through a study by Kemper, Savage, Niederbaumer, and Anthony (2005). The researchers compared diabetes knowledge of low income patients with a high school diploma or GED versus those without a high school diploma or GED. The study results showed that those patients with higher education reported receiving more diabetes related education. The results were significantly higher in areas of knowledge about causes and treatment of hyper and hypoglycemia, blood glucose monitoring, complications of diabetes, diet and exercise, and medication management (Kemper et al., 2005). These findings are significant because persons who do not understand treatment of hypoglycemia and its underlying causes may have more difficulty in understanding their glucometer readings. These findings are important to mention because if not already known to patients, the diabetes resource toolkit introduced them to self-care tools such as the diabetes glucose log, medication log, and meal planner, which are used in managing diabetes.

A health care toolkit is one way to provide patients with the education needed for diabetes self-management. Health care toolkits contain scientific and evidence-based literature and information. Toolkits can be targeted for health care professionals and for patients. Toolkits for staff are developed to increase professional education on specific diseases and illnesses. Toolkits are implemented for patients as well to increase their knowledge about their disease process, management, and available resources (Delta States Stroke Network, 2010). I used a diabetic self-care toolkit in this project. The diabetes resource toolkit provided an organized approach to diabetes self-care management. The purpose of this project was to reduce the number of diabetes-related emergency department visits. The diabetes resource toolkit included basic instructions on the use of glucometers, the parameters for normal glucose readings, and steps to take for abnormal readings. It also included information that informed veterans about what diabetes is, what medications may be required to treat diabetes, what common problems occur with diabetes, and how to be an active participant in managing their diabetes with their provider. Therefore, the diabetes resource toolkit was an introduction into the knowledge needed to successfully self-manage their diabetes.

My goal was to provide patients with a diabetes self-management tool that can help them understand how to care for their diabetes and improve their self-care abilities. The potential for positive social changes include better quality of life, improved healthcare outcomes, and positive cost effectiveness, all achieved through improved metabolic control (Kent et al., 2010).

Problem Statement

The identified practice problem was the number of diabetes-related emergency department visits. Many veterans use the Veterans Affairs (VA) health care system emergency rooms for nonurgent care because they do not have basic knowledge regarding how to manage their diabetes. Lower health literacy is a significant independent factor associated with increased health care and utilization cost (Haun et al., 2015). Because the VA healthcare system is open to all veterans regardless of insurance status, lack of access to care can be widely ruled out as a cause for use of the emergency department for nonurgent problems. Some of the multifactorial reasons for emergency department visits by veterans include stressful life events, poor prioritization skills, compounding health problems, external focus such as taking care of others, and low health literacy in respect to diabetes (Kent et al., 2010). Additionally, poor diabetes management is associated with increased emergency room visits (Stern et al., 2009). The implementation of a diabetes resource toolkit that brings health literate, patient-focused diabetes education to the forefront during an emergency department visit is intended to decrease diabetes-related emergency room visits. I derived the diabetes resource toolkit from toolkits already established by the American Diabetes Association (ADA), which has a recommended reading level of equal to or less than fifth grade (Hill-Briggs & Smith, 2008). I assumed that because the project took place in a VA health care facility, that all those treated had been in the military and would have achieved a fifth-grade level of education.

It is estimated that between 2009 and 2034, the number of people with diabetes will increase from 23.7 million to 44.1 million (Diabetes Care, 2009). Locally, per the Georgia Center for Nonprofits, 2010, Georgia has a population of approximately 9.7

million, and of these, 773,858 are veterans (Georgia Center for Nonprofits, 2010). The metro Atlanta area is populated with about 216,000 of those veterans. Associated spending for diabetes is estimated to rise from 45 billion to 171 billion dollars (Diabetes Care, 2009). Management of patients with diabetes is performed primarily by the patient's primary care provider. The barriers to adequate diabetes education include a shortage of certified educators, a growing number of referrals, and a shortage of clinicians. The shortage of certified diabetes educators decreases available specialized teaching that needs to be done with new, complicated, and brittle diabetics (O'Grady, 2013). This growing number of referrals puts more of a strain on already overloaded clinicians (O'Grady, 2013). This leaves the patient to rely even more on other disciplines, such as nursing, for that much-needed instruction.

Direct and indirect cost of diabetes care, poor accessibility to specialty care resources, the lack of social and community diabetes support programs, diabetes health illiteracy, and the obese culture of the United States all contribute to poor diabetes control, and these factors also often fall outside the control of the physician (Brown & LeRoith, 2010). Brown and LeRoith (2010) cited lack of diabetes education and training for the primary care providers, failure to intensify treatment when relevant signs such as weight gain and elevated HgA1c are present, patient nonadherence, and the abundance of new drugs and the physicians' inability to personalize treatment, as just a few of the barriers that create gaps in developing self-care practices. The development, implementation, and patient use of this toolkit helped to close this perceived patient knowledge gap about diabetes management by providing self-care information and education to the diabetic patient, thereby empowering the patient with tools to increase his or her health knowledge related to diabetes.

Patients and caregivers need guidance in overcoming their personal barriers to making significant lifestyle changes, especially when trying to integrate a prescribed diabetes self-care regime into their existing lifestyle (Canadian Institute for Health Information 2009). Therefore, the diabetes management plan should be formulated as a collaborative therapeutic team plan among the patient, family, and caregivers (Gomes-Villas Boas, Foss, & Freitas, 2012). The American Association of Clinical Endocrinologists guidelines emphasize a personalized approach to controlling diabetes and achieving blood glucose targets (as cited in Boughton, 2011). Manns et al. (2012) reported that those health care consumers who participate in primary care networks have a 19.4% decrease in emergency department visits and hospitalizations. A secondary positive outcome was that these same health care consumers participated more in ancillary care than those who did not participate in a primary care network (Manns et al., 2012). The negative correlation shown by Nuti et al. (2012) between no-shows to primary care appointments and use of emergency departments further supports the emphasis on a personalized approach to health care management. With the diabetes resource toolkit, each diabetic veteran who receives one can personalize those resources and educational tools to help him or her optimize a self-care plan.

Purpose

The purpose of the project was to reduce the number of diabetes-related emergency department visits. The need for implementation of the diabetes resource toolkit was identified, and the toolkit was developed by the stakeholder group. The gap in practice is the perception that patients understand the education given, but their actions, for instance, medication noncompliance and frequent emergency department visits, may indicate that a knowledge gap remains. The information that contained in the diabetes resource toolkit directly targets diabetics in the areas of recommended ancillary care, insulin and medication tracking and administration, and recommended nutrition and lifestyle changes. The question I asked was whether the diabetes resource toolkit decreased diabetes-related emergency department visits. I looked to address the perceived educational gap by providing relevant resources and educational material in a setting at a time when the patient is actively seeking care.

Nature of the Doctoral Project

This project was conducted as a quality improvement project. The sources of evidence used included current and archival data derived from the facility's Emergency Department Information System (EDIS) system and a patient survey. ADA evidence-based education and resources were reviewed by the stakeholder group and placed into a diabetes resource toolkit that participants were given by emergency department nurses in a VA emergency department setting. The toolkit provided resources pertaining to diabetes care, nutrition, recommended yearly testing, and physical activity. A section was available where veterans could keep track of their next doctor’s appointment as well as a diabetes log section, and because the project is occurring in a VA emergency department, there was also a section with specific, veteran-focused resources such as MyHealtheVet and eBenefits. MyHealtheVet is an online health record system where veterans can have access to their VA medical record and communicate through secure messaging with their providers. eBenefits is a system where veterans may access all their medical, financial, housing, and educational benefits (Veterans Health Administration, 2014). Furthermore, these additions helped to customize the toolkit for veteran use and highlight individual patient-focused care.

The evaluation of the effectiveness of the diabetes resource toolkit was conducted through pre-and postproject implementation analysis of diabetes-related emergency department visits. The EDIS patient tracking system was used to gather data related to diabetes-related emergency department visits. Through the EDIS patient tracking system, specific, depersonalized data were acquired about the patients’ visit, including reason for visit, final disposition, and discharge or admission diagnosis. Personalized health information such as age, gender, and race were also collected for a more detailed analysis of patient demographic use of the emergency department.

The purpose of the project was to reduce diabetes-related emergency department visits. Self-management of diabetes is the goal for patients being discharged from the emergency department. Providing education in the emergency department setting can be challenging, but educational opportunities and interventions can be effective, and the opportunity to disseminate health information should not be missed (Szpiro, K. A., Harrison, M. B., Van Den Kerkhof, E. G., & Lougheed, M. D., (2008). Patient health literacy is known to be a key factor impacting health status and cost in nonintegrated systems and remains a significant issue in a comprehensive integrated health care system such as the VA (Haun et al., 2015). Health systems such as the VA need to prioritize a comprehensive approach to implementing a combination of strategies in tandem with improving patients' decision-making skills and improving the usability of health services. Therefore, use of a health literate toolkit for diabetic self-care can help improve self-efficacy and thereby glycemic control.

Significance

The stakeholders were not limited to the participants. Stakeholders also included myself, hospital administration, and emergency department staff and clinicians. All stakeholders are impacted by the data generated from the project. The impact of the project spans from implementation of the diabetes resource toolkit to decreased utilization of the emergency department and financial savings for the facility.

Nearly one in four veterans receiving care in the VA health care system has diabetes (Veterans Health Administration, 2013). Veterans of all ages are at risk for diabetes because of the high rate of obesity, estimated at over 70% of veterans receiving VA care (Veterans Health Administration, 2013). The Atlanta Veterans Affairs Medical Center (VAMC) emergency department has no specific diabetes-related education or resource tools that are reviewed with patients before discharge. When veterans are treated and released from the emergency department, they are sent home with basic discharge instructions to follow-up with their primary care provider. Patient centered care, implementing evidence-based practice, and quality improvement are just a few core competencies for health care providers (Greiner & Knebel, 2003). The diabetes resource toolkit was geared toward patient self-care and was derived from evidence-based resources with a goal of quality improvement through decreasing emergency department visits. Because the project was conducted in a VA emergency department, the data generated can be transferable to other VA emergency departments.

Diabetes is one of the major health and development challenges of the 21st century. It is a chronic, costly, and increasing but largely preventable noncommunicable disease that is responsible for millions of deaths annually (International Diabetes Federation [IDF], 2008). Diabetes is unlike other diseases where medication alone can often successfully treat it. Lifestyle modifications, such as diet and physical activity, can control diabetes without the use of medication. The diabetes resource toolkit contains evidence-based resources to help guide the diabetic veteran toward a healthier lifestyle. There are other components to diabetes, such as the diabetes disease process, nutritional management, and physical activity, also addressed in the toolkit (Joslin Diabetes Center, n.d.). Additionally, with the use of SILS, data were gathered to determine if health literacy will need to be specifically addressed.

