IMPLEMENTATION OF A DIABETES-RELATED DISTRESS SCALE IN A PRIMARY CARE CLINIC

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The Supervisory Committee certifies that this ***disquisition*** complies with North Dakota State University's regulations and meets the accepted standards for the degree of

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ABSTRACT

Individuals with diabetes face many multifaceted issues when integrating their plan of care into their daily lives, which can become burdensome and lead to inadequate diabetes control. Due to the persistent demands of diabetes management, screening for psychosocial factors that can impact control, such as depression, anxiety, and diabetes-related distress (DRD) should occur routinely (American Diabetes Association [ADA], 2017). DRD is distinctly different from depression in that the focus is on the burden experienced due to the rigorous treatment regimen associated with diabetes.

DRD focuses on the self-management demands, complications, comorbidities, and lack of perceived social support (ADA, 2019). DRD can affect treatment compliance and lead to negative health outcomes, including more frequent hospitalizations and higher healthcare costs. Therefore, early screening and detection of psychosocial factors influencing management is essential to prevent health complications and deterioration.

The purpose of this practice improvement project was to implement DRD screening in a rural North Dakota clinic. Rural providers were educated on DRD and the use of an evidenced-based screening tool called the Problems Areas in Diabetes (PAID) scale. This self-report scale allows providers to make appropriate referrals to diabetes educators, dieticians, and mental health professionals, which may result in individualized treatment plans and improved outcomes.

The project implementation was comprised of an educational session focused on DRD that included a pre- and post-test, as well as return skill demonstration where attendees were asked to score a mock patient's PAID scale. Following the educational session, the PAID scale was implemented at diabetic appointments for a three-month period. Positive PAID scale results were monitored to determine if the positive screenings resulted in a referral or additional

resources. Twenty-four scales were completed by patients during the project, resulting in 30 referrals for additional support. Additionally, an increase in healthcare provider knowledge related to DRD evaluation and management was identified. The provision of DRD education and implementation of the PAID scale in this rural primary care clinic enabled patients within the community to receive evidence-based, individualized care, which may potentially reduce complications, as well as improve diabetes control and overall patient health.

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At a young age my father and grandparents stressed the importance of education. I remember my grandfather telling me that knowledge is something that cannot be taken away from you, and that everything else is perishable in comparison. The endless love they showed me

gave me the courage to pursue my dreams without the fear of failure. To my sisters, I hope you know how much I love you and my motivation for completing this degree was so I could be the best example for you. I hope that you know I am here for you, and that I will always be there to help you.

DEDICATION

I would like to dedicate this practice improvement to my late grandmother Ruby Hatton who lost her life to complications of diabetes. Her battle with this disease motivated me to research this topic with the hopes of creating awareness that could decrease suffering.

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LIST OF ABBREVIATIONS

ADA .....American Diabetes Association.

A1C .....Glycated Hemoglobin.

CDC .....Center for Disease Control.

CDSR .....Cochrane Database of Systematic Reviews.

CINAHL .....Cumulative Index to Nursing and Allied Health Literature.

DAWN .....Diabetes Attitude Wish and Needs.

DDS-17 .....Diabetes Distress Scale-17.

DNP.....Doctor of Nursing Practice.

DRD .....Diabetes Related Distress.

DSM-V.....Diagnostic and Statistical Manual of Mental Disorders.

EBP .....Evidence Bases Practice.

FNP .....Family Nurse Practitioner.

HPA-axis.....Hypothalamic - Pituitary Adrenal - axis.

IDF .....International Diabetes Federation.

IRB.....Internal Review Board.

LMC.....Linton Medical Center.

LPN .....Licensed Practical Nurse.

MDD .....Major Depressive Disorder.

MSN.....Master of Science in Nursing.

PAID .....Problem Areas of Diabetes.

PHQ-9 .....Patient Health Questionnaire-9.

ND.....North Dakota.

NDSU.....North Dakota State University.

PA .....Physician Assistant.

RN .....Registered Nurse.

SNS .....Sympathetic Nervous System.

WHO .....World Health Organization.

