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Educational Plan for Correctional Officers to Increase Awareness of Diabetes Mellitus Among Inmates

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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,
and that any and all revisions required by
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Abstract

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MS, Walden University, 2007

BS, Saint Xavier University, 2003

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

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Abstract

In the United States, approximately 30.3 million or 9.4% of the population have been diagnosed with diabetes mellitus. Of these, 8.3 million remain undiagnosed. There are approximately 2 million people incarcerated in detention centers, jails, and prisons across the United States with approximately 80,000 inmates living with diabetes. Correctional officers are not educated to identify and respond to inmates with evolving medical complications, such as low or high blood glucose, which can lead to preventable adverse events, including permanent injury or death. The purpose of this project was to develop an evidence-based education module to teach correctional officers how to recognize the signs and symptoms of low or high blood glucose levels of inmates with uncontrolled diabetes and to rapidly respond with basic medical treatment. The module was validated by 6 experts with 87% agreement prior to being presented to 49 corrections officers in a 1-hour lecture format with cases, guided by Knowles's adult learning theory. A paired *t*-test demonstrated the average knowledge scores significantly increased from 56% before to 76% after the education module ($t = 7.16$, $p = 0.0001$). Although the baseline and follow-up knowledge were low among this group, this project measured only short-term learning outcomes. Because the impact of knowledge acquisition could diminish or disappear with time, future studies to measure the long-term effects of the education on avoiding adverse events are necessary. This project contributes to positive social change by providing correctional officers with an increased likelihood of identifying early and responding appropriately to inmates with an evolving medical emergency.

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Dedication

For my mother, Faheemah who has always been my rock; in loving memory of my oldest brother, Labeeb Faheem who had always encouraged me to reach far; and the loving memory of my father, Mr. Merit Dunigan who taught me so many things. Thank you all for always believing in me.

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Section 1: Nature of the Project

Introduction

In the United States, approximately 30.3 million or 9.4% of the total population have been diagnosed with diabetes mellitus (Skolnik, Jaffa, Kalyani, Johnson, & Shubrook, 2017), but 8.3 million of these people remain undiagnosed (American Diabetes Association [ADA], 2018). Classified as the underlying cause of death for 80,000 people, diabetes is the 7th leading cause of death in the United States (ADA, 2018). There are approximately 2 million people incarcerated in detention centers, jails, and prisons across the United States (Thomas, Wang, Curry, & Chen, 2016) with more than 80,000 inmates living with diabetes (Almekinder, 2018).

Diabetes exacerbations are often not recognized by correctional officers, resulting in delayed responses to acutely abnormal blood glucose levels. Delays can result in serious medical complications, including permanent disability and death. As a result, the focus of this project was to develop a staff educational program for correctional officers to improve their knowledge and increase their competency in recognizing and responding to complications and exacerbations associated with diabetes. This project will contribute to positive social change by reducing the seriousness of diabetes complications for inmates through early recognition and response. Early intervention can result in fewer referrals to urgent care centers, emergency departments, and inpatient hospitalizations. As such, correctional officers will be able to meet the health care standards of the incarcerated individual as required by state and federal law (National Commission on Correctional Health Care [NCCHC], 2002).

Problem Statement

Correctional officers are often unable to recognize the signs and symptoms of complications and exacerbations of diabetes in a timely manner. Delayed responses to problems result in more serious medical complications (Hirsch, 2012). With the higher burden of diabetes in the correctional setting (Binswanger, Krueger, & Steiner, 2009), there is an increased frequency of medical emergencies, including sentinel events. Due to the absence of health professional, including nurses, during the nights, weekends, and holidays (Brent, 2015), correctional officers are often the first responders for inmates with medical emergencies. For example, an incident occurred when a new inmate did not notify staff in the intake area that he was an insulin-dependent diabetic. Several hours later, the on-duty correctional officer was alerted that this new inmate was unconscious. After activating emergency services and sending the inmate to an outlying hospital, the inmate blood glucose level was recorded at 870 mg/dl; the patient was diagnosed with diabetic ketoacidosis. The inmate was hospitalized for several days and sustained permanent injury–renal damage in this case. As a result of similar events across the country (Eisenberg & Thomas, 2018), legal actions have been filed against agencies by inmates and/or their families (Aoki et al., 2004).

The inability of a correctional officer to recognize a potential medical emergency can escalate disruptive inmate behavior as they believe officers are not concerned with their medical needs. However, an educational program to help officers recognize and respond to an evolving medical emergency can avert adverse events even when medical professionals are not present. This project was developed to assist correctional officers in

their ability to recognize subtle changes in inmates with diabetes that signal pending medical problems. As such, the correctional officer can become a first responder when he or she recognizes the early manifestations of diabetic complications in the absence of medical personnel (Barnes et al, 2013).

Purpose

The purpose of this DNP project was to design an evidence-based educational program to provide correctional officers with the knowledge to recognize the signs and symptoms of critical changes in blood glucose in inmates with diabetes in order to respond in a timely manner to get the inmate medical attention. The educational program, based on evidence from the inmate health literature, is anticipated to decrease the number of adverse events. The gap–in–practice addressed by this project is the lack of comprehensive educational programs for correctional officers to recognize and respond to the complications associated with diabetes. Correctional officers have 24-hour responsibility for providing a safe environment for inmates when health professionals are not working in the facility. Therefore, the practice-focused question for this project was: How will an educational program for correctional officers increase their understanding about diabetes, including their ability to recognize the early warning signs and symptoms associated with increasing or decreasing blood glucose levels and their ability to respond appropriately in a timely manner? This doctoral project had the potential to address gaps in knowledge related to diabetes and the ability of non-healthcare staff (e.g., correctional officers) to recognize and respond to medical emergencies. Findings can be utilized by inmate facilities such as prisons, detention centers, and jails.

Nature of Project

A variety of peer-reviewed journal articles, government reports, and evidence-based guidelines (ADA, 2014; NCCHC, 2014; Federal Bureau of Prisons, 2017) were reviewed for the purposes of providing evidence to support this staff education project. A literature search was conducted using CINAHL, Google Scholar, Medline, and PubMed to identify evidence to support the project. The Department of Justice website was also consulted. The evidence was used to determine if there were any competency-based education interventions available to educate correctional staff. Knowles' adult learning theory (Knowles, Holton, & Swanson, 2005), Boone's conceptual programming model (Boone, Safrit, & Jones, 2002), and Rossi's learning theory (Rossi, Lipsey, & Freeman, 2004) guided the content development and organization of the educational program. Specifically, the staff educational program development and design aligns with the *DNP project manual for staff education* (Walden University, 2017).

Significance

This staff education project held significance for multiple stakeholders at the macro-, meso-, and micro-levels. The stakeholders at the macro-level included the State Bureau of Health with the County Bureau of Health at the meso-level. The training staff and the corrections officers were the micro-level stockholders in the departments of the organization. Finally, the inmates were the most significant stakeholders as their health and wellness can be positively impacted by the success of the staff education program. More specifically, the program might result in the differentiation between problems

related to inmate medical conditions and mistaken associations with behavioral challenges.

Each group of stakeholders interacts in the prison in ways that are impactful. For example, the County and State Bureaus of Health are responsible for reporting morbidity and mortality data from correctional systems that can be used for litigation. Also, the Department of Corrections can be named in litigation as the result of poor data trends specific to adverse health events. In terms of human resources and financial impact, with an increased percentage of inmates transferred to outlying emergency departments and hospital units, more correctional officers are required to accompany the inmates leading to increased expenses. Finally, the conduct of inmates partially depends on the manner in which correctional officers interact with them, including the inmate perceptions about the way officers care for their emergent health issues.

Slightly external to this project, but directly related, are the nurses responsible for providing health services to inmates. Through staff education, nurses can help correctional officers learn how to more effectively manage the health and wellness of inmates as a part of an integrated team. In this way, this staff education project contributes to nursing practice as nurses can implement the education as well as evaluate the outcomes, including failures, in identifying complications related to diabetes prior to an adverse event. The potential implication is a proactive environment with positive health outcomes, including reduced external referral to urgent care centers, emergency rooms, and inpatient hospitalizations.

Summary

Approximately 2 million individuals re incarcerated in the United States, of which nearly 5% or 80,000 are diagnosed with diabetes mellitus (Wright & Dorn, 2019). As a result, inmates are at risk of developing complications of diabetes that lead to serious illness and possible death. Correctional officers are often unable to recognize and respond to complications in a timely manner. Health care professionals are not always present in correctional facilities, this leaves inmates at risk for developing serious complications from diabetes, including permanent injury and death.

Despite the problem, correctional officers can learn how to identify the signs and symptoms of elevated or decreased blood glucose. Also, the officers can be trained to provide basic interventions to prevent the evolution of a preventable adverse, or possible sentinel, event. This staff education project was developed to provide an evidence-based diabetes educational program tailored for correctional officers. Section 2, the evidence reviewed to inform the content of this project is discussed. Also, the theoretical models and concepts to support the educational strategy, including content development, delivery, and evaluation are presented.

Section 2: Background and Context

Introduction

Diabetic-related complications, including medical emergencies, result in many problems for correctional officers and inmates (Wahowlak, 2014). Correctional officers have misinterpreted evolving complications related to diabetes, such as increasing or decreasing blood glucose, with behavioral issues. However, the failure to recognize and respond to the gradually increasing or decreasing blood glucose levels of a poorly managed inmate living with diabetes can lead to potentially life-threatening emergencies. Adverse events in correctional settings related to inmates living with diabetes result from the lack of diabetic educational programs tailored for correctional staff (Wright & Dorn, 2019). Educational programs tailored for correctional officers that are focused on the health and wellness of inmates living with diabetes can avert adverse events in the absence of health care professionals. As such, this project sought to develop, implement, and evaluate an evidence-based staff education program designed to increase the knowledge of corrections officers specific to the complications associated with inmates living with poorly managed diabetes. With this knowledge, corrections officers can appropriately identify and respond to hypoglycemia or hyperglycemia prior to ketoacidosis.

In this section, I will discuss Concepts, Models, and Theories, Relevance to Nursing Practice, Local Background and Context, and Role of the DNP Student.

Concepts, Models, and Theories

Knowles' Adult Learning Theory

The development of a staff education program required the use of educational concepts, models, and theories. One such theory that guided the diabetic education program for correctional officers was that of Knowles' theory of adult learning. Knowles (1984) identified four assumption of the learner:

1. They are self-directed.
2. They have accumulated experiences during the course of their lives.
3. Their learning is based on a problem-oriented focus.
4. Their motivation to learn is based on an internal drive.

Through addressing these four assumptions, the educator can tailor the information to be relative to what is needed for the learner to improve their performance in their social and/or professional role.

Knowles et al. (2005) argued there is a domino effect of institutional needs and goals related to adult education. Most adult learning occurs under the auspices of institutions; and that the educator is typically employed by institutions. According to Knowles et al. (2005), the institution goals help to define the educator mission by evaluating three needs, including:

1. Development of individuals in the institution's constituency in the direction of the institution's goal for them.
2. Improvement of institutional operation.
3. Development of public understanding and involvement.