Producing tools, toolkits, and resources is one of the key areas for diabetes education (IDF, 2008). Implementations by the IDF itself include diabetes education modules, peer leader manuals, and international curriculum for diabetes health professional education. Some examples of successfully implemented health care toolkits include a toolkit to promote influenza & Tdap immunizations among health care workers, which has helped to increase the number of staff members who have chosen to be vaccinated (IDF, 2008). Toolkits have also helped to decrease the number of sick days taken by employees (Within Reach, 2013). The Pulmonary Hypertension Association created an empowered patient online toolkit that helps patients with pulmonary hypertension track medication dosages, important medical phone numbers, needed resources, and coordinating care (Pulmonary Hypertension Association, 2014). This has helped patients plan and stay organized to decrease the amount of time at doctor's visits associated with information gathering.

The Society to Improve Diagnosis in Medicine (2014) has implemented a four-part toolkit for patients visiting a care provider with a health concern. This toolkit helps patients prepare ahead of time for their visit and think about their concerns and symptoms (Society to Improve Diagnosis in Medicine, 2014). Each of these toolkits has helped to foster effective staff and patient education. The Agency for Healthcare Research and Quality (AHRQ) developed 17 Partnerships in Implementing Patient Safety program toolkits that correlate with the Joint Commission's National Safety Patient Goals to promote system wide improvements in patient safety. These toolkits were developed by examining best practices in a variety of health care settings and by studying patient safety interventions among diverse populations (MedSurg Nurse, 2009). These positive examples help to promote the proposition that the implementation of a diabetes resource toolkit in the emergency department will provide quality improvement in diabetes management, which may be reflected by the decrease in emergency department visits.

Support of patient self-management is a key component of effective chronic illness care and improved patient outcomes (Coleman & Newton, 2005). Researchers have demonstrated that knowledge and skills facilitating key self-care behaviors are successful in improving metabolic and psychosocial outcomes (Beebe & Schmitt, 2011). Healthcare toolkits are increasingly becoming the source of that education and knowledge. In a randomized clinical trial by Caldwell, Peters, and Dracup (2005), they concluded that simplified education programs and interventions improve knowledge and patient-reported self-care behaviors. Identifying barriers and making practice changes are some strategies for addressing the self-knowledge gap (Coleman & Newton, 2005). Social change leadership promotes equity, social justice, self-knowledge, service, and collaboration (Read, Pino Betancourt, & Morrison, 2016). The positive social change resulting from the project is the increased and continuing empowerment of patients in the management of their healthcare.

Making the toolkit available in the emergency department is a practice change. Although emergency department staff do not necessarily view their role as supporting secondary prevention and disease management, the emergency department is an increasingly crucial point of contact for populations known to be frequent emergency department users

(Szpiro et al., 2008). Considering this, it is imperative to address patient education as efficiently as possible in all areas and disciplines of health care.

Summary

In summary, diabetes is a worldwide healthcare problem affecting over 347 million people and is the 7th leading cause of death (World Health Organization, 2013). Education is one element used in the prevention and management of diabetes. Self-management education for people with diabetes is not an option; it is an imperative (IDF, 2011). This project's relevance to nursing practice demonstrates the need for not just additional resources, but the need to deliver these resources in a health literate, patient-centered way that allows the patient to be proficient at self-care. With 25% of veterans having diabetes and few educational resources in the emergency department, there is an overwhelming demand currently placed on the diabetic educators responsible for inpatient and outpatient consults throughout the organization, including the emergency department. With the need for effective interventions, the implementation of the diabetes resource toolkit helps educate and empower veterans in managing their diabetes, thus reducing diabetic patient emergency department visits. In Section 2, I explore the background and context for the project, including key terms and the theory used to inform the project.

Section 2: Background and Context

Introduction

The identified practice problem was the number of diabetes-related emergency department visits. The purpose of this project was to implement a diabetes resource toolkit for diabetic patients in the VA emergency department to help reduce diabetic patient emergency department visits. The practice-focused question addressed whether the implementation of a diabetes resource toolkit in a VA hospital emergency department would decrease diabetes-related emergency department visits. The topics to follow give information on the theories and framework that the foundation of the project was based on, the relevance to nursing practice, how the project identified locally, and my role as well as the DNP project team.

Concepts, Models, and Theories

One choice to be made when developing a theoretical base for a problem is the type of theory development methodology to use (Luse, Mennecke, & Townsend, 2012). Many theories of behavior used in health promotion do not consider maintenance of behavior, but rather focus on initiating behavior. The true goal in public health is prolonged behavior change, not just initiation of behavior. The goal of social cognitive theory is to explain how people regulate their behavior through control and reinforcement to achieve goal-directed behavior that can be maintained over time (LaMorte, 2013). The core determinants of social cognitive theory include knowledge of health risks and benefits of different health practices, outcome expectations about the expected costs and benefits for different health habits, perceived self-efficacy to control health habits, the perceived facilitators and social structural impediments to the changes sought, and the health goals people set for themselves along with the concrete plans and strategies for realizing them (Pajares, 2002).

A precondition for change requires knowledge of health risks and benefits. If there is a lack of knowledge related to the effects of unhealthy lifestyle habits on health, there is no motivation to make a change in that lifestyle. To overcome and adopt new lifestyle habits, self-influences are needed for most people. This focal belief is the foundation of human motivation and action. In the face of difficulties, unless people believe they can produce favorable effects by their behavior, they have little incentive to act or to persevere (Bandura, 2004). Whatever other factors may serve as guides and motivators, they are rooted in the core belief that one has the power to produce desired changes by one's actions (Bandura, 2004). Social cognitive theory is a solid base in relation and support of the diabetes resource toolkit. The purpose of the toolkit was to decrease diabetes related emergency department visits. Through the core concepts of social cognitive theory, observation, outcome expectations, perceived efficacy, goal setting, and self-regulation, increased health literacy and improved health outcomes can be achieved (Denler, Wolters, & Benzon, 2014). I discuss these core concepts further in Section 2.

Definition of Key Terms

Clinical preventive services: Clinical preventive services are routine disease screening and scheduled immunizations that are key to reducing death and disability and improving the nation's health (AHRQ, 2014).

Common access card: A common access card is a smart card about the size of a credit card and is the standard identification for active duty uniformed service personnel, selected reserve, Department of Defense civilian employees, and eligible contractor personnel. It is also the principal card used to enable physical access to buildings and controlled spaces, and it provides access to DoD computer networks and systems (Department of Defense, 2016).

Community-based outpatient clinic: A fixed health care site that is geographically distinct or separate from its parent VA medical facility. A community-based outpatient clinic can be either VA-owned or VA-staffed or contracted to healthcare management organizations (Veterans Health Administration, 2010).

Diabetes: Diabetes is a chronic disease where there is disruption of insulin regulation in the pancreas. Type 1 and Type 2 diabetes are the most common forms of the disease, but there are also other kinds, such as gestational diabetes, which occurs during pregnancy (Diabetesresearch.org, 2014).

Diabetes-related complications: If blood sugar is consistently high, over time it can affect the heart, eyes, kidneys, nerves, and other parts of the body. These problems are called complications associated with diabetes or diabetes-related. Sometimes people with diabetes do not realize that they have the disease until they begin to have other health problems (Department of Health, n.d.).

Emergency department integration software (EDIS): Used for tracking patient activity in Veterans Health Administration emergency departments and urgent care clinics (Veterans Health Administration, 2011).

Empower: To facilitate self-directed behavior change. The empowerment approach is designed to help patients choose personally meaningful, realistic goals (Anderson & Funnell, 2009).

Health literacy: The degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions (NNLM.gov, 2013).

HgA1c: The hemoglobin A1C test is a valuable measure of the overall effectiveness of blood glucose control over a period (MedicineNet.com, 2014).

Noncommunicable: Noncommunicable, also known as chronic diseases, are not passed from person to person. They are of long duration and generally slow progression. The four main types of noncommunicable diseases are cardiovascular diseases (like heart attacks and stroke), cancers, chronic respiratory diseases (such as chronic obstructed pulmonary disease and asthma), and diabetes (WHO, 2013).

Nonurgent: Conditions for which a delay of several days would not increase the likelihood of an adverse outcome (Pines, J., Uscher-Pines, L., Kellermann, A., Gillen, E., & Mehrotra, A. (2013)).

Toolkit: A package of combined resource and educational material given to diabetic patients at discharge from the emergency department. The toolkit contains information regarding the patients' primary care provider, TAP (telephone advice program) line, diabetes resource and education websites, medications, and future lab work and appointments (IDF, 2014).

Single Item Literacy Screener (SILS): A single item question intended to identify adults in need of help with printed health material (Morris et al., 2006).

Relevance to Nursing Practice

Nurses are increasingly being recognized as leaders in transforming the health care system to meet demand for prevention, wellness, and primary care services with a focus on improving quality and managing costs (American Nurses Association, 2012). The Institute of Medicine (IOM) Recommendation 2 promotes expanded opportunities for nurses to lead and diffuse collaborative improvement efforts in patient care (IOM, 2010). Private and public funders, health care organizations, nursing education programs, and nursing associations should expand opportunities for nurses to lead and manage collaborative efforts with physicians and other members of the health care team to conduct research and to redesign and improve practice environments and health systems (IOM, 2010). This recommendation by the IOM can be achieved by allowing nurses to conduct, implement, and evaluate programs to improve patient care and quality of care. Nurses are patient advocates who provide education for the patient and family member and who recommend resources to maintain the patient's high level of wellness

(ANA, 2012). As part of a project team, emergency department nurses will collaborate to educate veterans with the diabetes resource toolkit. The veteran will be a part of his or her healthcare team. Collaboration brings a feeling of mutual trust, respect, and empowerment that will help the veteran to achieve his or her self-care goals (Sorensen, Frederiksen, Groefte, & Lomborg, 2012).