CHAPTER I. INTRODUCTION

Background and Significance

Diabetes has become the most common chronic disease affecting more than 400 million people worldwide (Aljuaid, Almutairi, Assiri, Almalki, & Alswat, 2018; Jeong & Reifsnider, 2018). Diabetes is projected to be the seventh leading cause of death by 2030 and is predicted to increase to 642 million people by 2040. Diabetes is a challenging disease that requires lifelong management in order to maintain control. Patients with diabetes have a higher risk for developing numerous life-threatening problems that are a result of poor glycemic control.

Diabetes management requires patients to balance a number of tasks including monitoring blood sugars, counting and correcting for carbohydrates, administering injections, and paying for high-cost medications. The complex skills for proper diabetes management has the potential to create emotional distress and burnout among patients with diabetes (Hood et al., 2018). Diabetes-related distress (DRD) is exclusively linked with the diagnosis of diabetes and is unique because the diagnosis is related to the self-management demands, disease complications, comorbidities, and lack of social and personal support. Additionally, DRD refers to a specific diabetes-related emotional distress that does not meet the diagnostic criteria for major depressive disorders (Kreider, 2017).

The prevalence of DRD is estimated to be between 18% and 35% for patients with type 1 and type 2 diabetes (Perrin et al., 2017). Approximately 70% of those patients suffering from DRD do not meet the criteria for major depressive disorder (Kreider, 2017). Perrin et al. (2017) explained that when studying depression, DRD, and hemoglobin (Hgb) A1C, only DRD held a cross-sectional and time-varying longitudinal relationship to Hgb A1C, which demonstrates that

DRD has a greater impact and is more closely associated with treatment adherence, self-management, glycemic control, and prevention of complications.

Purpose of the Project

The purpose of the practice improvement project was to increase awareness, knowledge, and confidence in recognizing and managing DRD among healthcare professionals working in a rural community. The implementation of this project assisted rural healthcare workers in the evaluation and evidence-based management of diabetic patients who are experiencing distress related to managing their treatment plan through attending an educational session. Following the educational session, the Problem Areas in Diabetes (PAID) scale was implemented into their practice. The DRD contains 20 questions aimed to measure specific DRD by focusing on emotional distress and the burden associated with the disease in adults with type 1 and type 2 diabetes (Schmitt et al., 2016; Vallis et al., 2016).

The PAID scale is a self-reported measure that links concepts such as depression, social support, coping behaviors, and health perceptions, which contribute to the burden of the disease (Schmitt et al., 2016; Vallis et al., 2016). The use of this scale allows providers to identify areas that patients may need assistance in and focus resources to patient-specific areas. Through the provision of DRD education and implementation of a screening tool in rural a primary care clinic, patients in the community were provided opportunities to receive high-quality, evidence-based care, which has the potential to reduce complications and disabilities related to uncontrolled glucose levels from poor treatment management.

Significance for Practice

Complex psychosocial influences such as emotional, social, and behavioral choices influence individuals with type 1 and type 2 diabetes and may affect diabetes control (Young-

Hyman et al., 2016; Wong et al., 2017). Individuals with diabetes are challenged with multifaceted issues that may be within their control; however, there are also many factors that may be out of their control when integrating treatment plans into their daily life. Therefore, patient-centered care is imperative to ensuring optimal outcomes not only for physical health, but for psychological well-being as well.

Patient-centered care is defined as providing care that is receptive and considerate to individuals' "preferences, needs, and values, as well as ensuring patients' values guide all clinical decisions" (American Diabetes Association ADA, 2019, p. s7). This care model requires communication, therapeutic interactions, and problem identification with psychosocial screening, taking into account the person with diabetes as a whole, including their values and preferences. Management of diabetes involves complete patient engagement and active participation for compliance with their treatment regimen.

The ADA stresses how psychosocial factors play a large role in patients' compliance to treatment regimens (Young-Hyman et al., 2016). Psychosocial factors that affect compliance can lead to negative health outcomes, including more frequent hospitalizations and higher healthcare costs. Therefore, early screening and detection of psychosocial factors influencing diabetes management is essential to prevent health complications and deterioration. In fact, the ADA (2019) recommends every diabetic patient be screened for DRD at the initial visit and every six months moving forward even if the patient seems to be successful in their management. Screening should also be initiated during life transitions, such as divorce, death of loved one, and loss of a job, as well as with the onset of any complications and significant treatment changes, such as initiation of insulin.