In this regard, adult education combines individuals and institutions into a social system that can be described as discreet. Knowles et al. (2005) further explained that adult learning has six functions for learners, including:

1. Helping learners diagnose their need for particular learning with the scope of the given situation.
2. Planning with the learners a sequence of experience that will produce the desired learning objective.
3. Creating conditions that will cause the learners to want to learn (motivating factor).
4. Selecting the most effective methods and techniques for producing the desired learning, which is best described as a methodology.
5. Providing the human and material resources necessary to produce the desired learning (resources).
6. Helping the learners measure the outcomes of the learning experiences in the form of an evaluation.

There are also consequences of adult learning. For example, Knowles et al. (2005) believed adults can contribute to the learning of others because they are also a rich resource for learning via sharing their life experiences. Second, adults have a richer foundation of experiences to relate to new experiences so that new experiences take on a new meaning. Third, adults had acquired many fixed habits and patterns of thoughts, and as a result tended to be less open-minded. Knowles et al. (2005) also determined that additional assumptions about adult learning are as follows:

1. Adults have the ability to learn: the basic ability to learn remains unimpaired throughout life and if people don't perform as well in a learning situation it could be because they adult learners may have been away from systematic education for an undetermined period of time and as a result, could underestimate their ability to learn new information and any lack of confidence could prevent them from applying themselves in learning new information. In addition, there could be potential physiologic changes related to aging that could impede the learning process.
2. Learning is an internal process: what the learners learn is determined mostly by outside forces (external process) such as the type of educator and quality of reading materials.

Adult learning should be planned by educators so that the learners are motivated in receiving taught information. The rationale for the use of Knowles' learning theory in this project was to educate correctional officers as adult learners motivated to learn about diabetes, the signs and symptoms of complications, and how to appropriately intervene to help inmates. This is an important duty for correctional officers to learn in order to perform better at work.

Boone's Conceptual Programming Model

Boone et al. (2002) argued that adult learning was programmed so that the primary objective was to have a planned change in the adult learner, learning groups and the institutionalized learner systems. Boone et al. (2002) further explained that the adult learning that was programmed was a collaborative effort on the behalf of the adult

educators, organizational leaders and individual learners. The goal of the conceptual programming model was to plan, design, implement, and evaluate adult learning.

Boone et al. (2002) further stated that programming in adult learning is a proactive process that links the adult education organization with the targeted learner system in an attempt to identify the organization's educational needs, assess those needs, design and implement programs tailored to satisfy those needs, and evaluate if the educational program met the initial needs. Furthermore, the summative evaluation of an educational programming in adult education can be defined as a macro process in which the adult educational organizations cooperative extension services, community colleges, higher education institutions, training and development units, focused on the education of adults. Therefore, adult education organizations respond to and implement their mission and goals through the programming process. Boone's theory informs this project as the change in participant knowledge of diabetes, including the signs and symptoms, can be evaluated with a pre and posttest design.

Dirksen's Learning Theory

Although Boone et al. (2002) identified adult learning as a proactive process, Dirksen (2016) argues the goal of a good learning is to facilitate the emergence of the learners in the learning experience with new or improved capabilities that can improve their performance in a real-life situation. Also, Dirksen (2016) believes success depends on how well the educator understands the gap between the current situation and where the learn needs to be in order to be successful in their work. Once the gaps in learning are identified, then improved learning experiences can be designed by the educator. In

order for the learning experience to be successful, the learners must also be motivated to receive the content. Dirksen (2016) stated that the educator must determine the answers to the following three questions: a) What do your learners want to learn? b) What is their current skill level?; and c) How are your learners different from you?

Dirksen (2016) further argued highly motivated learners can learn regardless of the quality of the learning experience. If a learner is unmotivated, even the best educators will struggle to convey the learning content in a productive manner. Once the learning content is designed and implemented, an evaluation needs to be performed to determine the effectiveness.

Through the evaluation process, the educator will be able to determine the functionality of the learning design. The educator can assess the functionality by asking if the amount of content is lacking, sufficient, or burdensome. Also related, the educator needs to assess if the instructions for the learning content were clear and concise for the learners to comprehend (Dirksen, 2016). Finally, the level of engagement and motivation need to be considered. Dirksen's learning theory was related to this DNP project in that after the educational program was designed and implemented, the DNP student could perform an evaluation to determine the effectiveness of the learning design in the form of a summative evaluation.

Rossi's Learning Theory

Rossi et al. (2004) stated that evaluations were often used to assess the appropriateness of programs as well as to identify ways to improve the delivery of interventions. Rossi et al. (2004) defined program evaluations as "the use of social

research procedures to systematically investigate the effectiveness of social intervention programs". The assumptions of these theorists were all congruent with the design, development, delivery, and evaluation of the educational program for the correctional officers. In the development of a staff education plan for diabetes tailored to correctional officers, the main objective was to increase the knowledge of diabetes in correctional officers to reduce incidences of sentinel events among inmates who were in custody. The correctional officers were motivated to acquire information relevant to their ability to effectively respond to inmates who experience signs, symptoms and complications of diabetes. Rossi's learning theory was related to this DNP project in that the results of the evaluation and pre and posttests identified the need of long-term education for the correctional officers relating to diabetes.

Relevance to Nursing Practice

Many individuals who are incarcerated, on probation, parole, or released from law enforcement custody have been diagnosed with diabetes. This chronic condition was common nationally with approximately 1.9 million new adult cases (type 2) every year (ADA, 2011). The overall prevalence of diabetes among inmates had increased, currently reaching 4.8%. Because of this increase in the number of individuals with diabetes, nurses often encountered these new cases across a variety of healthcare systems. This project was relevant to nursing because correctional health nurses had ability to collaborate with the various disciplines including social work, mental health, medical and law enforcement in order to provide improved health outcomes for the inmates and reduce the amount of sentinel events that occurred.

Most research on diabetes did not pertain to incarcerated individuals. There were very few studies related to the inmate population and the incidences of diabetes. Among the few available studies, one suggested that inmates who had unrecognized diabetes were not afforded early treatment to control diabetes progression and prevent complications resulting from delayed treatment (Castro, 2014). The study also reported that due to poor lifestyle habits, some inmates had limited access to healthcare prior to incarceration, which resulted in not being properly diagnosed in a timely manner (Castro, 2014). This was critically important because inmates diagnosed with diabetes during the initial intake screening, were more likely to be placed in a housing unit with a correctional officer with knowledge about the signs and symptoms of diabetes and the ability to respond to emergencies in the absence of medical personnel.

Many strategies and standard practices were tailored towards diabetic individuals who are not incarcerated. The standard practices were tailored from professional and governmental organizations such as the ADA, NCCHC, and the National Institutes of Health (NIH). Currently in the correctional institution the early signs and symptoms related to low and high blood glucose in inmates with diabetes were missed by the correctional officers. When recognized, the inmate condition was a medical emergency with health professionals in the facility. In this case, the officers need authorization from a correctional supervisor to activate outside emergency services to move the inmate to an outside facility. While awaiting authorization, the medical condition continued to deteriorate. The gap would be closed in that correctional officers would recognize the early signs and symptoms related to diabetes and initiate the processes that would

facilitate the timelier transfer of the inmate for medical intervention and decrease the number of sentinel events that could lead to serious illness (Mahone, 2015).

Staff Education Needs and Program Goals

Organizational leadership. In the development of this staff education project, I had the opportunity to conduct an informal conversation via telephone and email correspondence with the Director of Training at the correctional institution in which the educational program would be presented. He agreed that correctional officers being knowledgeable relating to the signs and symptoms of diabetes would prevent sentinel events because they would be able to respond in a timely manner in the absence of medical personnel. He also agreed that correctional officers would benefit from being enrolled in a staff educational program relating to diabetes. Therefore, he agreed to provide a formal commitment of support from correctional institution in order to proceed with the presentation.

Development & Verification of the Staff Education Program

In the development of the staff education program, the content was based on content originally developed by the guidelines set forth by the ADA. The delivery strategy was a PowerPoint presentation based on Knowles' adult learning theory and Boone's conceptual programming model. Upon development, the staff education program was verified with the director of training of the correctional institution via an anonymous questionnaire. Upon receipt of the formative review, the staff education program was revised, based on the review results as well as an informal discussion to

validate content and ensure that the program was useable. After the site agreement was received, ethics approval through Walden IRB was reviewed and approved.

Formulation of Specific Learning Objectives

This staff education program was tailored to educate correctional officers regarding signs and symptoms of diabetes in the inmate population. The goal of the staff education project was to develop an evidence-based program to increase the knowledge of correctional officers about diabetes to recognize an evolving inmate medical emergency related to diabetes and to implement the appropriate basic interventions. After completion of the program, the correctional officers were expected to:

1. Recognize the signs and symptoms of increasing blood glucose levels of inmates with diabetes;
2. Differentiate unusual behaviors in inmates that may be related to diabetes versus the normal behavioral problems; and
3. Respond with basic interventions to manage the program and to prevent complications such as a medical emergency.

Local Background and Context

This project was based in an adult correctional facility located in the Midwest region of the United States with a 1,000-inmate capacity, male and female. The focus was on inmates diagnosed with a multitude of chronic diseases including diabetes mellitus. In 2013, the ADA released a report that provides a general set of guidelines for diabetes management in correctional institutions. This document included a discussion about areas in which inmates with diabetes may differ from the non-incarcerated population (ADA,

2013). The report provided specific recommendations that correctional institutions should take into consideration in order to adhere to standards of care (ADA, 2013). The article stated that all correctional institutions should have written policies, procedures for the management of diabetes, and the training of both medical and correctional staff. In addition, the need for written policies and procedures were highlighted as well as miscellaneous issues such as security needs, transfer between facilities, access to medical personnel and/or equipment. Policies should also be implemented to encourage self–care of diabetes by the inmate (ADA, 2013). In addition to having policies and procedures in place for both medical and correctional staff, there should also be ongoing therapy and education to reduce the risk of any complications that occurred (Pandve, 2014).

Inmates should be thoroughly screened for diabetes with the initial intake assessment process, that includes a complete health history and physical examination by licensed health professional (i.e., physician, physician assistant, or nurse practitioner). Risk factors such as alcohol use, behavioral health issues, and the presence of any diabetic related symptoms, previous medical treatment, and history of any diabetic complications should also be assessed (ADA, 2013).

The standards of medical care in diabetes is a position statement with evidence-based standards for healthcare providers, patients and other stakeholders (ADA, 2013). Overall, the components of diabetes care include determining the management goals, and an evaluation tool related to measure the quality of care (ADA, 2013). The first part of the standard of care position statement was the classification and diagnosis. The position statement divided the diabetes classification into four clinical classes: Type 1 and type 2

diabetes, other specific criteria, and gestational diabetes. Specific criteria had to be met in order to officially diagnose individual into one of the four clinical classes (ADA, 2013).

One criterion included a fasting blood glucose level of >126mg/dl or a 2-hour plasma glucose level of >200mg/dl (ADA, 2013). The next component of the standards of care involved screening for diabetes. This was important in correctional institutions because many inmates who have a history of diabetes prior to incarceration, would present to the correctional facility without any diabetic symptoms. The standards of care required that individuals who were asymptomatic have a screening if they reported a history of diabetes mellitus prior to incarceration.