The diabetic resource toolkit initiated the patient to nurse communication dialogue. This opened the door for the nurse to start or enhance the concept of patient centered care by individualizing the teaching moment with that patient in front of them. With over half of hospital admissions (Jacob, 2012) and over three-quarters of unscheduled admissions (Gold, 2013) coming through the emergency department, hospital HCAHPS (Hospital Consumers Assessment of Healthcare Providers and Systems) scores are more dependent on the care received in the emergency department. The nurse work environment is significantly related to all HCAHPS patient satisfaction measures (Kutney-Lee, et al., 2014). The initial interaction between nurse and patient could set the tone for the remainder of the patient's stay. When a nurse is aware of the patient's perception of the care they are receiving, the nurse can take measures to correct any negative habits and use the information as a learning tool to increase quality of patient care (American Sentinel University, 2012). Hence, quality of care can be negatively or positively affected by the nurse-patient relationship.

The adult diabetic population with HgA1c values greater than 9% has been identified by Healthy People 2020 as one of the clinical preventive services leading health indicators. Leading health indicators are a smaller set of Healthy People 2020 objectives (Healthy People 2020, 2014). These indicators will be used to assess the health of the nation, facilitate collaboration across sectors, and motivate action at the national, state, and community levels to improve the health of the U.S. population. (Healthy People 2020, 2014). The goal of HP2020 is a reduction in the adult population aged 18 years and over with an HgA1c greater than 9, from 17.9% to 16.1%, with focus on goals including improving lipid and blood pressure control, increasing the number of diabetics who receive annual dental, foot, and eye exams, and increasing the number of diabetics who receive formal diabetes education (Healthy People 2020, 2014).

The Healthy People 2020 objectives go far beyond decreasing the HgA1c values in diabetics. They are also focused on developmental goals such as reducing the death rate among persons with diabetes, specifically, reducing the rate of all-cause mortality and the rate of cardiovascular disease deaths in persons with diabetes (Healthy People 2020, 2014). The implementation of a diabetes resource toolkit supports the Healthy People 2020 goals by empowering veterans to take a role in their health care management. Taking an active role and becoming involved in self-care promotes shared decision making. Educating patients about self-management can improve their knowledge and understanding of their condition, coping behavior, adherence to treatment recommendations, and sense of self-efficacy and symptom levels (Coulter, Parsons, & Askham, 2008).

Shared decision making is among the delivery system reforms included within the new Center for Medicare and Medicaid Innovation which was authorized in the Affordable Care Act (Fowler, Levin, & Sepucha, 2011). The Affordable Care Act of 2010 contains provisions for people with diabetes in reference to diabetes prevention and chronic disease management and standards (US Dept. of Health and Human Services, 2014). People with diabetes should expect lower health care cost under health reform due to capped annual out-of-pocket spending, no discrimination for preexisting conditions and health status, coverage for preventive screenings, and better coordinated care and reduced health disparities (National Conference of State Legislators, 2011)). To achieve these goals, providers must partner with patients in making the best and most appropriate health care choices. With the use of a diabetes resource toolkit, patients have resources to help guide them during a visit with their primary caregiver. These resources include cues about recommended yearly exams, recommended nutrition and physical activity, and record keeping logs so patients have a history of their health to present and discuss with their provider. Along with this recorded information, the veteran can attend their appointments with information in hand to help them make informative decisions with their health care provider.

A trusting nurse patient relationship fosters an atmosphere for positive social change. Nurses can become an agent for social change through advocacy and being a good social role model. A positive aspect of the diabetes resource toolkit is that it becomes a catalyst for the nurse. Once the open dialogue between patient and nurse has begun, it creates opportunities for advocacy, rapport building, and social activism. This is highly significant to nursing practice. This affords nurses the opportunity for leadership and to impact nursing research. This aligns with 2010 Institute of Medicine (IOM) Future of Nursing Report: Leading Change, Advancing Health Report recommendations that nurses are prepared and enabled to led change and advance health and build an infrastructure for the collection and analysis of inter-professional health care workforce data (IOM, 2010). The implementation of the diabetes resource toolkit is an example of nurses in a collaborative effort to improve research and collection of data to achieve improved quality of care.

In summary, the implementation of the diabetes resource toolkit is one example of how nursing can respond to the IOM recommendations for the future of nursing. Some of the IOMs recommendations included expanding opportunities for nurses to lead and manage collaborative efforts with physicians and other members of the health care team to conduct research and to redesign and improve practice environments and health care systems. The diabetes research toolkit enables the opportunity for the APRN (Advanced Practice Registered Nurse) to take the lead in designing and implementing quality improvement programs, collaborate with disciplines such as CNS (Clinical Nurse Specialist), physicians, research analysts, and educators (Morris, 2015).

Local Background and Context

Nearly 25% of veterans have diabetes (Veterans Health Administration, 2013) and an estimated 70% of veterans are overweight or obese with a body mass index of

25.0 or higher (Littman, et al., 2012). In 2010, there were approximately 12.1 million diabetes-related emergency department visits in the United States. Of that 12.1 million, 5.1 million resulted in hospitalization and 7.0 million resulted in patients being treated and released. In the Washington et al., (2013) study, diabetics visited the emergency department at a rate of 515 visits per 10,000 U. S. population as compared to non-diabetics at 213 visits per 10,0000 U. S. population. Approximately 80% of emergency department visits at Veteran Affairs Medical Center were patients who were treated and released. Of these, 15% returned to the emergency department within the next 7 to 30 days and 5% were hospitalized in the next 30 days (Hastings, et al., 2011).

The population targeted for this project were users of a VA emergency department. Per the Georgia Center for Nonprofits, 2010, Georgia has a population of approximately 9.7 million, with 773,858 being veterans. The metro Atlanta area is populated with about 216, 000 of those veterans. This population impacts the economy, politics, and healthcare management. One of the Department of VA 2014-2020 Strategic Goals is to empower veterans to improve their well-being by partnering with other government agencies to end veteran homelessness, decrease disability backlog, and improve the healthcare experience (Veterans Health Administration, 2014). Locally, the Atlanta AVAMC accomplishes over one million outpatient visits per year with an average increase of about 9%a year. The Atlanta VAMC employs over 2900 staff members. Nationally, the VA healthcare systems employ over 80,000 nurses. This is highly significant to nursing practice (Veterans Health Administration, 2014). This affords nurses the opportunity for leadership and to impact nursing research. This aligns with 2010 Institute of Medicine (IOM) Future of Nursing Report: Leading Change, Advancing Health Report recommendations that nurses are prepared and enabled to led change and advance health and build an infrastructure for the collection and analysis of inter-professional health care workforce data (IOM, 2010). The implementation of the diabetes resource toolkit is an example of nurses in a collaborative effort to improve diabetic self-care and decrease diabetic related emergency department visits.

Diabetes costs individuals and health care systems millions of dollars annually and the added cost of emergency room visits adds substantially to this cost (ADA, 2014). A study in the Annals of Internal Medicine by Duseja, et al., (2015) reports that the total cost of all emergency department revisits was more than the total cost of all initial visits. The study not only tracked revisits at the same emergency department, but it tracked revisits at different facilities as well. In the VA health system, the highest contributing factors for return emergency department (ED) visits included homelessness, age 65 and older, previous emergency department visit, and previous hospitalization. Among veterans who returned to the emergency department, 71.7% did not see another provider in between their original and return visit (Hastings, et al., 2011). In summary, the implementation of the diabetes resource toolkit looked to lessen the cost and burden by decreasing the utilization of emergency rooms by diabetics. One aspect of the toolkit highlighted several ways a veteran without an appointment may see his or her primary care provider (PCP). This includes knowledge of walk-in hours that exist from 8am until

3pm daily at all the primary care clinics, the TAP (telephone assist program) where veterans may speak to a qualified triage person who can get a message to their provider, and secure messaging for non-urgent communications such as medication refills, lab results, and questions that can be answered directly by their provider. Diabetes is a chronic disease that carries with it serious comorbidities. Self-care knowledge about the disease and the management of the disease is necessary to achieve and maintain a healthy lifestyle. Therefore, the importance of addressing these issues through nursing practice cannot be overstated.

Role of the DNP Student

The role of the DNP student is aligned with the Walden University mission to encourage positive social change (Walden University, 2015). Under the supervision of a committee of experts, the DNP student will develop a plan to address a practice need, issue or problem and design evidence-based implementation processes and implement their plan. My role as it relates to the project is the project leader. The topic of diabetes-related visits in a VA emergency department became of interest to me while working as a registered nurse in a VA emergency department. Many of the diabetic patients that visited the emergency department appeared to be there for non-urgent reason, including medication refills, questions regarding their glucose readings or how to correctly use a glucometer, and some just because they didn’t want to wait at their primary care providers’ office.

A 2013 study by Kangovi et al., which was supported in part by the U. S. Department of Veteran Affairs, was conducted to investigate the reasons why some patients prefer the use of the emergency room over their primary care. It was found that insurance status was not a key factor. When asked the question, “What are some of the reasons you would prefer to come to the emergency room rather than your primary care doctor’s office or clinic?”, the responses, from both insured and uninsured, included convenience, stating that it was more convenient to go to the emergency room instead of waiting for a next day appointment. That area also included having available transportation. Some reported they would have to wait days to set up transportation for an appointment. Even same day appointments would take hours to obtain. Another reason stated for going to the emergency room was quality. Some patients felt their primary care didn’t treat them aggressively enough, that they weren’t seeing the results they wanted quickly enough. In a May 2012 report, The Centers for Disease Control and Prevention (CDC) cited a National Health Interview Survey that found that almost 80% of adults who visited emergency rooms over a 12-month period said they did so because of convenience and lack of access to other healthcare providers (CDC, 2014). With this being said, it is even more important in the use of the diabetes resource toolkit to educate patients on other options available instead of using the emergency department.

Most patients that visit the emergency department are assigned to a primary care provider, and each primary care clinic has acute walk-in hours for patients without an appointment from 8 am until 3pm daily, there is also the TAP line, which has a qualified triage staff member to take calls and address any immediate issues or relay message to a medical provider, and secure messaging is available to address non-urgent issues. My motivations are personal and professional. Personally, diabetes runs deep in my maternal family heritage. Both my mother and grandmother passed away from complications of diabetes. Professionally, I could see the disconnect between patients, education, and staff. Patients would come into the emergency department for a diabetes-related problem, be seen by the emergency department physician, treated if necessary, and given discharge instructions to follow up with their primary care provider. During my observation in this setting, there was very little education or one on one teaching going on to possibly prevent another visit from the patient within days. Having been embedded in the emergency department could be seen as a bias. But I think I can see the patient's perspective and emergency department clinical staff perspective to develop and implement a project to help improve the quality of care of diabetic patients.