The treatment regimen for patients with diabetes is burdensome due to the constant demands, including monitoring glucose, counting carbohydrates, and dosing medications, which can lead to burnout (Johnson, Al Sayah, Mathe, & Johnson, 2016). Because of the persistent demands of diabetes management, patients should be screened for psychosocial factors that have the potential to impact diabetes control, such as depression, anxiety, and DRD. One distinct difference between DRD and depression is that the focus of DRD is on the burnout experienced due to the rigorous diabetes treatment regimen (Young-Hyman et al., 2016).

The ADA recommends that patients are routinely monitored using validated patient appropriate measures (Young-Hyman et al., 2016). The prevalence of DRD is reported to range from 18-45% of patients with diabetes. DRD is associated with having a high impact on medication noncompliance, higher A1C, lower self-efficacy, sedentary lifestyle, and inadequate dietary behaviors. Implementation of early and frequent screening allows healthcare providers to make appropriate referrals to diabetes educators, dieticians, and mental health professionals, which has the potential to improve diabetes control and overall patient health (Young-Hyman et al., 2016).

CHAPTER II. LITERATURE REVIEW

Literature Review and Synthesis

A literature exploration was conducted to better comprehend DRD screening, assessment, management, guidelines, and education using four electronic databases: the Cochrane Database of Systematic Reviews (CDSR), Cumulative Index to Nursing and Allied Health Literature (CINAHL), PubMed, and Science Direct Nursing Journals. The search also included the Center for Disease Control (CDC) and World Health Organization (WHO) websites.

Keywords that were utilized in the search strategy include the following: DRD, emotional distress, diabetes, diabetes and depression, diabetes-related distress assessment, diabetes-related distress diagnosis, depression management, diabetes-related distress management, depression treatment, diabetes-related distress treatment, provider education for diabetes-related distress, global impact of diabetes-related distress, depression versus diabetes-related depression, defining diabetes, PAID scale, diabetes distress scale – 17 item, diabetes burnout, regimen distress, and DAWN2. Inclusion criteria included peer-reviewed research articles, systematic reviews, original research, and clinical practice guidelines relevant to DRD assessment, management, guidelines, and education. Articles published prior to 2013 were excluded from the literature review to ensure relevant and current research was utilized to guide the practice improvement project. However, two articles published prior to 2013 that explained the development of the PAID scale and early research in the development of DRD were included because of their significance to the project.

Background

Diabetes Mellitus

Currently, 415 million adults are living with diabetes worldwide, and diabetes is projected to rise to 642 million people by 2040 (Ley et al., 2016). This progressive, chronic disease occurs when the pancreas cannot produce adequate amounts of insulin or use insulin properly to regulate glucose control. Diabetes is an ongoing condition that requires frequent interventions, self-regulation, and management for control. Over time, uncontrolled diabetes can lead to permanent damage to the heart, blood vessels, eyes, kidneys, and nerves. This damage can increase patients' risk of cardiovascular and cerebrovascular disease (WHO, 2018).

Diabetes can be classified into three main categories: type 1, type 2, and gestational diabetes (WHO, 2018). Type 1 was previously known as childhood-onset diabetes. This type is characterized by deficient insulin production in the body. For these patients to survive, they require daily insulin injections to ensure regulation of adequate insulin control. Type 2 diabetes, also known as an adult-onset diabetes, results from the body not being able to use insulin effectivity (ADA, 2017). Manifestations of this disease can be undiagnosed for years until the patient starts to experience symptoms or complications. Additional diagnoses prior to the development of diabetes include impaired glucose tolerance and impaired fasting glycemia, which are considered intermediate conditions.