Other specific criteria including habitual physical inactivity, having a first degree relative (e.g., parent or sibling) with diabetes, being a member of a high risk ethnic population (African American, Hispanic, Native American, Asian and Pacific Islander), delivering a baby weighing more than 9 pounds, diagnosed with gestational diabetes, hypertensive and having other clinical conditions associated with insulin resistance (ADA, 2013). The standard of care offered recommendations for screening to detect prediabetes for individuals over the age of 45 and those with a body mass index (BMI) over 25 (Cramer, Sibley, Bartlett, Kahn, & Loffredo, 2007).

Incarcerated women were at high risk of substance abuse and behavioral health issues which have the potential to interfere with healthy pregnancies. Detecting and diagnosing gestational diabetes mellitus (GDM) was of great importance among female inmates. The ADA (2013) suggested that a risk assessment for GDM be given at the first prenatal visit, especially for women who that may exhibit clinical characteristics that put

them at higher risk for GDM (i.e. obesity, glycosuria, or a prominent family history of diabetes).

The next component of the standards of care was the prevention/delay of Type 2 diabetes. The ADA (2013) standards of care suggested that strategies proven to be effective in the prevention of diabetes rely on lifestyle modification or medications that lower blood glucose levels to treat diabetes. However, individuals with diabetes who were incarcerated may have had difficulties with lifestyle modifications as a result of not having access to the same resources prior to incarceration (Vieira-Potter Karamichos, & Lee, 2016). For example, an inmate who was noncompliant with his or her medication regimen and had a history of substance abuse and poor dietary habits prior to incarceration would likely experience the most difficulty with lifestyle modification both during the period of incarceration and after they are released (Nam, Chesla, Stotts, Kroon, & Janson, 2011).

The next component of the standards of care was lifestyle modification. The standards of care suggested that studies that were well-controlled had a component of lifestyle interventions that examined changes in weight and exercise (ADA, 2013). Another major component of the standards of care was the diabetes care itself. According to the study, diabetes care included a complete medical evaluation to determine whether the patient needed insulin or an oral hypoglycemic agent. A plan was formulated to determine the type of care necessary to ensure that the patient received the optimal care as a diabetic. Many individuals who were diabetic were susceptible to other complications of diabetes inclusive of heart disease, renal failure, neuropathy, and

gangrene. It was also noted that “substantial efforts” must be made in order to achieve changes in weight and exercise enough to influence blood glucose levels.

Another component of the standards of care involved pharmacologic interventions. According to ADA (2013) three pharmacological therapies were reported to lower the incidence of diabetes. The agents included Metformin which was found to be effective in the treatment of diabetes among individuals between the ages of 24-44 and/or individuals who have a BMI greater than 35kg/m2 (ADA, 2013). Those treated with Metformin also had an equal benefit of lifestyle interventions such as diet and exercise (ADA, 2013).

Another component of the standards of care was the comparison of lifestyle changes and medication regimen in the treatment of diabetes. According to the ADA (2013), the study suggested that lifestyle modification was nearly twice as effective in preventing diabetes as the medication treating the symptoms of diabetes. The study stated that the benefits of weight loss and physical activity were more effective for preventing or delaying the onset of diabetes than treating diabetic symptoms. Substantial weight loss of approximately 5-10% of total body weight and physical activity of 30 minutes or more daily was found to make a significant impact in preventing or delaying the onset of diabetes. The study stated that healthcare providers should also use the lifestyle changes and medication education as tools to treat diabetes for those who have been already diagnosed with diabetes mellitus (Deng et al., 2016).

Definition of Terms

Diabetes mellitus: a group of disease that are characterized by high blood glucose levels that results from defect in the body's ability to produce and/or use insulin (ADA, 2014).

Type 1 diabetes: A form of diabetes that has a usual onset in children. Type 1 or insulin dependent occurs when the pancreas lacks the ability to produce insulin. This form of diabetes requires the use of insulin to control blood glucose levels (ADA, 2014).

Type 2 diabetes: The most common form of diabetes mellitus which usually has an adult onset. This form of diabetes occurs when the body does not properly use insulin to metabolize blood glucose levels in the body (ADA, 2014).

Impact evaluation: Assessment of the extent to which a program causes change in the target population (Rossi et al., 2004).

Summative evaluation: is an evaluation of student learning at the end of an instructional unit by comparing it against some standard or benchmark (Carnegie Mellon University, 2019).

Sentinel event: A preventable error that results in the serious injury to a person, including death, permanent harm, or severe temporary harm where an intervention required to sustain life (The Joint Commission, 2017, para 2).

Monitoring: Assessment of whether the design or operation of a program is reaching its specified target population (Rossi et al., 2004).

Target population: Persons, households, organizations, communities, or other identifiable units to which interventions are directed (Rossi et al., 2004).

Special Diabetes Programs

State and federal funding for diabetes research should be increased. Policies to further diabetes research at the NIH and Centers for Disease Control and Prevention should be promoted (ADA, 2013). In addition, funding for special diabetes research and programming for Type 1 among the Alaskan Native and Native Indian (AI/AN) population is greatly needed. According to ADA (2013), the Indian Health Services (IHS) diabetes programs have led to a 54% decrease in diabetes and related kidney disease in the AI/A population between 1996 and 2013.

The ADA had been an advocate for funding of the Special Diabetes Program for Indians which received $150 million annually to implement evidence-based strategies for diabetes treatment and prevention at the local level. It was also reported that in 2016, the ADA collaborated with the House and Senate Diabetes caucuses to obtain support for the Special Diabetes Program for Indians (SDPI) into a reauthorization year. The effort resulted in 356 members of the House and 75 members of the Senate committing to this program. It was the mission of the ADA to continue to advocate for reauthorization of the SDPI and to also support programs that helped reduce the incidence of diabetes among the nation's most vulnerable populations (ADA, 2013).

Role of the DNP Student

The professional context of this project supported the use of an educational program for correctional officers relating to the ability to identify and respond to inmates who had been diagnosed with diabetes mellitus. A diabetic educational program could serve as a tremendous asset to a correctional facility with inmates living with diabetes. A

greater awareness potentially reduced the number of offsite hospital admissions, security generated incident reports, and sentinel events. It would be an asset to train correctional officers to recognize the signs and symptoms of hypoglycemia and hyperglycemia and enhance the ability to take emergency action for reducing sentinel events.

Through completing this practice improvement project, I have attempted to develop an educational program regarding inmates who had been diagnosed with diabetes mellitus. The educational intervention was designed to teach the participants about the pathophysiology of diabetes, signs and symptoms of hypoglycemia and hyperglycemia, complications, and interventions that a correctional officer could perform in the event of an emergency. I believed that the development of an educational program would likely prevent sentinel events such as serious complications and/or death.

I came to this project with several years of experience in correctional health nursing and treating inmates who had been diagnosed with diabetes. I have also had the opportunity to collaborate with correctional staff regarding inmates with diabetes, sharing my observations regarding the physical and mental health ramifications of the condition. In this context, I have been able to discuss not only the effects of diabetes on physical health such as possible behaviors of an inmate who was experiencing hypoglycemia and hyperglycemia, and the possibility of misinterpreting behaviors as combative or disobedient during a hypo or hyperglycemic episode.

My motivation for developing this project was to improve knowledge of the disease process of inmates who had been diagnosed with diabetes. It was my belief that if correctional personnel were knowledgeable regarding diabetes and its associated

symptoms, there would be a reduction of sentinel events such as serious health complications and/or death. This would also reduce the number of related incident reports generated from correctional staff and the number of lawsuits from inmates and their families. My previous employment as a correctional health nurse introduced potential bias, although it could be argued that experience provided an intimate insight to the problem, an understanding of possible solutions and access to stakeholders for consultation.

Summary

Because of the number of incarcerated individuals with diabetes had increased, the need for more educational programs to help correctional staff understand the disease process, prevent complications, and avert sentinel events was indisputable. This project held multiple implications for social significance which extended further than simply increasing awareness of diabetes mellitus but increased the capacity of correctional staff to assist in meeting health care standards to each incarcerated individual as entitled under the law. Section 3 covers the sources of evidence, evidence generated for the doctoral project, procedures and protections.

Section 3: Collection and Analysis of Evidence

Introduction

Diabetes remains a significant problem for incarcerated adults. Inmates diagnosed with diabetes mellitus are significantly more likely to experience medical problems than the non-diabetic incarcerated population. Knowledge about many chronic conditions, such as diabetes, awareness about the potential complications and how to respond to evolving medical emergencies are limited with correctional officers. This results in a delay in recognition and response to a medical emergency, especially when health care professionals are not readily available. A delayed response can lead to further deterioration of an inmate's health, including irreversible damage and death.

The purpose of this project was to design an evidence-based educational program to provide correctional officers with the knowledge to identify the signs and symptoms of diabetes mellitus, recognize the manifestations of diabetic complications, and respond with basic interventions in the absence of health care professionals. In this section, the problem is restated, the gap in practice is defined, and the practice-focused question is stated in the context of the project method. The approach to developing the evidence-based education program is described and the method for delivering the program is discussed. Importantly, the purpose for this project is aligned with the practice-focused question. The operational definitions for key aspects of the project are clarified. This section covers the sources of evidence, as well as how the evidence, or data, was generated for analysis in Section 4.

Practice Focused Question

Correctional officers can misinterpret the manifestations of an evolving medical emergency related to diabetes as an "inmate behavior" As a result, there can be a delay in responding to the medical condition, leaving the inmate at risk for potentially life-threatening outcomes. This gap in practice is addressed with an evidence-based educational program focused on correctional officers as they have the most and closest contact with inmates. The identified gap in practice is defined by the question, how will an educational program designed for correctional officers impact their knowledge about diabetes, including their ability to recognize the signs and symptoms associated with diabetes complications, and their ability to respond to affected inmates with basic interventions?

Sources of Evidence

The sources of evidence used were the published literature, professional organization guidelines, and government standards. The comprehensive literature review was completed using the following databases: CINAHL and PubMed. The following keywords were used: *diabetes mellitus, correctional health, inmates*. The literature review included materials published between the years 2010 and 2019. A total of 60 publications were identified. After inclusion criteria were considered, 25 evidence-based sources were used to frame the narrative. The evidence was used to design an educational program that would provide correctional officers with the knowledge needed to recognize manifestations of diabetic complications in inmates.

Evidence Generated for the Doctoral Project

This project focused on quality improvement through an evidence-based education program focused on improving the recognition and response to complications in inmates associated with diabetes mellitus. The program content and delivery strategies were guided primarily by Knowles' adult learning theory as well as concepts from other theories such as changing knowledge through education (Boone et al., 2002), evaluation to determine the need for long-term education (Rossi et al., 2004) and the effectiveness of learning design on outcomes (Dirksen, 2016). In addition to the theoretical guidance and conceptual development, the guidelines and reports were included in the review.

Participants

The participants for this project included 49 correctional officers employed with the Department of Corrections. The director of training for the correctional facility agreed to select the correctional officers who were primarily assigned to housing units with inmates with a diabetes diagnosis. The participants were not limited by gender but needed to be employed by the Department of Corrections for at least 90-days and have daily interactions, at least 8 hours, with inmates.