Role of the Project Team

The project team included the DNP student, emergency department staff, the DNP Chair, the DNP student preceptor, the Evidence-Eased Practice Innovation Chairman, and the Health Promotion Disease Prevention Committee Chairperson. The role of the Project team included development of the diabetes resource toolkit. This process included review of already existing evidence-based diabetes education and resources. After review of educational toolkit and resources from the ADA, CDC, Joslin, and Diabetes Care and Education (DCE), it was decided by the Project team to use already existing toolkits established by the ADA. The ADA has patient toolkits related to diabetes education on topics ranging from how to read a glucometer to how to administer insulin correctly. The Project team's role also included decisions on additional elements to include in the toolkit. Decisions on length of the Project, number of participant, the amount of archival data to retrieve, and the amount of postproject data to collect. To provide background information to the team members, the DNP student presented the project team with written research materials supporting the project and a copy of the project premise. Team members met monthly to share input about development and of the toolkit and give their specific insight on project planning. During the project, the team met weekly upon for review and feedback on progression. Once the project was completed, the Project team met to review data and results of the project. Once analyses of the data had been completed, the results were presented to the emergency department staff, emergency department management, in hospital administration by the project team lead.

Summary

In summary, as clinical and professional staff, we view practice issues that are inadequate, ineffective, and outdated in many areas of healthcare. To affect nursing practice and implement positive changes, evidence-based programs must be conducted. Evidence-based practice is a process which involves critical thinking and evaluations of best evidence, practitioner expertise and client values and expectations (University of Michigan Library, 2015). Section 3 will introduce and guide you to the method, the literature search, and analysis of the project.

Section 3: Collection and Analysis of Evidence

Introduction

The identified practice problem was the number of diabetes-related emergency department visits. The purpose of the project was to decrease emergency department visits. The population targeted for this project was users of a VA emergency department. Per the Georgia Center for Nonprofits, 2010, Georgia has a population of approximately 9.7 million, and of these, 773,858 are veterans. The metro Atlanta area is populated with about 216,000 of those veterans. Veteran healthcare is a top priority for the country and government, so the presence of the veteran population impacts and influences the economy, politics, and how healthcare is managed. One of the Department of Veterans Affairs 2014-2020 Strategic Goals is to empower veterans to improve their well-being by partnering with other government agencies to end veteran homelessness, decrease disability backlog, and improve the healthcare experience (Veterans Health Administration, 2014). Locally, the Atlanta VAMC accomplishes over 1 million outpatient visits per year with an average increase of about 9% a year. The Atlanta VAMC employs over 2,900 staff members. Nationally, the VA healthcare system employs over 80,000 nurses; these numbers alone demonstrate the impact VA healthcare has on nursing practice. The major topics of Section 3 will address the practice-focused question, how the evidence was researched and collected, the procedures used to gather final data, the protection measures taken to ensure that participants would be protected during program participation, and the procedures used in analysis and synthesis of the data to ensure validity.

Practice-Focused Question

Through evidenced-based research, patient-focused education has been shown to improve compliance in healthcare (Mirzael et al., 2013). The project addressed the number of diabetic patients using the Atlanta VAMC emergency department. The gap in practice, that is, the perception that patient education is adequate, is reflected through medication noncompliance and frequent emergency department visits. Through pre- and post-data analysis of total emergency department visits and diabetes-related visits, I determined whether the diabetes research toolkit helped to decrease the number of diabetes-related emergency department visits at the Atlanta VAMC. The purpose of the project was to reduce the number of diabetes-related emergency department visits. Determination of whether the purpose was met or not helped answer the practice-focused question and guide future implications of the project.

Sources of Evidence

The purpose of gathering the evidence is to generate new knowledge or validate existing knowledge based on a theory. The sources of evidence used included published outcomes and research, emergency department archival and operational data, and evidence generated for the project from a patient survey. The literature search yielded a large amount of researched evidence on diabetes education, including education provided by primary care providers, internet and telehealth, and healthcare toolkits. Researched evidence also provided qualitative data on patient adherence to medications and their health care plan. The review of evidence showed a positive supportive relationship between the use of patient-focused health care education, improvement in self-care management, and a decrease in emergency department visits.

In a 3-year study by Garcia-Talavera et al. (2012), they focused specifically on how to reduce avoidable admissions due to diabetes complications. Two of the goals of the study included quantifying avoidable admissions in the hospital emergency service associated with diabetes before and after improvement intervention and reducing public health expenses owing to avoidable admissions due to diabetes complications (Garcia-Talavera et al., 2012). The study was conducted over a 3-year period on a diabetes unit, and the researchers followed 217 patients who were discharged from the unit between 2007 and 2010 (Garcia-Talavera et al., 2012). The education was conducted in three separate phases: initial education, deep education, and continuous education. Initial education occurred after diagnosis and aimed at basic features of diabetes, self-control of glucose, and family involvement (Garcia-Talavera et al., 2012). Deep education happened after 3 to 4 weeks and included deepening the patients’ knowledge of diabetes, possible complications, and how to avoid them (Garcia-Talavera et al., 2012). Continuous education contained the philosophy behind diabetic education and the continuous training of the patient and health care professional. After a 3-year period, the program resulted in a 39% reduction in emergencies due to avoidable diabetes complications, most marked, and a reduction of 52.2% in simple hyperglycemic complication, which went from 23 in 2007 to 11 in 2010 (Garcia-Talavera et al., 2012). In 2010, the reduction in avoidable emergencies attributed to diabetes decreased in a 6-month period from 112 to 69 (Garcia-Talavera et al., 2012). The program resulted in a total saving of 326,532 euros in the 3 years (Garcia-Talavera et al., 2012). The use of the pre-and post collection method assisted in showing the effects of the use of the toolkit.

Using a comparative analysis with descriptive statistics via percent difference, the results of this project show whether use of the diabetes resource toolkit over a 30-day period decreases diabetic emergency room visits. The results of the data collected determined if the purpose of the project was met.

Published Outcomes and Research

The search strategy for this literature review was initiated by searching the online databases of CINAHL, MEDLINE, Allied health literature, and Academic search complete with the inclusion criteria of peer-reviewed articles with full text and the English language. Search engines used were Google and Bing. Search terms and phrases used were the following: *diabetes, teaching, health education, diabetes toolkit, health care toolkit, diabetes education*, and *provider toolkit*. The scope of the review, in terms of years, ranged from 1998 until 2016. The types of sources searched included primary sources, such as research reports, and secondary sources, such as academic journal articles, books, and documentaries. Attempting to ensure an exhaustive and comprehensive search, my initial search yielded a total of 162 articles that produced subtopics of medication adherence, cost effectiveness, lifestyle changes, and glycemic control. After reviewing abstracts, 98 selected articles were organized categorically by relevance of topic.

The goal for Healthy People 2020 in respect to diabetes is to reduce the incidences of diabetes, reduce the societal economic burden, and improve the quality of life for those living with diabetes (Healthy People 2020, 2014). Zhang et al., (2010) reported that 12% of global health expenditures are used to treat and manage diabetes. The United States spends more than half of that expenditure even though 70% of the people with diabetes live in low and middle-income countries (Zhang et al., 2010). India, which has the largest population of diabetics, accounts for less than 1% of those expenditures (Zhang et al. 2010). Diabetes affects 29.1 million people in the United States, with 8.1 million going undiagnosed (CDC, 2014). There are approximately 3.5 million newly diagnosed cases of diabetes each year (CDC, 2014). This costs the United States an estimated 245 billion dollars, with 176 billion dollars being directly associated with diabetes care and the other 69 billion dollars indirectly through disability work loss and premature death (CDC, 2014). These data are relevant to the project because emergency department utilization is an added cost in diabetes care. The use of the diabetes resource toolkit can empower diabetics in self-care and management, in turn reducing healthcare cost.

In 2011 there were approximately 282,000 diabetes-related emergency room visits in the United States associated with hypoglycemia or low blood sugar (National Diabetes Statistics Report, 2014). In comparison, there were 175,000 emergency department visits related to hyperglycemia and diabetic ketoacidosis. Although it is estimated that only 35-40 percent of people who die from diabetes have it listed as cause of death, in 2010 there were 234,051 death certificates that mentioned diabetes as cause of death (CDC, 2014). The literature identifies medication non-adherence, resistance against the use of insulin, and physician and patient barriers such as underuse of educational materials, patient tracking tools, feedback mechanisms, and systemic support for communication and care coordination as cause for gaps in diabetes prevention and care (National Committee for Quality Assurance NCQA, 2014). It is imperative that diabetics realize the magnitude of the effects of diabetes on other body systems. With this in mind, the diabetes resource toolkit provides information and resources that informs the patient of the relationship between diabetes and heart disease, hypertension, kidney failure, and other comorbidities.

It is important to distinguish between the reasons for poor glycemic control. Making this distinction can help determine the next course of action. If poor glycemic control is due to medication non-adherence, the treatment would consist of patient education versus failure of the type of drug being used for treatment (NCQA, 2014). Drug treatment would lead to a change in medication or addition to current regime. It is reported that only 62 – 64% of patients with type 2 diabetes adhere to their drug regimen, with only one third of young patients filling their prescriptions for insulin (NCQA, 2014). Medication and non-medication treatment adherence represents a fundamental concept in care delivery to diabetes patients, and the understanding of barriers and facilitators for behavioral changes can support nursing interventions with a view to furthering or strengthening conditions that promote adherence (Gomes-Villas et al., 2013). The reasons for non-adherence are not universal or clearly identified. There is reason to believe that poor medication adherence may also be related to increased risks of a variety of adverse health outcomes, including hospitalizations, emergency department visits, and death (Yang, Thumula, & Pace, et al., 2009). For this reason, the diabetes resource toolkit is one more asset in the fight against diabetes through patient-focused education.

In addition, the NCQA promotes addressing low literacy, cultural differences, using technology, and broadening patient education efforts as ways of improving diabetes management, care and treatment adherence (NCQA, 2014). Evidence from the following literature cites improvement in diabetes control when participants were adherent to their treatment regime. Herman, et al., (2013) reports the results of a ten-year analysis revealed that lifestyle and medication interventions are even more effective for diabetes prevention with participants who are adherent to their randomized treatments than among the larger group of both adherent and non-adherent participants. The Herman et al., (2013) study included 3,234 adult participants who were at least 25 years of age. The participants were randomized to 1 of 3 groups, lifestyle, metformin, or placebo. The goals for participants randomized to lifestyle were to achieve and maintain a weight reduction of at least 7 percent of initial body weight through diet and physical activity of moderate intensity, such as brisk walking, for at least 150 minutes per week. The participants also participated weekly in a 16-session core curriculum, monthly subsequent sessions, and group sessions with a case manager. Compared to placebo, the absolute risk reduction at 10 years was 25.9% with lifestyle and 10.9% with metformin. The relative risk reduction was 49.4% with lifestyle compared to placebo and 20.8% with metformin compared to placebo (Herman et al., 2013). Due largely to the reduced incidence of diabetes, quality-of-life, as assessed by health utility scores, was better among adherent lifestyle and adherent metformin participants than placebo participants (Herman, et al., (2013). Over the 10-year period, the adherent lifestyle participants accrued 6.80 quality adjusted life years (QALYs, years of perfect health), the adherent metformin accrued 6.74 QALYs, and the placebo accrued 6.61 QALYs.