Gestational diabetes is a temporary condition that develops with pregnancy and can increase the patient's risk of developing type 2 diabetes in the future (WHO, 2018). According to the CDC (2017), 50% of women who develop gestational diabetes will go on to develop type 2 diabetes. This disorder causes elevated blood glucose levels that are above the normal range (Ley et al., 2016). Mismanaged diabetes in pregnancy can have detrimental effects on the fetus, as

well as the mother. According to Ley et al. (2016), fetal and maternal complications associated with gestational diabetes include an increased risk of miscarriage, congenital malformations, perinatal death, and maternal morbidity and mortality.

Risk Factors for Diabetes

The cause of type 1 diabetes is unknown, but research shows there is a strong correlation between genetics and environmental factors (Ley et al., 2016; WHO, 2018). The risk factors associated with type 2 diabetes are associated with a combination of genetic, metabolic, and environmental factors. Additionally, family history, ethnicity, obesity, physical inactivity, and smoking have also been shown to have a high correlation to the development of type 2 diabetes with excess body fat being the most influential risk factor.

The time spent being overweight or obese has also shown to be a critical predictor of diabetes (Ley et al., 2016). Overweight is defined as a body mass index (BMI) of 25 to 29.9 kg/m^2 and obesity as a BMI of $\geq$30 kg/m^2. With that being said at all ages, the risk of type 2 diabetes rises with increasing body weight. The prevalence of type 2 diabetes is 3 to 7 times higher in those who are affected by being overweight than in normal weight adults, and is 20 times more likely in those with a BMI greater than 35 kg/m^2 (Obesity Action Coalition, 2020). Current literature shows that American Indians and Alaska Native adolescents have the highest incidence of type 2 diabetes in the United States at 1.2 per 1,000 individuals, followed by African Americans (1.06), Hispanics (0.79), Asians (0.34) and non-Hispanic Whites (0.17) (Zamora-Kapoor, Fyfe-Johnson, Omidpanah, Buchwald, & Sinclair, 2018).

Rural residents experience a 17% higher rate of type 2 diabetes than urban residents (Rural Health Information Hub, 2020). This is correlated to the culture and lifestyle habits of the rural setting that increase their likelihood of being obese, such as consuming greater amounts of

dietary fats and lesser amounts of fruits and vegetables. Also, rural communities may also lack access to walking paths, paved sidewalks, exercise facilities, and grocery stores with affordable or fresh produce, which creates challenges for rural residents to engage in health promotion and also adds barriers to successful self-management.

Economic Impact of Diabetes

In 2015, nearly 12% of global health expenditures were used for diabetes-related treatments, imposing the most substantial economic burden on the healthcare system worldwide (Ley et al., 2016). The United States alone accounted for 673 billion dollars in 2015. This economic burden was measured through direct medical costs associated with preventing and treating diabetes and the known complications. By the year 2040, an estimated 802 billion dollars will be spent on diabetes-related health expenditures in the United States (Ogurtsova et al., 2017). Significant cost drivers occur from inpatient hospital stays and outpatient care, as medications and medical devices used to treat the disease are quite costly.

Indirect costs related to diabetes include productivity loss and premature mortality, which was estimated at 90 billion dollars in the United States in 2017 (ADA, 2019). Approximately 3.3 billion dollars was associated with absenteeism, and 26.9 billion was lost from reduced productivity while at work in 2017. The loss of productivity due to premature diabetes-related deaths was 19.9 billion dollars in 2017.

Diabetes has become a public health crisis, and substantial efforts have been established to prevent this disease and associated complications (Ley et al., 2016; WHO, 2018). On average, patients with diabetes incur $16,750 in total medical cost expenditures per year, of which $9,600 is attributed to managing diabetes. Additionally, patients with diabetes have, on average, 2.3 times higher medical costs than patients without diabetes (ADA, 2019).

Morbidity and Mortality Associated with Diabetes

Diabetes was the seventh leading cause of death among both sexes in the United States 2015 (ADA, 2019). In addition to diabetes being a prevalent disease in the United States, prediabetes is estimated to affect approximately 1 in 3 adults or 84.1 million people in the United States, and over half of the newly diagnosed adults are between 45 and 65 years old. The CDC (2017) reports that as many as two out five Americans are projected to develop type 2 diabetes in their lifetime.