Procedures

Prior to the presentation, a 10-item multiple choice and true/false pretest was provided to the participants based on the learning objectives in the educational presentation (Appendix A). Then, the staff education program was presented in a PowerPoint lecture format (Appendix B). This program provided an overview of diabetes and the signs and symptoms related to complications, including hypoglycemia and

hyperglycemia with manifestations. There were also case studies based on situations regarding law enforcement encountering individuals experiencing signs and symptoms related to diabetic complications reported by the ADA. Then, the 10-item knowledge-based assessment was provided to the participants at the end of the program.

In addition, a summative evaluation was provided to the participants to evaluate the learning module (Appendix C). The summative evaluation requires at least two participant responses to validate the learning module. The evaluation was designed using a Likert scale to measure opinions, attitudes, and/or perceptions. The Likert scale provided a range of numerical responses to questions associated with descriptors such as most likely, likely, or less likely (Waltz, Strickland, & Lenz, 2010). The summative review of the learning module was conducted with six members of the security leadership evaluated the effectiveness of the learning module. This included the staff sergeant, two lieutenants, two shift sergeants, and the director of training. The reviewers were selected by the chief of security of the facility.

Analysis

Pre and posttest scores were measured and compared to assess if the educational presentation had a significant impact on enhancing knowledge. The data were collected in a paper format, input into an excel database and transferred into SPSS for analysis. A paired *t*-test was used to determine whether the mean quiz scores in the same group were significantly different "before" and "after" exposure to the learning module (Figure 1).

Protections

Prior to the design, implementation and presentation of the learning module, Walden University Institutional Review Board approval number was obtained per university policy. Participants in the project received a Consent Form for Anonymous Questionnaires prior to the distribution of the pretest to maintain privacy. As the staff educational program consisted of a presentation related to diabetes mellitus, including case study scenarios, there were no risks for correctional officers.

The privacy of all participants was protected. The pre and posttests did not ask any identifying questions to which the respondent could be linked. Participants were informed that their involvement was strictly voluntary and that their employment or benefits to which they were entitled did not depend on their decision to participate. The voluntary nature of attending the session and completing the pre and posttest was addressed. The correctional officers were not required to sign any documents. They were informed that participation was voluntary and that their decision to complete a ten item the pre and/or posttest was their consent to participate in the project. All data was kept in a locked cabinet and stored in a computer to which only the DNP student had access.

Institutional Approval

Approval to conduct the staff education program was obtained by the director of training of the correctional facility. Written notification from the Department of Corrections was submitted to Walden University prior to IRB approval.

Summary

Diabetes is a significant problem within correctional facilities. It is important that correctional officers are cognizant of signs and symptoms related to diabetes. The purpose of this DNP project was to design an evidence-based educational program that will provide correctional officers with the knowledge needed to recognize early signs and symptoms of diabetes and to initiate timely transfers of the inmate for medical care in the absence of medical personnel. The director of training provided a formal commitment of support to implement the educational intervention at this correctional institution site.

The delivery strategy was based on Knowles' adult learning theory and Boone's conceptual programming model. The sources of evidence included standards in diabetic care from the ADA, the Federal Bureau of Prisons, the NCCHC, and the NIH. The diabetic education program consisted of a PowerPoint presentation detailing the signs and symptoms of diabetes and highlighted hypoglycemia and hyperglycemia and its manifestations.

The privacy of subjects was protected by using an anonymous questionnaire that did not ask identifying questions nor could link responses to the respondent. All answers were analyzed and reported only in the aggregate. Data were kept in a locked file and managed in a computer database to which only the DNP student had access. Participation was voluntary and their decision not to participate would not affect employment in the facility. Section 4 covers findings and implications, any recommendations and strengths and limitations of the DNP project.

Section 4: Findings and Recommendations

Introduction

The purpose of this project was to improve the knowledge of correctional officers about the complications associated with diabetes, including the signs and symptoms of high blood glucose. This project was premised on the local problem as the correctional officers were not familiar with the signs and symptoms of diabetes and typically had a delayed response to evolving medical emergencies. These delayed responses contribute to additional medical complications that can result in in permanent disability and death.

The gap-in-practice was the correctional officer's knowledge deficit about the signs and symptoms of complications related to diabetes. As the correctional facility officers work with inmates 24 hours a day, 7 days a week, they are the first line response to medical emergencies. As such, the practice-focused question for this project was: How will an evidence-based educational program for correctional officers increase their understanding about diabetes in the context of the inmates living with diabetes, including their ability to recognize the early warning signs and symptoms associated with a decreasing or increasing blood glucose serum and their ability to respond in a timely manner with the appropriate intervention to the address the needs of the inmate prior to an adverse event?

Sources of evidence that guided the development of the educational project were acquired from a literature review of diabetes mellitus in correctional settings. Sources for this project were searched from databases focused on peer-reviewed journals, government reports, and professional organization clinical practice guidelines.

Approximately 60 publications were identified, but after the abstracts were reviewed and inclusion criteria applied, a total of 25 publications were used to provide evidence-based information on the subject matter.

The educational module was presented to 49 correctional officers, both male and female, who had regular interactions with inmates for at least 8 hours daily and who had been employed by the Department of Corrections for more than 90 days. A pretest was administered prior to the presentation. The educational presentation was delivered to the correctional officers followed by the posttest.

Findings and Implications

The director of training was provided with a copy of the educational presentation and a copy of the pre and posttest for review by the panel of experts. The panel members were given 10 days to review and evaluate the presentation and complete the evaluation questions in order to determine the effectiveness and viability of the educational project. In developing the educational module, I sought to determine whether an educational module on diabetes mellitus directed towards correctional officers would improve preventative and proactive care for patients diagnosed with diabetes. The module presentation had three phases. Phase 1 involved presentation to a panel of six experts for evaluation of the module. Phase 2 involved delivery of educational program to the correctional officers. Phase 3 involved statistical analysis of pre and posttest data to determine the effectiveness of the educational presentation.

Phase I. Panel Evaluation

The six experts provided an evaluation of the learning module. A total of six evaluation questions were asked based on a four-point Likert Scale.

Question 1, "Will the information presented increase the staff's knowledge about the signs and symptoms of diabetes mellitus?" This question received a rating of "most likely" by 4 participants and "likely" by 2 participants. The agreement for this question was 66.8% and suggested a reasonably high agreement that the information presented would increase the staff's knowledge about signs and symptoms of diabetes mellitus.

Question 2, "Will the presentation and the questions achieve the identified objectives?" was rated as "most likely". Based on the responses, there was 100% agreement among the panel that the presentation and questions would achieve the identified objectives.

Question 3, "Was the information presented easy to understand?" was rated as "very easy" by all six panel members. The 100% agreement strongly suggests that the information presented was easy to understand.

Question 4, "Are the target users for the presentation clearly identified?" was rated as "very clear" by 5 panel members and "clear" by one panel member. Based on the responses, 83.3% of the panel agreed that the target users for the presentation were very clearly identified.

Question 5, "Was the time allotted for the presentation acceptable?" was completed rated as "very acceptable" by all 6 panel members. All (100%) of the panel members agreed that the time allotted for the presentation was acceptable.

Question 6, “Were your questions about the presentation answered to your satisfaction?” All 6 panel members rated this item as “very satisfactory” unanimously agreeing that the presentation answered questions to the satisfaction of the staff.

The overall rating of 87.5 among all six of the panel members suggested that the educational module was a valid tool for teaching the correctional staff about recognizing and responding to diabetes mellitus among the inmates. This outcome suggested that the expert panel believed that the educational module was valid for use without the need of modifications (See Table 1).

Table 1.
Panel Questions on Educational Module Content (N=6)

Question	Not Likely	Somewhat Likely	Likely	Very Likely
1. Will the information presented increase the staff's knowledge about the signs and symptoms of diabetes mellitus?"	0	0	2	4
2. Will the presentation and the questions achieve the identified objectives?	0	0	0	6
3. Was the information presented easy to understand?	0	0	0	6
4. Are the target users for the presentation clearly identified?	0	0	1	5
5. Was the time allotted for the presentation acceptable?	0	0	0	6
6. Were your questions about the presentation answered to your satisfaction?	0	0	0	6

Phase II. Delivery of the Educational Module

The educational module was presented to 49 correctional officers, both male and female who had regular interactions with inmates for at least 8 hours daily and were employed by the Department of Corrections for more than 90 days. The Power Point presentation was also based on ADA learning objectives relating to diabetes mellitus and its signs and symptoms of hypoglycemia and hyperglycemia (Appendix B). A pretest was administered prior to the presentation (Appendix A). The educational presentation was given to the officers and the posttest was administered immediately after the presentation. The pre and posttest (Appendix A) were comprised of a combination of 10 multiple choice and true/false questions based on the learning objectives in the educational presentation. In total, the educational presentation and accompanying pre and posttest were completed in approximately 15 minutes.

Phase III. Evaluation of Module's Impact on Learning.

Four assumptions were met to confirm that data could be analyzed using the paired t-test. (1) The dependent variable should be a continuous variable (test score), (2) The independent variable should consist of two "related groups" or "matched pairs", (3) There should be not be any significant outliers and (4) The distribution of the dependent variable should be **(**approximately) normally distributed**.** The significance level, also denoted as alpha or α, was the probability of rejecting the null hypothesis when it was true. The significance level was held at 0.05 indicating that there is a 5% risk of concluding that a difference exists when there was no actual difference.

Question: "Will an educational module increase ability of correctional officers to recognize signs, symptoms and respond to medical emergencies associated with diabetes in inmates?"

H0: Exposure to the educational module has no impact on knowledge of signs, symptoms, and medical emergency response to inmates with diabetes mellitus.

Ha: Exposure to the educational module had a significant impact on knowledge of signs, symptoms, and medical emergency response to inmates with diabetes mellitus.

An analysis of pre and posttest data found that the average prescore 5.6/10 or 56% and average posttest score of 7.6/10 or 76%. While the near 2 point (20%) increase in scores was statistically significant ($t = 7.16$, $p = 0.0001$) it was noted that baseline knowledge as well as follow up knowledge were low among this group (See Table 2).

Table 2.

Diabetes in Correctional Institutions: Pre and Post Test Scores (N=49)

Score	**df**	**M**	**SD**	**Δ**	***t***	***P***
Pre	48	5.67	1.41			
Post	48	7.63	1.28	1.96	7.16	.000

The difference measured between mean pre and posttest scores achieved statistical significance. However, as visually illustrated in Figure 1, the scores achieved by each participant was able to demonstrate that on average scores were higher for all respondents after exposure to the educational session although it was noted that the percent of

increased learning were not consistent for all respondents.

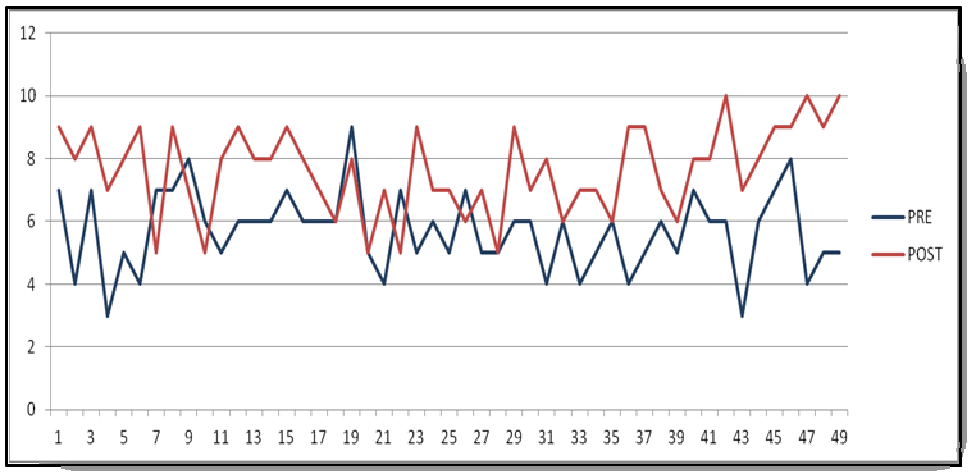

Figure 1. Pre and posttest scores earned by each respondent ($N = 49$).