In similar studies, Nuti, et al., (2013), Gibson, et al., (2010), and Butler, et al., (2010), all concluded that non-adherence led to an increase in emergency room visits, hospitalizations, and increased health care cost. In 2007, with a total of $218 billion total cost for diabetes, 3.87 billion dollars was attributed to emergency department cost. The Nuti et al., (2013) study had a total of 8,787 patients. The prospective cohort study was conducted to examine emergency room visits six months following the last scheduled primary care appointment. For no-shows to appointments, the six-month emergency room rate was 0.56 and 0.38 for those who attended their last scheduled appointment and the hospital admission rate for no-shows was 0.22 and for those who attended their last appointment was 0.14, showing that no-show status is associated with time to utilization of acute care services (Nuti et al., 2013). The Andersen-Gill model used in the study revealed that diabetic patients who had a prior hospital admission, those that no-showed were at 60% greater risk for subsequent hospital admission than those who attended their appointments. No-shows were also significantly more likely to have hospital admission for diabetes diagnosis considered potentially preventable compared to those that attended their appointments, 13.4% versus 4.37% (Nuti et al., 2013).

Participants in the Butler et al., (2010) study were selected from a 7-year panel with information on healthcare and prescription, 127,916 met the section criteria. Over a 6-year period from 1999 to 2005. Adherence was measured by the number of days elapsed between the time a prescription was consumed and the time it was refilled. The descriptive statistics for the nonadherence ratio for the years 2002 to 2004 indicated that the majority of persons in the study adhere to their medication. The percentage of those that were non-adherent at least 75% of the time was 14.98% and those that were non-adherent less than 25% of the time was 12.71% (Butler et al, 2010). The patients that were least adherent had 68% more emergency room visits than those who were fully adherent. The fixed effect model revealed that nonadherence correlated with more emergency department visit and in every case, there was a strong relationship between nonadherence and increased emergency department visits in both current and future years Butler et al., (2010)

In further support of the relationship between nonadherence and emergency room visits, the Gibson et al., (2010) retrospective, cross-sectional study analyzed 96,734 patients with type 2 diabetes. Gibson et al., (2010) included patients 18 years or older with diabetes and they filled at least 2 prescriptions for antidiabetic agents. The results of the Gibson et al., (2010) study showed the number of emergency room visits was significantly lower among adherent patients, while the number of physician visits was higher among adherent patients. The Gomes-Villas Boas et al., (2013) study reviewed the relationship between social support and treatment adherence showing that social support can be useful to achieve higher diet, physical exercise, and treatment adherence. In turn, increased adherence contributes to improve patient health-disease condition (Gomes-Villas Boas et al., 2013). Asante, 2013 states that full adherence to treatment recommendations, such as pharmacological agents, dietary changes, physical activities, and regular self-monitoring of blood glucose, are essential in the achievement of sustainable metabolic control. However, treatment adherence in type 2 diabetes mellitus populations is often sub-optimal, ranging from 35 to 86% with patients usually not reaping the full benefits of their treatment plan (Asante, 2013). The Asante (2013) study showed that with the interventions there were positive effects. The hemoglobin A1c value had a decrease range of 0.1-1.87 percent and for every percentage point decrease, there is a 25% reduction in diabetes-associated deaths, 35 percent reduction in risk of microvascular complications and 18 percent reduction in combined fatal and non-fatal myocardial infarction (Asante, 2013). In summary, the diabetes resource toolkit will assist in initiating and maintaining patient adherence to their health care plan by creating a base that can be followed up with at home and with their primary care provider.

The implementation of PCP toolkits, patient education toolkits, and the use of health information technology has been identified as strategies to address the communication and knowledge gap that exist in patient health care. Ringborg, et al., (2009), researched the relationship between the use of resources and cost and health care compliance. The cross-sectional observational study collected data from 15,016 individuals with type 2 diabetes. The frequency of diabetes-related general practitioner visits, specialist visits, hospitalizations, inpatient days, emergency room visits, diabetes educator visits, days of sick leave and pharmacological treatment was assessed to determine utilization rates. Ringborg et al., (2009) reports an annual hospitalization rate increase of 3.2 to 4.6 for patients with inadequate glycemic control. The level of education was also identified as a significant predictor of hospital inpatient days. The rate of hospitalizations was 66% lower for university level and 50% lower for patients with primary and secondary education when compared to illiterate patients.

The conclusion of the Ringborg et al., (2009) study revealed that the more resources utilized associated with increased compliance with primary care, health care plan, and decreased cost. For future implications, they indicated that valuable savings could be generated via prevention or delay of complications associated with non-adherence (Ringborg et al., 2009). Wong, et al., (2014) cited patient empowerment programs as an indicator for decreased HbA1c levels and improved metabolic control. Wong et al., (2014) revealed that structured empowerment and patient education programs proved an advantage in diabetes management. Studies as far back as 2002 emphasize the positive effects of achieving increased glycemic through patient involved education programs and clinician-led education management programs (Maljanian, Caramanica, Taylor, MacRae, & Beland, 2002). Therefore, implementing the diabetes resource toolkit will be putting evidence-based research into practice.

Despite that addressing diabetes education in the emergency department has shown to be a challenge, the American Association of Diabetes Education, (2016) examines placing diabetes educators in emergency rooms. Although the emergency room is the primary point of contact that some patients have with the health care system, some challenges of providing education in the emergency room include the sometimes-chaotic environment that may not be as conducive to patient education as ambulatory care settings, overcrowding, potentially anxious mental state, and the challenges of limited staffing and unpredictable census (Lewis et al., 2015). Diabetes educators are being used in emergency rooms to provide staff with expert knowledge in taking care of diabetics that utilize the emergency department for primary care and non-urgent issues. These educators have provided patients with education and resources to help them with self-management of their disease. Because of the lack of diabetic educators, clinical staff need resources to provide healthcare information to patients. The diabetes resource toolkit can be a way to deliver that much-needed information.

Healthcare and patient toolkits are examples of interventions used to address the issue of education in emergency departments. A toolkit is an action-oriented compilation of related information, resources, or tools that together can guide users to develop a plan to meet specific goals (AHRQ, 2013). WithinReach, a not for profit health organization, implemented a toolkit to promote influenza and Tdap immunization among health care workers (WithinReachwa.org, 2013). The immunizations are given to staff at no cost to them. Facilities that implemented the immunization toolkit report an increase in the number of staff members who have chosen to be vaccinated and a decrease in the number of staff sick day making it both cost-effective and health-protective (WithinReachwa.org 2013). Toolkits not only benefit patients, but the clinical staff as well. Implementation of the diabetes resource toolkit will present an opportunity for staff to open a two-way conversation with the patient and hear needs and concerns that may otherwise go unheard.

Health literacy is defined as the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions (Jeppesen, Coyle, and Miser 2009). Limited health literacy, which refers to marginal health literacy, inadequate health literacy, or both, has been independently associated with several undesirable health-related outcomes (Jeppesen et al., 2009). The Short Test of Functional Health Literacy in Adults (S-TOFHLA) and Single-Item Literacy Screener (SILS) were administered to 225 patients being treated for diabetes in a study designed to predict limited health literacy. The study results indicated a correlation between self-rated reading ability, SILS result, highest education level attained, sex, and race independently predict whether patient has limited health literacy (Jeppesen et al., 2009). Specifically, patients were more likely to have limited health literacy if they had a poor self-rated reading ability. A three-year retrospective study examined health literacy screening results of 112,417 veterans in a Veterans Health

Administration integrated health system. The Haun, et al., (2015) study was conducted in the North Florida/South Georgia sub-region of the Veterans Health Administration, using the BRIEF literacy screening tool. Haun et al., 2015 utilized 92,749 veterans with service utilization between 2007-2009. Demographic and cost data were retrieved from the Veterans Health Administration centralized database for the corresponding patients who had Veterans Health Administration use in all three years. Haun et al., 2015 provided a population based large-scale data set to confirm the long-held belief that there is an inverse association between a veteran's health literacy and annual VA medical and pharmacy utilization and costs at a population level.

Haun et al., 2015 highlighted the importance of health literacy on total cost of care in an integrated medical system. Concluding that 9.5% of the emergency department visits were potentially preventable and 61% of preventable visits made by limited literacy patients resulted in hospitalizations. The estimated VA medical and pharmacy costs associated with veterans with marginal and inadequate health literacy for a 3-year period, using mean values, was approximately $143 million more than those with adequate health literacy. The analysis suggests 17.2% (inadequate and marginal) of the population accounts for almost one-quarter (24%) of VA medical and pharmacy cost between 2007 and 2009 (Haun et al., (2015).

Other evidence generated in support of the concept that low literacy is associated with higher medical costs include a cross-sectional observation study of 408 English and Spanish-speaking patients who were older than 30 years and had type 2 diabetes

(Schillenger et al., 2002). It utilized the s-TOFHLA (Test of Functional Health Literacy in Adults) for screening with the results showing patients with inadequate health literacy were less likely than patients with adequate health literacy to achieve tight glycemic control (Schillinger et al., 2002). Furthermore, in support of literacy, in two randomized controlled trials, 198 diabetic patients, aged 18-80 years old, with an A1C equal to or greater than 7.0% were enrolled for 3 months in programs using Diabetes Literacy and Numeracy Education Toolkits (Cavanugh et al., 2009). Cavanaugh et al., (2009) evaluated the impact of providing literacy- and numeracy-sensitive diabetes care within an enhanced diabetes care program on A1C and other diabetes outcome. At the 3-month follow up, the intervention group had a decrease in HgA1c of 1.50 and the control group had a decrease of .80 in HgbA1c. Their HgA1C was measured at 3 and 6 months' follow-up with both showing improvement, but the difference attenuated after conclusion of the intervention programs (Cavanaugh et al., 2009). Numeracy, or the ability to use numbers in daily life, is an important but understudied component of literacy and may play an integral role in successful diabetes self-management because quantitative skills are often required for tasks such as blood glucose monitoring, carbohydrate counting, and medication administration (Cavanaugh et al, 2009).