There is a two to three-fold increase of myocardial infarctions and cerebrovascular accidents among adults with diabetes (WHO, 2018). Neuropathies, skin ulcers, and amputations are additional common consequences of poorly controlled glucose due to reduce blood flow. Diabetes can be attributed to 2.6% of cases of blindness globally and has become one of the leading causes of kidney failure worldwide.

Diabetic patients are at a higher risk for developing depression that patients without diabetes, and similarly, patients with depression have a higher risk of developing diabetes (ADA, 2019). One in four patients with type 1 and type 2 diabetes will develop significant depressive symptoms in their lifetime (Kreider, 2017). The stress of managing diabetes can be burdensome and lead to the development of depression and distress. Depression can lead to poor lifestyle choices, such as physical inactivity, poor eating habits, risky behaviors, and smoking and is associated with increased weight gain, which are risk factors for diabetes and other comorbidities (Dierter & Lauerer, 2018). Depression can also affect patients' cognitive function and interfere with their ability to successfully manage diabetes, potentially leading to increased complications.

Depression

Major depressive disorder (MDD) is the most commonly diagnosed psychiatric mood disorder, affecting more than 300 million people worldwide (Esbitt, Tanenbaum, & Gonzalez, 2013). Depression affects how individuals feel, think, and handle daily activities. The Diagnostic and Statistical Manual of Mental Disorders, 5th edition, states that to be diagnosed with MDD, an individual must have five of the nine following symptoms present for at least two weeks: a depressed mood, loss of interest, fatigue or low energy, sleep disturbance, increased or decreased appetite or weight, feeling of guilt or worthlessness, poor concentration, psychomotor retardation or agitation, and thought of death or suicidality (American Psychiatric Association, 2013).

Patients with depression may present with feelings of emptiness, sadness, and hopelessness for most of the day (National Institute of Mental Health, 2018). They may report a loss of interest and pleasure in hobbies or spending time with friends and family. Additional symptoms may include trouble sleeping, eating, and concentrating. Although these symptoms are common among patients, few patients discuss these symptoms with their primary care providers (Williams et al., 2019). Instead, these patients present with somatic symptoms such as headache, back pain, or chronic pain, making detecting and managing their depression difficult.

Over two-thirds of primary care patients present with somatic complaints such as headaches, back problem or chronic pain (William et al., 2019). Unless directly asked by their provider, patients may omit discussing this information, making it difficult to detect depression. Patients often avoid talking about depressive symptoms for a number of reasons, including fear of judgement, false beliefs that treatment of depression falls out of primary care providers' scope of practice, concerns about being prescribed medication, and stigma associated with taking psychiatric medications.

There are several forms of depression, and they may present differently (National Institute of Mental Health, 2018). Some examples of various forms of depression include persistent depression, seasonal affective disorder, postpartum depression, psychotic depression, unipolar disorder, and bipolar disorder. Persistent depression disorder is also called "dysthymia" and is defined by a depressed mood that must be persistent for at least two years (National Institute of Mental Health, 2018). These patients may have significant episodes of depression along with periods of less severe symptoms. Seasonal affective disorder occurs when the symptoms of depression occur only during the winter months or months when there is less natural sunlight (Avery, Roy-Bryne, & Soloman, 2019). Typically, this depression improves or lifts during the spring and summer months. Patients usually experience social withdrawal, weight gain, and need to increase sleep with the symptoms returning every winter. Another type of depression is postpartum depression, which occurs among women during pregnancy or after giving birth. Women with postpartum depression report symptoms of extreme sadness, anxiety, and exhaustion that make it difficult for them to care for themselves and their newborn child.

Psychotic depression occurs when a person has severe depression with some form of psychosis (National Institute of Mental Health, 2018). This is expressed by the patient having delusions, false fixed beliefs, or some form of hallucinations. These psychotic episodes usually have some form of a depressive theme such as guilt, illness, or poverty. Although bipolar disorder is different from depression, the disease is included in the depression spectrum because these patients may experience episodes of extreme lows that meet the criteria for depression.