Implications

The implications resulting from this project suggested that the correctional officers initially did not have a significant amount of knowledge related to the signs and symptoms of diabetes mellitus as evidenced by the low scores in the pretest. After attending the educational intervention, the significant increase in knowledge scores suggested significant gains in their knowledge of diabetes signs and symptoms, how to appropriately respond to potential medical emergencies, and how to identify disruptive behaviors that result from this medical condition. However, it was also evident that the level of knowledge regarding this topic was very low at baseline and remained moderately low after participating in the educational session. The significant increases in posttest scores however provide optimism that this group was trainable and open to learning about this important health topic.

Education is both a process and a product. From a societal perspective, education was meant to provide knowledge, reasoning skills, and awareness. Findings suggested that providing correctional staff with the knowledge, skills, and capacities needed to respond to this issue may require more than one educational session. Corrections officers were essential for averting medical emergencies and death. While education was measured in a variety of ways, it was argued that learning was often measured as a short-term phenomenon rather than the application of new knowledge for long-term application.

Recommendations

The educational presentation was recommended for new correctional staff training at the correctional facility used in this project. The director of training also recommended that this educational module be presented at other correctional facilities within the same jurisdiction. A brief quarterly in-service presentation was also recommended. A third recommendation was to require that a full medical history be obtained on admission to the facility. Any history of diabetes as well as other chronic conditions must be reported to staff of the housing unit to which the inmate is assigned.

Strengths and Limitations of the Project

Strengths

There were several strengths in this project. First, the project was able to address the critically important topic in correctional facilities of recognizing signs and symptoms of diabetes among inmates in custody. The correctional officers who had an increased knowledge of diabetes signs and symptoms could prevent medical emergencies that lead

to complications, sentinel events, and even death.

The strength of the DNP project included the review and preapproval of the educational module by a panel of experts before it was presented to the intended audience. This afforded the DNP student with much guidance in the effective use of the module and supporting guidelines with the target population. Another strength of the project was the large sample size ($N = 49$). An analysis using a sample larger than 30 was preferred because differences were more likely to be measured when they exist. Larger sample sizes allowed for interpretation of findings and generalizing them to a population in a relevant manner.

Limitations

The project was created with the staff from only one facility in mind. Future recommendation for a project includes longer time to monitor staff acquisition and retention of knowledge on diabetes and their ability to transfer knowledge on diabetes from staff to patient. The improvement of the health of incarcerated diabetics was the primary goal of this exercise, so there should be more time devoted to monitoring the effects of this educational module on this health subject of critical importance.

The correctional facility currently has limited medical personnel that could respond to diabetic medical emergencies. The limitation was that the original facility that agreed to participate changed administrative staff and were no longer in agreement about participating in the project. Several facilities were contacted for participation in the project and several facilities either did not have enough staff to participate or did not respond to the request for participation. After finding a facility with a significant number

of correctional officers that were willing to participate, the administration approved the educational project.

Finally, the evaluation of module effectiveness only measured short-term results. The impact of achievement of knowledge acquisition could diminish or disappear with time. Long-term effects of the newly gained knowledge needed to be measured in order to ascertain the positive benefits of the module. Because documenting long-term impacts, require longitudinal studies and measures a longer period of time after participation, information on the long-term impacts of the diabetes education module was lacking and was key for subsequent researchers to consider. Long-term reductions in medical complications, sentinel events and death required measurement and analysis.

Summary

The results of the feedback from the panel of end users (evaluators) yielded an overall score of 0.87 and suggested that an educational project was appropriate for training correctional officers about diabetes and appropriate emergency response in order to decrease the occurrence of complications, sentinel events, and/or death. A paired *t*-test estimated that the average scores increased from 56% before exposure to 76% after exposure to the education module. This 20% increase in scores was statistically significant ($t = 7.16$, $p = 0.0001$) it was noted that baseline knowledge and follow up knowledge were low among this group. Finally, this project only measured short-term results of exposure to the educational module. Because the impact of achievement of knowledge acquisition could diminish or disappear with time, future studies that measured the long-term effects of exposure to education on averting medical

complications, sentinel events and death were required. Section 5 covers dissemination of the project and analysis of self.

Section 5: Dissemination Plan

The plan is to disseminate the educational project, an overview with results, to the facility administration with a PowerPoint presentation. The administration includes senior correctional administration as well as senior medical administration including the Director of Nursing and Medical Director. In addition, the project results will be presented during the quarterly staff meeting for discussion about broader implementation in the facility.

This educational project can be disseminated externally to police departments to educate police officers about the signs and symptoms of diabetes among individuals who are arrested and prior to transfer to county jails and detention centers. This project can be disseminated during the annual conference of the National Commission of Correctional Healthcare which is next scheduled to take place April 2020 in Atlanta, Georgia. This conference is attended annually by nurses, physicians and correctional staff nationwide. The results of the project can be published in journals such as the *Journal of Correctional Healthcare*. The publication will provide readers with evidence supporting the use of education modules to increase staff awareness of diabetes.

Analysis of Self

I learned many facts about myself as a nurse, scholar and potential leader as a result of participating in the DNP program. My DNP education has broadened my knowledge of evidence-based practice. My role as a practitioner requires me to focus on improving the healthcare outcomes of the population I serve. As a correctional health nurse, I realized the importance of correctional officers to recognize signs and symptoms

of diabetes and not misinterpret the signs and symptoms for behavioral issues, and how to appropriately respond to medical emergency situations. As a scholar, the DNP program has improved my ability to use my critical thinking skills and formulate a solution to an ongoing healthcare issue.

Although the scholarly project provided me with the opportunity to use my knowledge to develop a correctional health curriculum to distribute to local police departments, I experienced some challenges in writing the paper in a scholarly voice and finding a correctional facility to present my doctoral project. My long-term professional goals include plans to contribute to the nursing profession by developing a correctional health nursing course as a part of the undergraduate curriculum at community colleges in my local area. I also plan to contribute to my community by speaking to local police departments regarding diabetes education training for police officers. Finally, this practice project has encouraged me to earn certifications as a Certified Correctional Healthcare Practitioner (CCHP-RN) and a Certified Diabetes Educator (CDE).

Summary

Diabetes is a significant problem among individuals who are incarcerated and are likely to have more medical complications than individuals who have diabetes that are not incarcerated. It has been noted that correctional officers often lack basic knowledge on how to recognize signs and symptoms of diabetes, and how to appropriately respond to medical emergencies in order to avert sentinel events and death. The purpose of this staff education project was to provide an educational to correctional officers to enhance their knowledge about the signs and symptoms associated with diabetes complications,

and to appropriately respond to inmates with an evolving medical emergency. The educational module presented to the group of $N = 49$ officers, proved to have a significant short-term impact on increasing knowledge. Education is both a process and a product. Education is meant to provide knowledge, reasoning skills, and awareness. Findings suggested that providing correctional staff with the knowledge, skills, and capacities needed to respond to this issue may require more than one educational session. Corrections officers were essential for averting medical emergencies and death. While education was measured in a variety of ways, it can be argued that learning is often measured as a short-term phenomenon rather than the application of new knowledge for long-term application.

The ability of correctional officers to recognize early the signs and symptoms of diabetes, can improve health outcomes of individuals with diabetes. This project was able to produce significant results ($t = .7\ 64$, $p = .000$) and provide evidence that an educational module is an effective intervention for increasing knowledge of staff involved with protecting the health of incarcerated individuals. DNP projects such as the one presented provide the opportunity to implement interventions that have a positive impact on the health outcomes experienced by vulnerable patient groups such as the incarcerated population.

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Appendix A: Pre and Posttest

Circle one answer:

1. There are 80,000 individuals in custody who have been diagnosed with Diabetes.
    a. True
    b. False

2. All of the following are possible complications of Diabetes except:
    a. Numbness of hands and feet
    b. Blindness
    c. Kidney Failure
    d. Sleepiness

3. Diabetes mellitus is the 3rd leading cause of death.
    a. True
    b. False

4. Type 2 Diabetes is a disease in which the pancreas does not produce enough insulin and your body does not use the insulin properly
    a. True
    b. False

5. Diabetes happens because of which of these:
    a. Your liver doesn't make enough blood sugar
    b. Your muscles use too much blood sugar
    c. Your body can't use blood sugar the way it should
    d. Your body makes more insulin than it needs

6. All of the following are signs and symptoms of low blood sugar except:
    a. Excessive thirst
    b. Sweating
    c. Shaking
    d. Irritability and Uncooperative Behavior

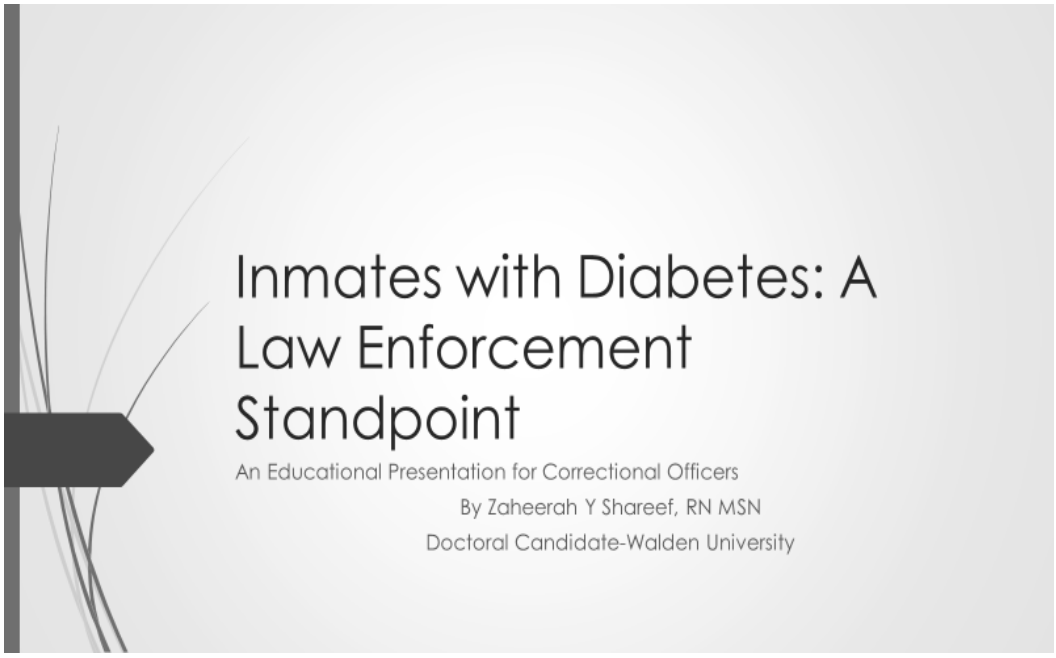
7. All of the following are signs and symptoms of high blood sugar except:
    a. Anxiety
    b. Confusion
    c. Hot and Flushed Skin
    d. Loss of Consciousness