In summary, diabetes is a growing health and economic concern. Along with diabetics who utilize private health care organizations, the problem with glycemic control is mirrored in veterans that utilize the VA system. The ADA and many other organizations have developed substantial evidence-based patient and clinician educational tools. Yet, the number of patients diagnosed with diabetes and pre-diabetes is increasing at a rapid rate. Attempts to address the associated problems such as poor glycemic control includes programs such as telehealth, physical reminders, nurse calls, and patient education toolkits. Several studies suggest that patient-focused educational programs resulted in better glycemic control and increased patient participation in their health care plan. In the fight against diabetes, patient education toolkits have been used in many different settings with positive results. The evidence-based information gained from multiple studies indicated a need for more patient-focused education and health information to improve the individual status of diabetic patients. The implementation of the diabetes falls in line with, and be in support of this evidence.

Archival and Operational Data

Archival data is data that already exists in an organization. Archival data allows the possibility of looking at the effects of work over time. Operational data is data that is current and being used in daily processes. The archival data is critical to the purpose of the project. Collecting and analyzing the archival data will give the information needed for the comparison pre-and post-implementation analysis to see if the project has met its' purpose.

The EDIS patient tracking system was used to gather data related to diabetes-related emergency department visits. This data was already being collected by the organization for purposes other than related to this project. Through the EDIS patient tracking system, specific, depersonalized data was acquired about the patients' visit to include, reason for visit, final disposition, and discharge or admission diagnosis. Already existing data consisting of the number of emergency department visits and the number of diabetes-related emergency department visits was gathered from 30 days prior to start of the project. This data was necessary for the comparison to postproject data. Features of the system allow clinicians and administrators the ability to create custom reports, enter patient dispositions, and discharge and admission status and diagnosis. To have access to the EDIS system, you either needed to be an approved administrator that needs access for reports or a clinician who needs access for patient care purposes. Special permissions may also be granted for research and project purposes. For the purposes of this project, permission was granted as part of review and approval of the project. Emergency room nurses, who are participants in the project, already have access to the EDIS system.

Evidence Generated for the Doctoral Project

The first step in initiating the project was to obtain the academic Institutional Review Board (IRB) approval. The Walden University IRB is responsible for ensuring that all Walden University research complies with the university's ethical standards as well as U.S. federal regulations. IRB approval is required before collection of any data, including pilot data. After IRB approval, the consent of the facility where the project was conducted was obtained. The Atlanta VAMC’s process for project approval included addressing all items on the Checklist for Academic Nursing Projects Atlanta VAMC 2014: Requirements for Conducting Academic Projects at the Atlanta VA Medical Center and the Research Determination Request Form (Is it Research? Is it Human

Subjects Research?). These items were obtained from the Atlanta VAMC Research Office. Any educational material distributed to patients was first submitted and approved by Health Promotion/Disease Prevention Program Manager. This was one portion of the project approval checklist done prior to starting the project. This step ensures that evidence-based material is being used in educating patients. Once the necessary steps were completed and approval had been obtained for this quality improvement project, the process of implementation began. The specific evidence that was generated and used for the project was the total number of emergency department visits for the length of the project, the number of diabetes-related emergency department visit, the age, race, and gender of the participants, and the disposition of the participants.

Participants

The diabetes resource toolkit project participants were obtained from the Atlanta VAMC emergency department. Because this is a veterans' hospital, we are working on the assumption that all participants will be adults. The goal was a total of 200 participants. This number was determined by the process of distribution of the diabetes resource toolkit. There were to be ten kits distributed Monday through Friday between the hours of 8:00 am and 4:00 pm for 4 weeks. These days and times were chosen because those hours corresponded with when the participants' primary care provider would also be available. The final number of toolkits distributed was 149. These participants were emergency department users who identified themselves at triage as a diabetic or pre-diabetic. There was an already existing question on the triage form that asks each patient whether they are diabetic. Once the patient responded with yes, they were invited to participate in the project. The recruitment of diabetic patients is highly relevant to addressing the practice-focused question.

Procedures

The first step in implementing the project was to gain approval from the Walden University IRB. Once the DNP student had obtained the university's' IRB approval, facility approval was also obtained. The Atlanta VAMC has specific steps for review and approval of potential projects. All students conducting an academic project at the Atlanta VAMC are required to complete a project description and project checklist. These items can be obtained from the EBP Innovations Chairman. Once these are completed, they are to be signed by the manager and nurse executive of the department where the project will be implemented and submitted to the Nurse Scientist, the Coordinator of EBP & Innovation, and key stakeholders.

Because the project was implemented in an emergency department, the patient population was not predictable. Therefore, it would have been difficult to contact patients before implementation to sign up participants. Participant recruitment was done at the time of the patients visit to the emergency department. Potential participants were identified at triage. There was an already existing question on the emergency department triage interview that asks whether patients are diabetic. Once a patient identified themselves as a diabetic or pre-diabetic, the project was explained to them by the emergency department nurse in detail and then they were asked if they would like to participate. If yes, they were given a description of the project, and the toolkit which the nurse reviewed with them during their visit. During this process the emergency department nurse also completed the SILS health literacy assessment by asking the following question of the participant: How often do you need to have someone help you when you read instructions, pamphlets, or other written material from your doctor or pharmacy? Two additional questions were asked of participants to help determine reasons why patients use the emergency department instead of their primary care. The questions were, “Do you have a primary care provider, if yes, did you attempt to contact them before coming to the emergency department?” The participants were told that the project is to determine if using a diabetes resource toolkit will help to decrease the number of diabetes-related visits. They were informed that the project was being implemented by a DNP student and that no personal identifiable information was collected. The participant’s age, race, and gender were recorded on the survey. They were informed that this information would later be analyzed to determine the effect, if any, of the implementation of the diabetes resource toolkit.

The diabetes resource toolkit was used in place of the normal diabetes teaching that is conducted with the patient in the emergency department. The goal was for ten toolkits to be distributed Monday through Friday 8:00 am to 4:00 pm for 4 consecutive weeks totaling 200 toolkits. During the 4-weeks of the project, a final total of 149 toolkits were distributed. EDIS enables you to run and view eleven standard reports, and allow you to print reports and export them for use in spreadsheet applications such as

Microsoft Excel. For the purposes of this project, the activity reports will be run. The activity report will create a data report for each patient whose visit falls within the date and-time range selected. The information in this report will include will include patient complaint, disposition, and diagnosis

Once the report had been generated for the 4-week period of the project, data was obtained on complaint, disposition, and admission status and diagnosis. This information provided the number of emergency department visits, the initial complaint, the disposition of the patient, whether they were discharged to home, admitted to hospital, transferred to another VA hospital, or transferred to an outside facility. This data also supplied the discharge and admission diagnosis. The total number of emergency department visits during the project period was also collected to obtain a look at the percentage of visits that were diabetes-related. Accuracy of the EDIS system is enhanced by its integration with the hospital information systems and electronic health records (medhost.com 2013)

Toolkit Discussion and Content

The diabetes resource toolkit was developed by the project team members. The reading level of the toolkit is equal to a fifth grade. The diabetes resource toolkit contained an informational wallet card, a diabetes glucose seven-day check book, and 58-page informational pamphlet. The content of the diabetes resource toolkit comes from the ADA. The ADA has established evidence-based toolkits. In a study by Hill-Briggs and Smith, 2008 of print patient education materials for use with low-health literate populations, it was found that the ADA materials consistently met 34% of the criteria identified for use, one of which is that reading material be equal to or less than a fifth-grade reading level. One of the assumptions of the diabetes resource toolkit project is that because all participants will be veterans, that they have achieved this reading level as evidence by the education requirements to answer the military. These toolkits were reviewed extensively and select ones were chosen by the project team members to be placed in the diabetes resource toolkit. The wallet card helps guide the patient during their visit with their health care provider. It includes a list of test and events that should occur at every diabetes visit, every 3-6months visit, yearly visit, and questions to ask the health care provider. The diabetes glucose checkbook includes top meter tips, which are tips to use when using a glucometer to check blood glucose. The patient will be able to record 14 weeks of glucose readings for breakfast, lunch, dinner, and bedtime readings. They will be able to record before meal and after meal readings, how much insulin or medications taken, and a bedtime reading and medication dosage.

The 58-page pamphlet included an informational sheet on hypo and hyperglycemia, a diabetes risk test, information sheets on pre-diabetes, type 1 and type 2 diabetes, tips on how to shop healthy and save time and money, a food log, with examples, to record and monitor eating habits, a plate that shows the proper amount of each food group to have at breakfast, lunch, and dinner, information and a log for planning and keeping track of physical exercise, a sick-day record where the patient can record how they are feeling, what foods/liquids they intake, what medications they used, what was their blood sugar, and what were other symptoms they had. The pamphlet also included a foot care diagram, pictorial insulin injection sites, a 31-day blood glucose journal, a medication log, a daily food and drink tracker, and diabetes web resources with some veteran specific sites such as the veteran's crisis line, MyhealtheVet, and eBenefits. All veterans have access to MyhealtheVet. Here they can send secure messages to their provider to request follow up appointments, medication refills, or with non-urgent questions or concerns.

Protections

The participants chosen to contribute evidence to address the practice-focused question included diabetic veterans using the Atlanta VAMC. The procedures used to ensure ethical protection of participants in the doctoral project starts with the doctoral student completing a course on protecting human research participants. Completion of this course was mandatory before beginning the project. The measures taken to ensure ethical protection and privacy of the participants, including data retention include keeping data under a double password protected file. Once the participant completed the survey, it was kept in a folder locked in an area with limited access, and then collected at the end of each day. Once all data was collected, the project lead transferred the data into an excel spreadsheet document. The project lead was the only person with access to this data after collection.

The participants were informed that no private information was collected. After the surveys were collected, analyzing the data collected was limited to the project team lead who had access to EDIS. The Walden University IRB is responsible for ensuring that all Walden University research complies with the university's ethical standards as well as U.S. federal regulations. IRB approval was required before collection of any data, including pilot data. Review of the project premise and educational material was also completed by the facility's Evidence-Based Practice (EBP) and Innovations Chairman and the hospitals Health Promotion and Disease Prevention Committee. Review by the EBP and Innovations Chairman determines whether the project is research or quality improvement. The Health Promotion Disease Prevention Committee reviews and approves any educational material that would be distributed to patients.