Risk Factors for Depression

Depression can happen to anyone but is more commonly linked with women and occurs more in adulthood (National Institute of Mental Health, 2015). Research shows that the etiology

of depression is multifactorial and associated with genetics, as well as biological, environmental, and psychological factors (Otte et al., 2016). Depression occurring in middle adulthood or the elderly population is often linked with serious or debilitating comorbidities such as diabetes, heart disease, Parkinson's, or cerebrovascular accidents. Additionally, pharmacologic management is typically needed to manage or treat these chronic conditions, and depression may be an adverse effect of the medications or may occur due to living with a chronic disease

Economic Impact of Depression

The American Psychiatric Association (2013) reported that the economic burden of depression was estimated at 210.5 billion dollars per year in 2010, which was an increase of 21.5% since 2005 when the cost was estimated at 173.2 billion dollars. These costs can be broken down into three areas: workplace costs, direct costs, and suicide-related costs. Workplace costs include missed days and reduced productivity, which accounted for half of the total cost. Additional costs in 2010 include 23.3 billion due to absenteeism and 78.7 billion due to presenteeism. Direct medical costs linked to medications and both outpatient and inpatient treatment accounted for 45-47% of the total cost (Greenberg, Fournier, Sisitsky, Pike, & Kessler, 2015). For every dollar spent on major depressive disorders in 2010, an additional 1.90 dollars was spent on indirect costs (American Psychiatric Association Foundation, 2018). The remaining 5% of costs came from suicide-related costs, which included the loss of income.

Neuropsychiatric disorders were also ranked as the leading cause of disability for people ages 15-44, which resulted in more than 400 million disability days per year (US Burden of Disease Collaborators, 2013). Major depressive disorders accounted for the top 35% of these neuropsychiatric disorders followed by anxiety and drug use disorders. The prevalence of major depressive disorders in the United States rose from 13.8 million people to 15.4 million between

2005 and 2010, and the prevalence has grown the fastest among individuals greater than 50 years old.

The treatment rate of major depressive disorders was estimated to be approximately 50% in 2010, and the low rate of treatment may contribute to the increasing disease burden of patients' comorbidities (Greenberg et al., 2015). However, collaborative care approaches have proven to be successful in the treatment of major depressive disorders. Greenberg et al. (2015) found that by treating a patient's depression, they are more inclined to be compliant with medication regimens, experience less pain, and participate in more physical activities.

The Link between Depression and Diabetes

Depression is associated with various chronic medical conditions but has been strongly correlated with diabetes mellitus. Depressive symptoms occur in 1 out of 4 diabetic patients, but only 10-15% are diagnosed with clinical depression (Dierter & Lauerer, 2018). The current methods of assessing and diagnosing depression have also been shown to hurt the accuracy and frequency of DRD diagnosis, as Patient Health Questionnaire – 9 (PHQ-9) scores in diabetic patients may be related more to general levels of distress rather than true clinical depression (Esbitt et al., 2013). The overidentification of depression in patients with diabetes may occur because of overlapping symptoms found in both DRD and depression, such as lethargy, irritability, weight changes, and fears of complications (Dierter & Lauerer, 2018). The overlapping symptoms make it difficult for providers to differentiate a diagnosis of DRD versus depression in diabetic patients (Holt et al., 2016).

Literature now suggests that the association between depression and diabetes is more bi-directional, meaning that depression may lead to the development of diabetes and vice versa (Dieter & Lauerer, 2018; Herman et al., 2013; Kreider, 2017). This correlates to the fact that

diabetes has proven to be one of the most psychologically demanding illnesses. Patients with comorbid depression have been found to have worse glycemic control and a more rapid and problematic development of complications, which are often undiagnosed and undertreated (Dieter & Lauerer, 2018).

The report of feelings of anger, fear, and resentment at the time of diagnosis of diabetes is common, and a sense of social isolation may be evident throughout all the stages of the disorder (Hermann et al., 2013). These reactions and emotional vulnerability have been shown to increase patients' risk of developing depression. Individuals with depression are more likely to be sedentary, have poor diet choices, and smoke cigarettes, and all of these factors have been shown to increase patients' risk for developing diabetes. Risk factors for diabetic patients to experience a higher vulnerability of developing depression include female gender, diagnosis at a young age, obesity, history of poor glycemic control, lower level of education and income, and history of loss needing social support (Hermann et al., 2013; Holt et al., 2016).