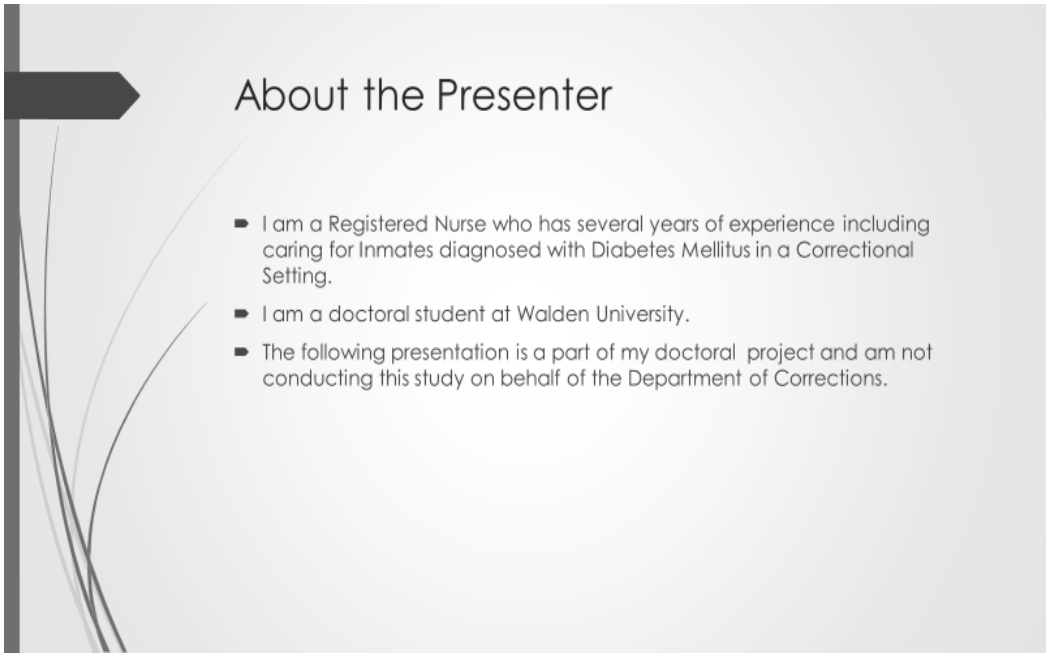
8. What should the correctional officer do FIRST if he/she believes the inmate is having a hypoglycemic attack?
    a. Determine if the inmate is identified as a diabetic
    b. Do nothing at all
    c. Give the inmate a sugar packet
    d. Contact security leadership

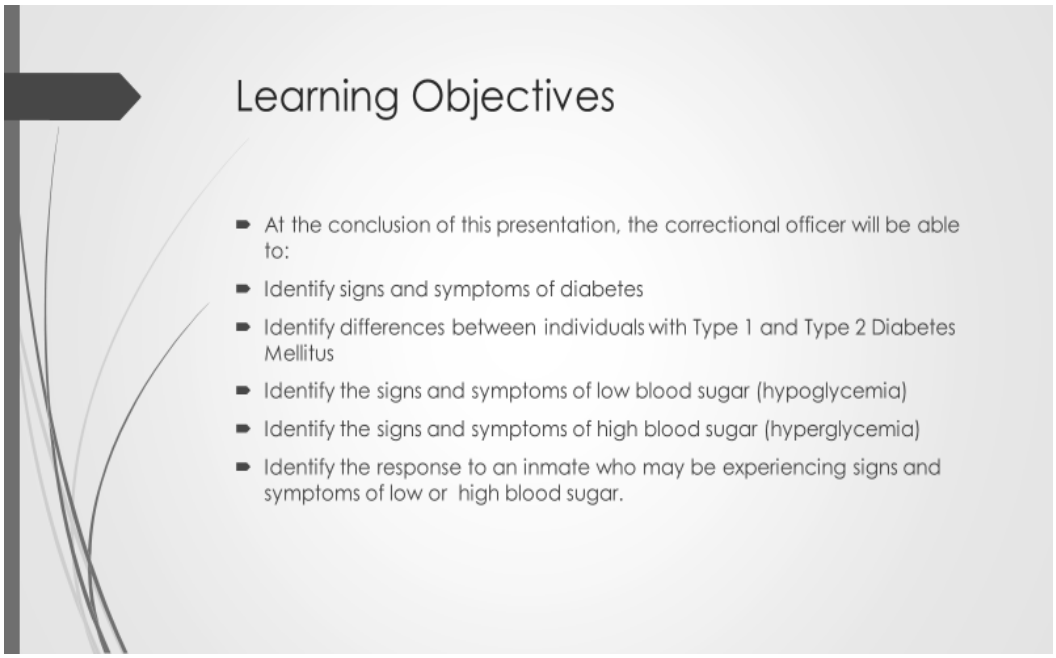
9. The increase of incident reports can be a concern for the correctional officer.
    a. True
    b. False

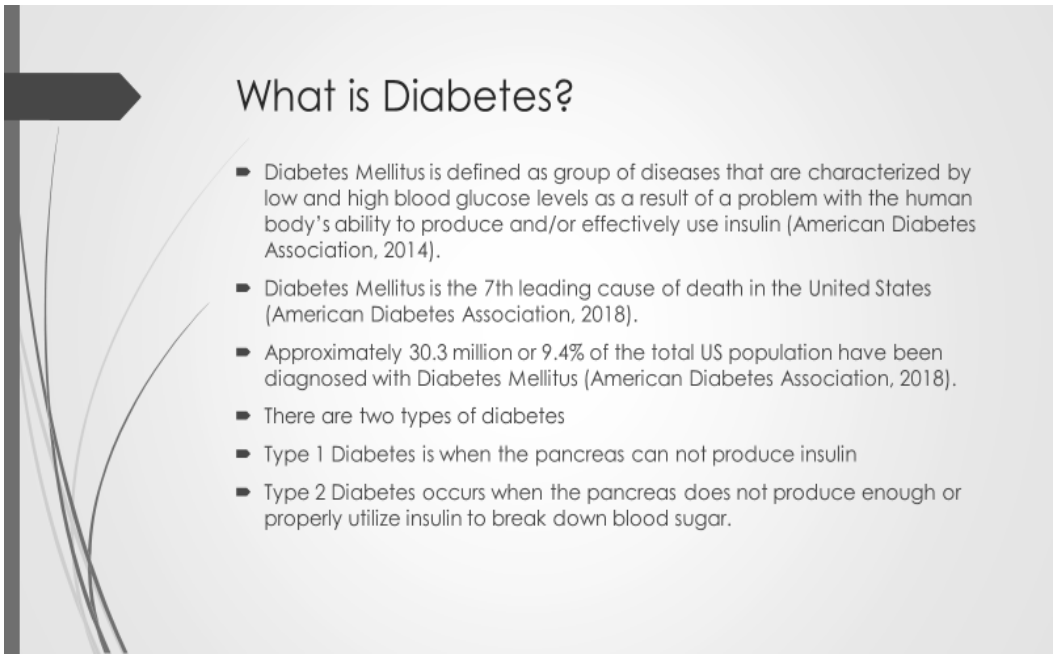
10. The normal blood glucose (blood sugar) levels range between 70-120.
    a. True
    b. False