Analysis and Synthesis

Analysis and synthesis of data provides a narrative of the study's results. The EDIS patient tracking system automatically stores the data related to number of emergency department visits and how many were diabetic-related. Once there was an official start date for the project, the preproject data collection and analysis began. Through the EDIS system, reports were generated to show the total number of emergency department visits for the 30 days previous to the start of the project, the reason for the visit, and the discharge diagnosis. Every visit for the month before the start of the project was reviewed by running an activity report in EDIS. Diagnosis related to diabetes, such as hypoglycemia, hyperglycemia, diabetic ketoacidosis (DKA), diabetes, and diabetes medication refill was considered to be a diabetes-related emergency department visit. One feature that helped to ensure that each patient had a discharge diagnosis is that the

EDIS system requires a discharge diagnosis before the patient record can be reconciled. One month after the project ended, data was again collected through the EDIS system using the same procedures as collecting the preproject data. The data collected from participants during the study was compiled in a table format.

The following data was collected, whether participant is diabetic or pre-diabetic, whether the visit is a revisit in the past 30 days, age, gender, race, whether the participant has a PCP, and if yes, did they attempt to contact their PCP before coming to the emergency department. The collection of this data helped to track revisits and demographic information on the patient more likely to use the emergency department. The total number of diabetes related visits was also collected to obtain the percentage of total emergency department visits they represented. Comparison of the pre-and postproject data was accomplished using descriptive statistics via percent difference. Because the purpose of the project is to reduce the number of diabetes related emergency department visits, the data focused on the number of emergency department visits, the number of diabetes-related emergency department visits, and disposition or discharge diagnosis. Each discharge or disposition diagnosis will be reviewed.

The following diabetes related diagnoses: hypoglycemia, hyperglycemia, diabetic ketoacidosis (DKA), diabetes, and diabetes medication refill, were included in the data collection. The results were reported using quantitative and descriptive analysis. Quantitative data analysis is making sense of the numbers to permit meaningful interpretation. It involves organizing the data, doing calculations, interpreting information, and explaining limitations. Organizing the data includes organizing all forms in one place, checking for completeness and accuracy, removing those that are incomplete or do not make sense; keeping a record of those decisions, and assigning unique identifiers such as study codes to each participant.

Data entry was done manually and recorded in table format. Calculations of counts of total number of diabetic visits, percentage of total emergency department visits that are diabetic, from the total number of participants. The change score, which would potentially show changes pre-and post, was also reported. Numbers do not speak for themselves; interpretation is attaching meaning to data. Part of interpreting the data is identifying lessons learned during the study and what came out of it that may have been unexpected. Identifying limitations of the study was important in determining whether the results could have been generalizable to other populations and whether there is enough valid evidence to make a causal relationship.

Summary

In summary, for generated evidence to impact quality of care it must be valid and useable (White & Dudley-Brown, 2012). The data collected for the project was generated from existing hospital data. This helped reduce the possibility of errors. The relevance of the project to practice is supported by the review of literature. The evidence highlighted the relationship between patient education, patient-focused care, and adherence to health care plan to optimum glycemic control. The literature reviews also reveal the use of personalized, individual approaches to patient education, such as the use of toolkits have been shown to improve diabetic control. Section IV will report the findings that resulted from analysis and synthesis of the evidence that was collected, discuss any limitations or outcomes that were unanticipated and their impact on the findings, any potential implications, recommendations, contributions of the doctoral project team, and the strengths and limitations of the project.

Section 4: Findings and Recommendations

Introduction

Project findings are a direct reflection of the data collection and analysis methods. The identified practice problem was the number of diabetes-related emergency department visits. The identified gap in practice was the perception that patients understood the education given, but frequent emergency department visits indicated that there still remained a knowledge gap. The question I posed was whether the implementation of a diabetes resource toolkit in a VA emergency department helped to decrease emergency department visits. The purpose of this project was to reduce the number of diabetes-related emergency department visits. The sources of evidence to answer the project question included the EDIS system data and a patient survey. The evidence was attained by running reports on the EDIS system to obtain visit information on veterans who had visited the emergency department before and after the project. Diabetic status was determined at triage. There is an already existing question on the ED triage form that asks each patient if they are diabetic. If their answer was yes, they were invited to take part in the project. The patient survey gathered data on patient demographics and visit information as well to characterize the population.

Findings and Implications

In the researched literature, there is great support of the concept that education increases self-management and helps to decrease emergency department visits. The purpose of the implementation of the diabetes resource toolkit was to see if it would positively impact the number of diabetes related visits in a VA emergency department. The project was conducted in a VA emergency department. The data were collected via a patient survey and through the EDIS patient tracking system. Table 1 reports data on the demographics of diabetic veterans who were included in the project. There was the possibility of 200 participants. The total number included 149 participants. There were 135 male participants and 14 female participants. Of the 149, two identified themselves as Hispanic, 38 as Caucasian, and 109 of the 149 participants identified themselves as Black, which is 73% of the total participants. Overall, there were 14 participants in the 31 to 50 age group, 103 participants in the 51 to 70 age group, and 32 participants in the 71 and over age group. The age group seen most often was the 51 to 70 group.

Table 1

Patient Demographics

Race	18-30yrs	31-50yrs	51-70yrs	>70yrs	Male	Female
Black	0	13	81	15	96	13
Caucasian	0	1	21	16	37	1
Hispanic	0	0	1	1	2	0

In the project, I used the SILS as a literacy screener tool to help identify any deficit in literacy. The SILS screener is written at a fifth-grade reading level. Questions on the SILS health literacy screener were read verbally to participants. Table 2 displays the data collected related to literacy. Because of the importance of health literacy and the time constraints in the emergency department, the SILS was used to assess patients' health literacy. The SILS is a validated, single-item question intended to identify adults in need of help with printed material. There were 95 participants (63%) reporting never needing assistance with educational material when given to them. The remaining reported *rarely* (11%), *sometimes* 14%, *often* (2%), and *always* (8%).

Table 2

SILS (Single Item Literacy Screener)

	Never	Rarely	Sometimes	Often	Always
Black	70	14	15	3	7
Caucasian	24	3	6	0	5
Hispanic	1	0	1	0	0

Table 3 shows the pre- and postproject data of the total number of emergency department visits and the number of diabetes-related visits identified through triage complaint and disposition diagnosis. As long as one was diabetes-related, the triage complaint and disposition diagnosis did not have to match to be included in the results. It also shows those who had a previous visit in the past 30 days and those with a PCP and whether they attempted to contact their PCP before going to the emergency department. There were 146 who identified themselves as diabetic and three who identified themselves as prediabetic. Of the 149 participants, 59 reported having a previous visit in the past 30 days, while 125 of the 149 reported having a PCP. Only 31 of the 125 who reported having a PCP stated that they attempted to call them before coming to the emergency department.

Table 3

Visit Report

	Has PCP	Attempted to call PCP before emergency department visit	Had previous visit in past 30 days	Diabetic	Prediabetic
Black	90 (109)	23	47*(10)	106	3
Caucasian	34 (38)	8	12*(2)	38	0
Hispanic	1 (2)	0	0	2	0

**Note*. Designates those who had previous visit in past 30 days and without a PCP.

The purpose of the project was to determine whether implementing a diabetes resource toolkit would decrease the number of diabetes-related emergency department visits. Table 4 is a report of the total number of emergency department visits and total number of diabetes-related emergency department visits 30 days prior to start of the project and 30 days post end of the project. The diabetes-related visits were a culmination of triage complaint and disposition diagnosis of hypoglycemia, hyperglycemia, DKA, diabetes, and diabetes medication refill. The check-in complaint as well as the disposition diagnosis was reviewed for all 3,240 visits for the 30 days prior to the start of the project and the 3,362 visits for the 30 days after the end of the project. During the project, 149 surveys were given out during restricted hours and days of Monday through Friday from 8am to 4pm.

Table 4

Pre- and Postproject Visit Report

	30 days preproject	30 days postproject
Total emergency department visits	3240	3362
Diabetes-related visits	124	126
Diabetes-related % change	.038	.037 0

Providing accurate data analysis helps to answer additional questions. There were 3,240 total emergency department visits, with 124 identified as diabetes-related for the 30 days prior to the start of the project, and 3,362 total emergency department visits with 126 identified as diabetes-related for the 30 days after the end of the project. That data reflects an average of 3.4% of total visits being diabetes-related. What was discovered during the record review process is that although it is documented on the triage note that the patient is diabetic, unless his or her triage complaint or disposition diagnosis was specifically related to diabetes, there was no other way to know of their diabetes diagnosis. Therefore, this results in an inaccurate account of the actual number of diabetes-related visits. This is important to point out because several initiatives like Healthy People 2020 are addressing diabetes nationally. Diabetes statistics are constantly being collected to help with future management of this chronic disease. During the project frame time, 1,541 patients came through the emergency department, and 149 toolkits were given to those with diabetes-related complaints. This data more accurately reflects the reported 10% of visits that are diabetes-related, which aligns more with national averages. Pointing out these data inconsistencies helps to direct future projects on what data to collect to help future researchers with more specific findings.

Overall, in the time frame of the project, the toolkit did not serve to decrease diabetes-related emergency department visits. One reason may have been the time limitation of the project. Due to the scope of the project, the review was limited to 30 days postproject. This limited the ability to review revisit rates for participants and whether the toolkit was effective long term. The 8am to 4pm Monday through Friday time frame limitations during the project was set to have the project run during times when the patient's PCP would also be available. This limitation contributed to the decreased number of toolkits distributed and did not represent the overall number of diabetes-related visits. Although the limited time frame and omittance of personal protected information did not provide the needed data necessary to help determine effectiveness of the diabetes resource toolkit, it helps to guide future research in this area. This helps to focus on areas that would give more specific and accurate data. Considering the project findings, I believe the toolkit contains useful information and resources. The findings highlight medication management and PCP communication as 2 top areas that need to be addressed. The diabetes resource toolkit contains information on diabetes medication, a glucose log, how patients may contact their PCP, how to contact pharmacy, and how medications can be reordered via telephone, in person, or by computer. Potentially, the toolkit can be better focused on what the discharge issue was so that it impacts the patient's individual needs for medication management, education, or diabetes resources.