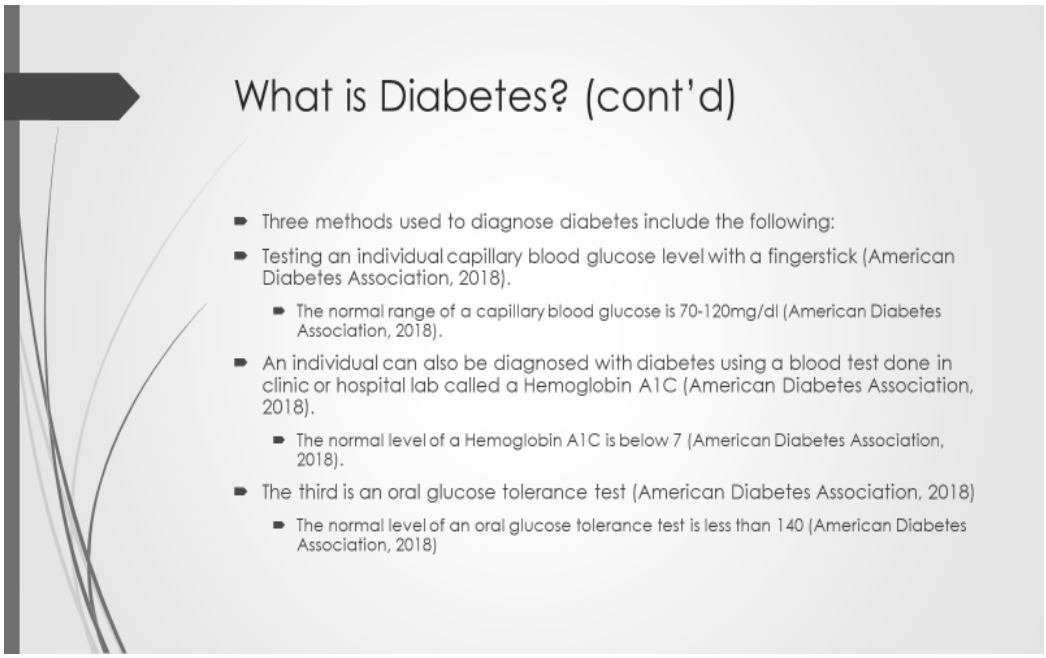
Appendix B: Educational Module

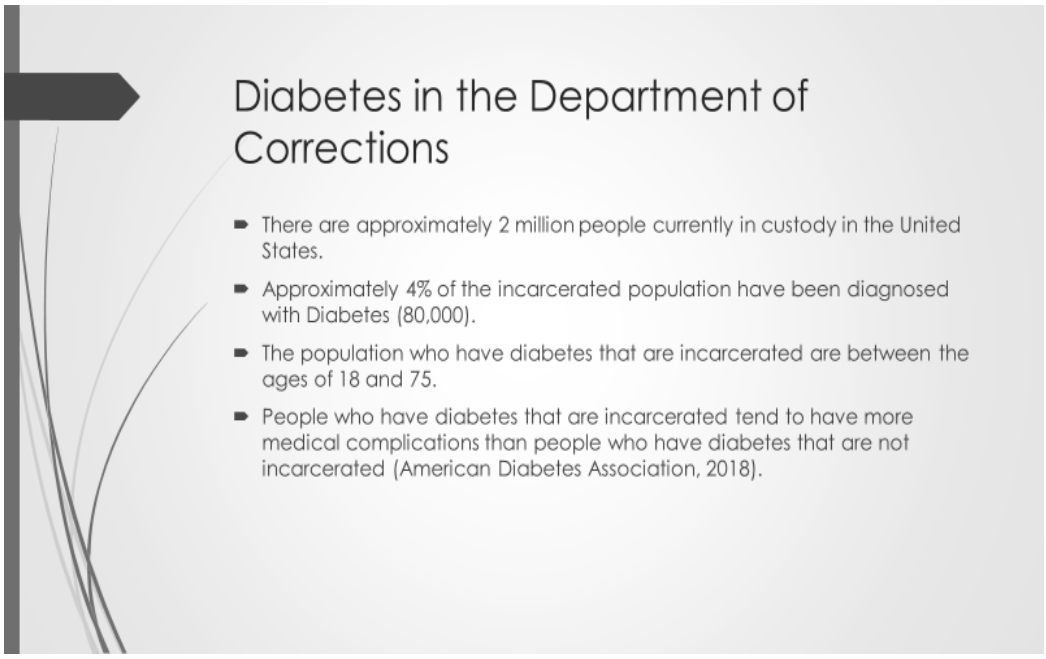


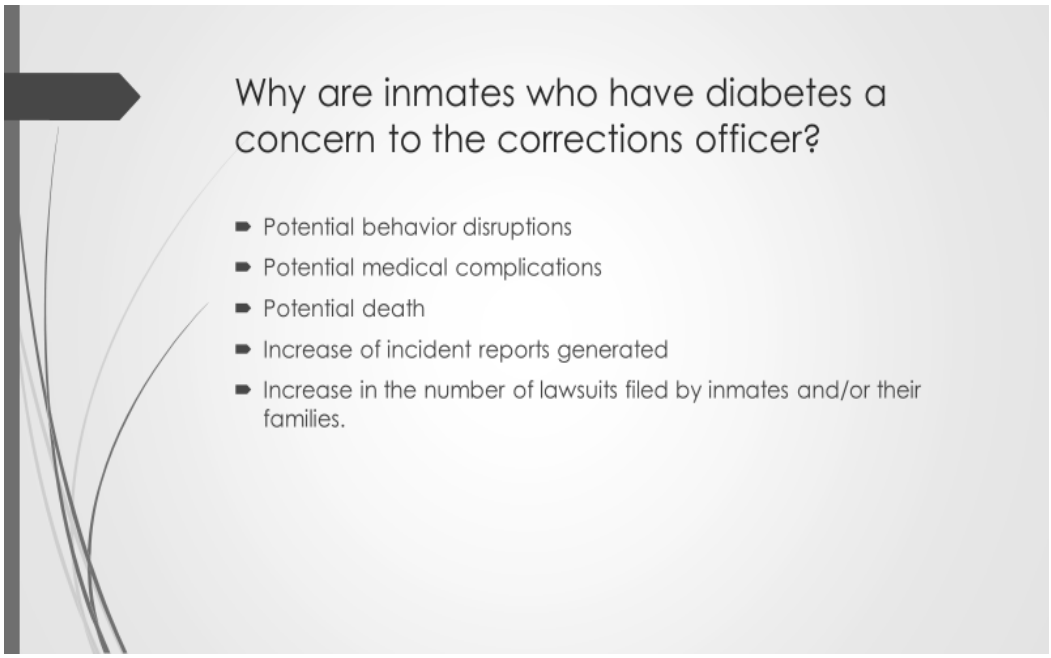


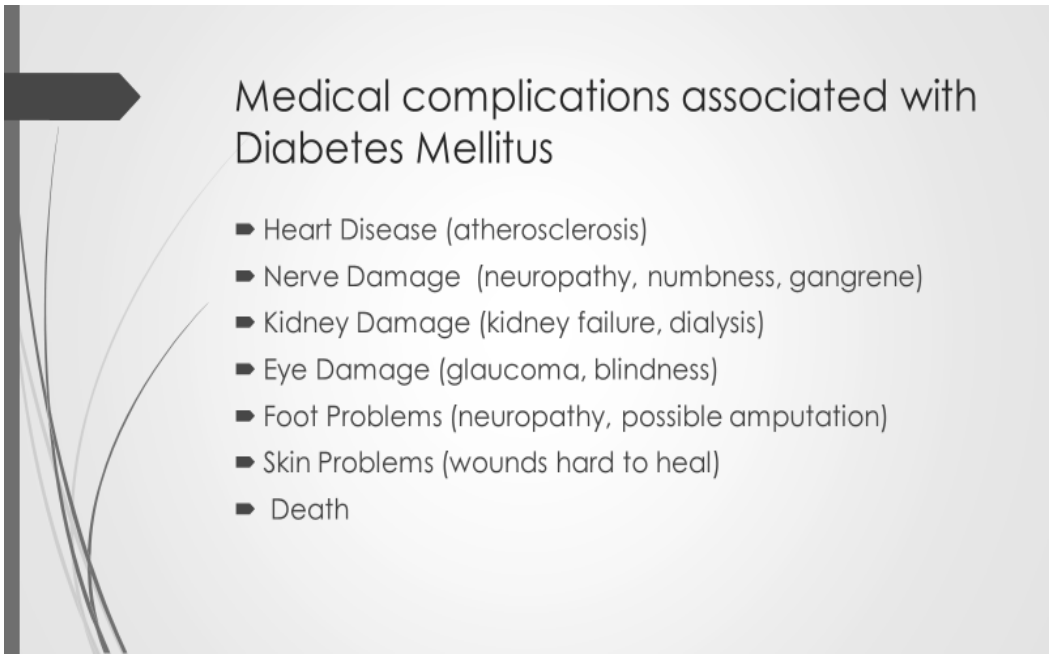

Learning Objectives
At the conclusion of this presentation, the correctional officer will be able to:
Identify signs and symptoms of diabetes
Identify differences between individuals with Type 1 and Type 2 Diabetes Mellitus
Identify the signs and symptoms of low blood sugar (hypoglycemia)
Identify the signs and symptoms of high blood sugar (hyperglycemia)
Identify the response to an inmate who may be experiencing signs and symptoms of low or high blood sugar.


What is Diabetes?
Diabetes Mellitus is defined as group of diseases that are characterized by low and high blood glucose levels as a result of a problem with the human body's ability to produce and/or effectively use insulin (American Diabetes Association, 2014).
Diabetes Mellitus is the 7th leading cause of death in the United States (American Diabetes Association, 2018).
Approximately 30.3 million or 9.4% of the total US population have been diagnosed with Diabetes Mellitus (American Diabetes Association, 2018).
There are two types of diabetes
Type 1 Diabetes is when the pancreas can not produce insulin
Type 2 Diabetes occurs when the pancreas does not produce enough or properly utilize insulin to break down blood sugar.


What is Diabetes? (cont'd)
Three methods used to diagnose diabetes include the following:
Testing an individual capillary blood glucose level with a fingerstick (American Diabetes Association, 2018).
The normal range of a capillary blood glucose is 70-120mg/dl (American Diabetes Association, 2018).
An individual can also be diagnosed with diabetes using a blood test done in clinic or hospital lab called a Hemoglobin A1C (American Diabetes Association, 2018).
The normal level of a Hemoglobin A1C is below 7 (American Diabetes Association, 2018).
The third is an oral glucose tolerance test (American Diabetes Association, 2018)
The normal level of an oral glucose tolerance test is less than 140 (American Diabetes Association, 2018)

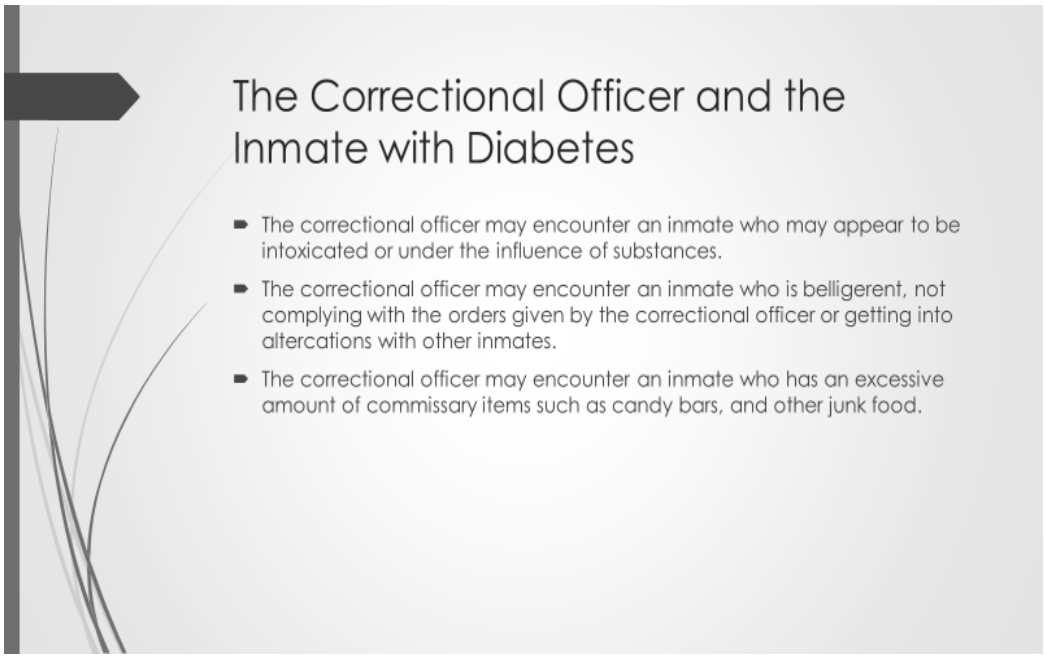

Diabetes in the Department of Corrections
There are approximately 2 million people currently in custody in the United States.
Approximately 4% of the incarcerated population have been diagnosed with Diabetes (80,000).
The population who have diabetes that are incarcerated are between the ages of 18 and 75.
People who have diabetes that are incarcerated tend to have more medical complications than people who have diabetes that are not incarcerated (American Diabetes Association, 2018).

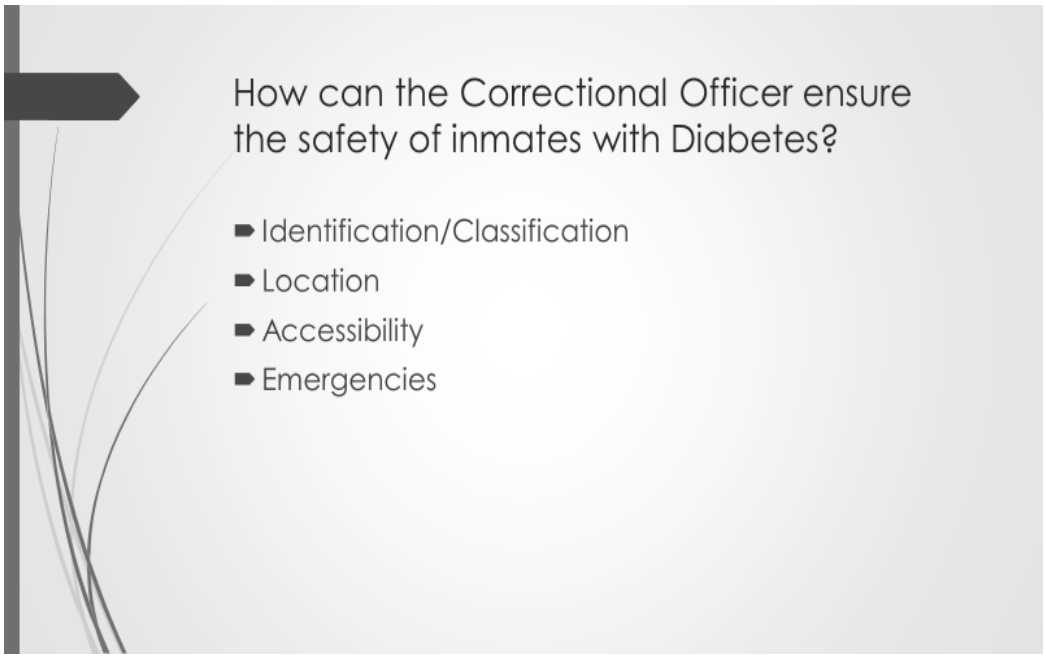

Why are inmates who have diabetes a concern to the corrections officer?
Potential behavior disruptions
Potential medical complications
Potential death
Increase of incident reports generated
Increase in the number of lawsuits filed by inmates and/or their families.

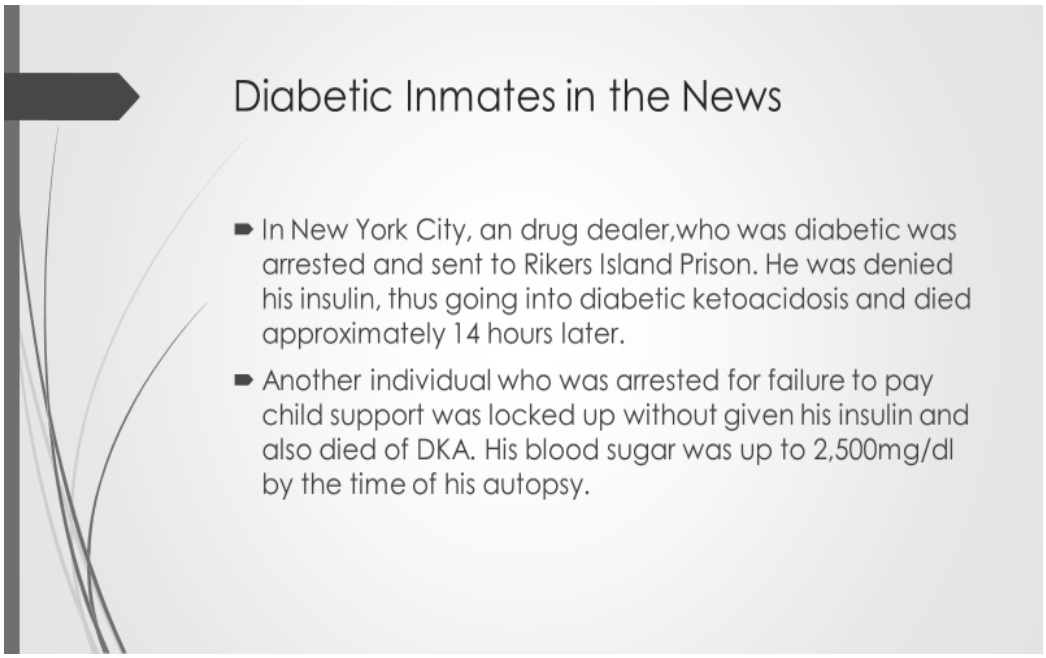

Medical complications associated with Diabetes Mellitus
Heart Disease (atherosclerosis)
Nerve Damage (neuropathy, numbness, gangrene)
Kidney Damage (kidney failure, dialysis)
Eye Damage (glaucoma, blindness)
Foot Problems (neuropathy, possible amputation)
Skin Problems (wounds hard to heal)
Death

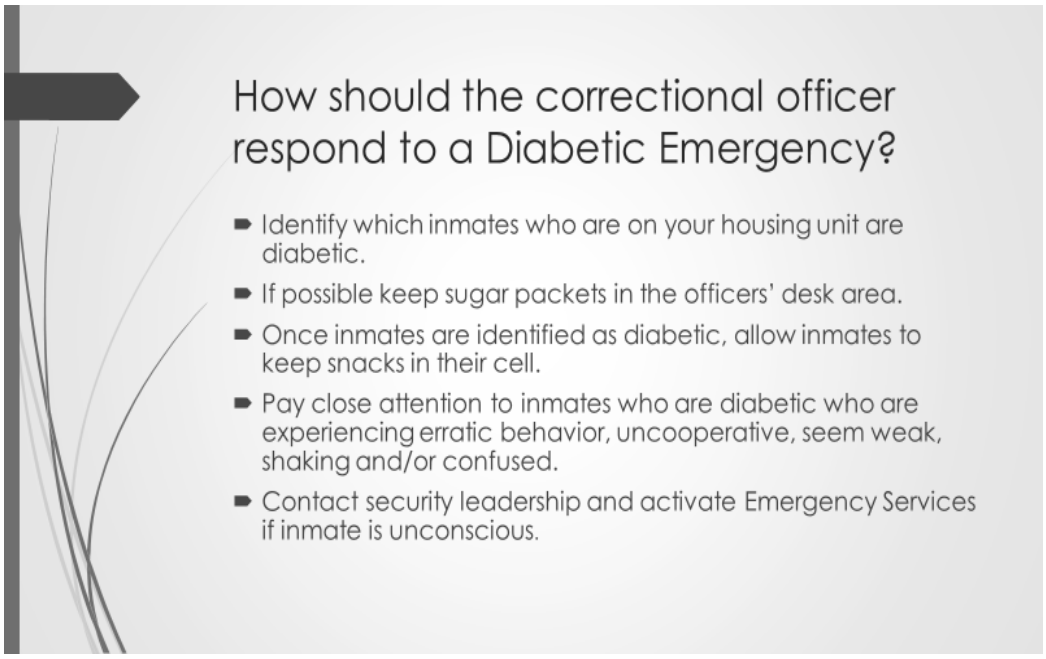

Signs and Symptoms of Diabetes Mellitus-High Blood Sugar
Hot and Flushed Skin
Labored Breathing
Dry Mouth
Excessive thirst
Mental Confusion
Cramps
Physical Weakness
Sweet and fruity odor on breath
Nausea
Loss of Consciousness


Signs and Symptoms of Diabetes Mellitus-Low Blood Sugar
Sweating
Shakiness
Anxiety
Confusion
Difficulty speaking
Irritability and Uncooperative Behavior
Loss of Consciousness
Seizure


The Correctional Officer and the Inmate with Diabetes
The correctional officer may encounter an inmate who may appear to be intoxicated or under the influence of substances.
The correctional officer may encounter an inmate who is belligerent, not complying with the orders given by the correctional officer or getting into altercations with other inmates.
The correctional officer may encounter an inmate who has an excessive amount of commissary items such as candy bars, and other junk food.


How can the Correctional Officer ensure the safety of inmates with Diabetes?
Identification/Classification
Location
Accessibility
Emergencies


Diabetic Inmates in the News
In New York City, an drug dealer,who was diabetic was arrested and sent to Rikers Island Prison. He was denied his insulin, thus going into diabetic ketoacidosis and died approximately 14 hours later.
Another individual who was arrested for failure to pay child support was locked up without given his insulin and also died of DKA. His blood sugar was up to 2,500mg/dl by the time of his autopsy.


How should the correctional officer respond to a Diabetic Emergency?
Identify which inmates who are on your housing unit are diabetic.
If possible keep sugar packets in the officers' desk area.
Once inmates are identified as diabetic, allow inmates to keep snacks in their cell.
Pay close attention to inmates who are diabetic who are experiencing erratic behavior, uncooperative, seem weak, shaking and/or confused.
Contact security leadership and activate Emergency Services if inmate is unconscious.


Questions/Comments?
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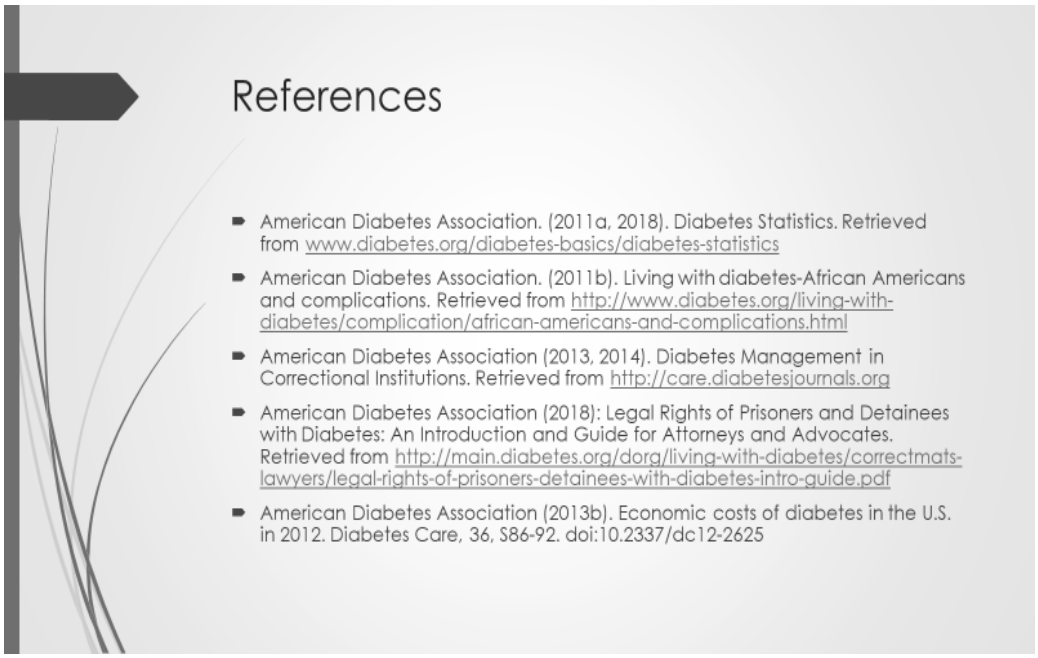
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American Diabetes Association (2018): Legal Rights of Prisoners and Detainees with Diabetes: An Introduction and Guide for Attorneys and Advocates. Retrieved from http://main.diabetes.org/dorg/living-with-diabetes/correctmats-lawyers/legal-rights-of-prisoners-detainees-with-diabetes-intro-guide.pdf
American Diabetes Association (2013b). Economic costs of diabetes in the U.S. in 2012. Diabetes Care, 36, S86-92. doi:10.2337/dc12-2625

Appendix C: Evalution Form

1. Did this educational presentation increase your knowledge about signs and symptoms of diabetes mellitus?
    a. Most likely
    b. Likely
    c. Less Likely
    d. Not at all
2. The clinical questions are covered by the objectives are clearly outlined in the presentation.
    a. Most Likely
    b. Likely
    c. Less Likely
    d. Not at all
3. The information for the presentation was easy to understand.
    a. Most Likely
    b. Likely
    c. Less Likely
    d. Not at all
4. Questions for the presentation were answered in detail.
    a. Most Likely
    b. Likely
    c. Less Likely
    d. Not at all
5. The presentation time was manageable
    a. Most Likely
    b. Likely
    c. Less Likely
    d. Not at all
6. The information given in the presentation will allow me to recognize potential diabetic emergencies that may arise with an inmate who has diabetes mellitus.
    a. Most Likely
    b. Likely
    c. Less Likely
    d. Not at all
7. The target users of the guideline are clearly defined.
    a. Most Likely
    b. Likely
    c. Less Likely
    d. Not at all

Appendix D: Normal Distribution of Pre and Posttest Scores