In analyzing the demographic data, when looking at the Caucasian group, the greater than 70 age group made up 42% of the visits. In comparison, the Black participants greater than 70 age group only made up 13% of their visits. Females made up 9% of the total visits with only 1 out of the 14 being Caucasian. This data can help identify or show target groups that may need more in-depth education when visiting the emergency department. For example, the higher number of Caucasians over the age of 70 may indicate that that particular group may need extended time for instruction during discharge or that a family member or care provider needs to be present. Also 109 out of the 149 participants were Black. This shows health care disparities in the incidence of diabetes in the veteran population. Again, another example of where future projects may focus their attention.

The information captured in Table 3 breaks down the number of diabetics vs pre-diabetics in the project, the number of participants who had a PCP and whether they attempted to call them prior to coming to the emergency department, and whether they had a previous visit in the past 30 days. Of the 109 Black participants 90 reported having a PCP, but only 25% (23) reported attempting to contact them prior to coming to the emergency department. And of the 109 Black participants 43% (47) reported that they had a previous visit in the past 30 days, of those 47 participants, 21% (10) reported they did not have a PCP. In comparison, of the 38 Caucasian participants, 34 reported having a PCP, 23% (8) attempted to call them prior to coming to the emergency department and 31% (12) had a previous 30-day visit, of those 12, 16% (2) reported not having a PCP. Of the 149 participants, 146 identified themselves as diabetic and only 3 claimed to be pre-diabetic. The percentage of Blacks with repeat visits in the past 30 days was 43%.

The EDIS patient visit activity report shows the triage check-in complaint as well as the discharge or admission diagnosis. It is noted that most of the diabetes-related disposition diagnosis and triage complaints were for med-refills. Of the 124 preproject diabetes-related visits, 59 were for medication refills. Of the 126 postproject diabetes-related visits, only 33 were for medication refills. That is a difference of 26 visits. Because participants cannot be individually tracked, it is not certain if the decrease can be attributed to the use of the diabetes resource toolkit. With nearly 50% (72 of 149) of diabetes-related visits being identified as medication refills, the question of patient understanding of medication use and even system process comes to light. Despite facility efforts to inform patients, are patients aware of the methods available to obtain medications? The VA health care system allows for multiple ways for this to occur. Of course, there are the usual ways of calling in refills and presenting at the pharmacy itself. But the VA healthcare system has put in place for automatic refills, refills via MyhealtheVet, where the patient has access to their personal health record and are able to see their medications and its refill quantity status. Patients may also use secure messaging to request refills from the ordering provider. This project therefore reveals a needed focus on the basics of medication management.

In summary, there were many working pieces that contributed to the completion of the project. During the first week of the project, the unpredictability of the emergency department setting had an immediate effect on the process of the project. The original process was to distribute 10 diabetes resource toolkits a day between the hours of 0800 and 1600. After the first week, the emergency department manager recommended not limiting the number of packets per day because the patient flow was unpredictable. The input given, stated that one day 3 diabetics may come in during the project time period and another day 15 may come in. With that information considered, the change was made to eliminate the restriction on the number of packets given out daily, but the time frame would remain the same. Besides unpredictability, staffing was also an issue in the emergency department. Due to short staffing, outside staff were placed in the triage area and some were not able to participate in the project. That limited the number given out as well. As discussed above, the implications from the findings impact the individual stake holder because the results specifically identify those that use the emergency department most frequently. This helps to place focus on those individuals when education and self-care are being addressed. As for communities, institutions, and the system, the results can be applied in the same manner as the individual but on a larger spectrum. The community, the institution, and the system can continue to promote programs that involve the patient, family, and healthcare provider. Potentially, the impact on social change is providing the data that shows the need to keep in place programs for self-management and patient education. Health care providers can continue to be advocates for care.

Recommendations

In review of the project findings, of the 149 patient surveys collected, 73% identified themselves as Black, those in age group 51-70 made up 69% of the participants, 44% of the Black participants reported having a prior visit in the past 30 days, 84% of participants reported having a PCP, and only 20% or 12 of the 59 that reported having a repeat visit in the past 30 days stated they did not have a PCP. Most revealing, the project also showed that 47.58% of preproject visits and 26.19% of postproject visits were related to medication refills. There was no notable change when pre- and postproject data was compared as to total emergency department visits and diabetic related visits. So therefore, recommendations will focus on other findings. The first recommendation is to establish a PCP line. When the visit was considered a "repeat", 20% of these patients reported that they did not have a PCP. The establishment of a dedicated PCP line would help to get patients an initial visit with a primary care clinic and get established with a PCP. The PCP line would be a dedicated telephone line that would dial the TAP Line (Telephone Advice Line) directly. The technician would assist the veteran with setting up a first-time appointment with a primary care clinic and that would get them established with a PCP. The appointment would be set within 30 days, therefore possibly preventing a repeat visit to the emergency department from that patient. The second recommendation would be improved communication with the PCP after the patient is discharged from the emergency department. Out of the 84% that reported having a PCP, only 25% reported attempting to contact their PCP before coming to the emergency department. The project was conducted during the days and hours that their PCP would have been available for consultation or walk-in. Communication with the PCP after the patient has been discharged can be done easily. A feature of the charting system is the ability to identify an additional signer on your clinical note. This would allow the emergency department provider to notify the PCP of the patients visit. The PCP can then read the emergency department providers clinical note, any orders, and follow-up information given to the patient. This would add mere seconds to each providers' time with patients. The PCP is already identified in the patients' record. If there is not one identified, that would cue the provider to have the veteran use the PCP line to get established.

All above recommendations encompass patient education. The first task is to establish a PCP. The diabetes resource toolkit contained information for patients on how to contact their PCP, what questions should be asked at appointments, and what test or procedures, as diabetics, should be done yearly. Secondly, communication between patient and PCP, per the data, was lacking. Only 31 of the 125 that reported having a PCP, stated they attempted to contact them before coming to the emergency department. Even though, the PCP and clinic were available during those times. The diabetes resource toolkit promotes communication between patient and their PCP. Lastly, after reviewing the data generated from the project, I would recommend a more in-depth educational project. The diabetes resource toolkit could be given out as part of an educational patient class or seminar. The patients could be track for period intervals of 3 and 6 months to see how the education impacted them long term. One area to place focus on would be medication management. Of the 124 preproject visits that were identified as diabetes-related by triage complaint or disposition diagnosis, 59 were for medication refills. In addition, of the 149 project participants, 72 of the triage complaints were for medication refills, and of the 126 postproject diabetes-related visits, 33 were related to medication refills. This data highlights the need for more specific, patient-centered self-management education. This notwithstanding, education should be the focus of future projects to help increase patient self-management of their chronic disease.

Contribution of the Doctoral Project Team

The doctoral project team included the DNP student, the DNP Committee Chairs, the DNP preceptor, the facility administration, and the emergency department staff. As the DNP student, I developed a plan to address a practice need, issue or problem and designed evidence-based implementation plan. My role as it relates to the project was the project leader. The DNP Chairs assisted with review and guidance of my plan. Through the individual and URR reviews, my plan was revised until ready for implementation.

The DNP preceptor was the primary practicum guide for me. She assisted with development of my plan idea, reviews, and implementation as well. The emergency department staff was instrumental, as they recognized the importance of research and evidence-based practice in quality improvement for patients. They assisted in the implementation, completion, and review of the project. The facility administration assisted in establishing protocol for carrying out the project. The project team was involved in every aspect and every step of the project from idea to completion. During the project, the emergency department staff gave feedback that allowed for adjustment during the project that helped to get the maximum number of participants.

Strengths and Limitations of the Project

The identified project strengths include the high number of participants and the support of the organization and staff. The goal of the project was to have 200 participants. The project collected a total of 149 surveys, which is 75% of the goal. The support of the Evidence-Based Practice and Innovations Chairman helped to lend credibility to the study. The study limitations included the limitation of all participants being veterans. The project was implemented in a single facility, making it less generalizable to public facilities. Also, having the project implemented in an emergency department setting where it is unpredictable for many reasons. Staffing was unpredictable, some days staffed appropriately and other days they weren’t. That unpredictability impacted the number of toolkits distributed daily. One other limitation that affected the outcome data, was that no personal protected information was collected and the participants could not be tracked to establish whether they made a repeat visit after the project. The collection of this data would help to determine if those patients were specifically affected by using the toolkit. Therefore, recommendations are that future projects to continue an educational theme and include collected data that would allow for individual follow up of participants.

Section 5: Dissemination Plan

The project dissemination plan includes participation in the facility's yearly EBP Nurse Research Poster Presentation. Each year, the facility provides a forum for nurses to present a poster presentation on research. It can be research that they have participated in or previously researched projects that they can present as a "did you know" presentation. This allows dissemination to peers within the facility. Dissemination will also be done with the emergency department staff to show them the results of their participation, how they may continue internal research, and recommendations to address results.

Analysis of Self

Self-analysis is essential in the process of development of future goals. Self-analysis assists in recognizing strengths and weaknesses. In my roles as practitioner, scholar, and project manager, I have noticed growth in the areas of awareness, curiosity for knowledge, and leadership. I say awareness because as an associate degree nurse or bachelor's degree nurse, my focus was mainly on providing care, mainly carrying out the already established policies or protocols. As a doctoral student, practitioner, scholar, and project manager, I see the questions behind established research. I am able to question why a certain protocol is in effect instead of just following it out, even though it is not effective. My curiosity for knowledge extends beyond the nursing floor. My curiosity for knowledge is my guide for my long-term professional goals. In my growth, I see others looking to me as a leader. Specifically, in my role as practitioner, others recognize my growth and therefore, not only do I recognize it, I embrace it.

Summary

In summary of the project results, there was no change between pre- and postproject data regarding number of total emergency department visits and number of diabetes-related emergency department visits after implementation of the diabetes resource toolkit. However, data collected from the survey showed potential problems in the areas of 30-day revisits, visits for medication refills, and lack of communication between patient and PCP before emergency department visits. These are areas that are recommended to be addressed in future projects for the facility and the emergency department. Diabetes continues to be a critical world-wide health care issue. It remains the responsibility of all to address it. Specifically, advanced practice nurses can continue to research and implement care that provides quality of life to diabetics.

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Appendix A: Project Survey

Study: Diabetic Resource Toolkit in a Veterans Administration Emergency Department

Is this your first visit to the emergency department in the past 30 days? Yes____No__

How often do you need to have someone help you when you read instructions, pamphlets, or other written material from your doctor or pharmacy?

1-Never 2-Rarely 3-Sometimes 4-Often 5-Always

Are you? Diabetic_________ or Pre-Diabetic__________

Do you have a primary care provider? (YES or NO), if yes, did you attempt to contact them before coming to the emergency department?

M/F________________

Race_______________

Age________________