Diabetic patients with the comorbidity of depression have been associated with worse glycemic and metabolic control, leading to the development of the micro- and macro-vascular complications and a two times higher risk of mortality compared to people without the co-morbidity of depression (Hermann et al., 2013). Additionally, diabetic patients who screened positive for MDD were statistically more likely to be prescribed more medications, have a higher rate of obesity, and need more insulin than patients who did not meet positive screening criteria for MDD (Esbitt et al., 2013).

Depression has a comparable mortality rate to cardiovascular disease among diabetic patients 60 years of age and older (Hermann et al., 2013). Patients diagnosed with diabetes and depression have also shown to have a significantly poorer quality of life relative to individuals

without comorbid diseases, such as those who have depression or diabetes alone. Furthermore, people with diabetes and depression experience significantly more sick days, longer hospital stays, and more frequent admissions compared to patients with diabetes alone. The co-morbidity of depression is linked to a 4.5-fold increase in healthcare expenditures without considering the loss of productivity.

Definition of Diabetes-Related Distress

Maintaining strict glycemic control include strict adherence to diet and complex medication management, which may result in patients experiencing emotional distress. DRD refers to a specific diabetes-related emotional distress that does not meet the diagnostic criteria for major depressive disorders (Kreider, 2017). The complications or events that people with diabetes encounter from the treatment and management are unique to this disease (Jeong & Reifsnider, 2018). DRD reflects the emotional and psychological reactions to the stress and burden of diabetes. DRD has been distinguished separately from depression because the symptoms arise from self-management concerns related to maintaining glycemic control (Gonzalez, Kane, Binko, Shapira, & Hoogendoorn, 2016).

DRD is more common than depression and has a stronger correlation to inadequate self-management including diet and medication adherence, which leads to decreased glycemic control (Gonzalez et al., 2016; Jeong & Reifsnider, 2018). Research has shown that 45% of the diabetic population suffer from DRD, and 70% of these individuals do not meet the criteria for MDD (Jeong & Reifsnider, 2018; Kane, Hoogendoorn, Tanenbaum & Gonzales, 2018; Kreifer, 2017). DRD has been found to correlate to the chronicity of diabetes and to the number of complications the patient has experienced due to unsupportive social structures, self-management demands, and the perceived threat of complications(Jeong & Reifsnider, 2018;

Kane, Hoogendoorn, Tanenbaum & Gonzales, 2018; Kreifer, 2017). This psychological distress has been associated with lower quality of life among diabetic patients (Hood et al., 2018; Kreifer, 2017; Perrin et al., 2017).

DRD captures a much more extensive user experience than depression by looking at the distinctive emotional concerns within the spectrum of the patient's experience for those dealing with the progressive and chronic disease (Perrin et al., 2017). DRD has also been found to be a strong predictor of future depressive disorders; therefore, early and frequent screening is critical in primary prevention of depression (Kane et al., 2018; Wong et al., 2017).

Differences between Depression and Diabetes-Related Distress

Wong et al. (2017) reported that in primary care, depression rates range from 9.9% to 32%, and DRD rates ranges from 19% to 35%. DRD is different from depression in that the focus is on the emotional burden that is often not expressed and encompasses a variety of areas associated with living with a cumbersome disease (Dierter & Lauerer, 2018; Wong et al., 2017). This emotional state experienced by patients living with diabetes encompasses feelings of guilt, stress, or denial that arise from living with the need for 24-hour management for control.

Diabetes has a significant impact in all aspects of patients' lives including their physical health, finances, work, relationships, social interactions, and ultimately, their well-being and quality of life (Vallis et al., 2016). The comprehensive impact that diabetes can have on a patients' lives demonstrates an urgency for providers to be called to action to address the psychological burden associated with lifelong diabetes management. Healthcare providers must acknowledge depression and DRD as two different psychological aspects of diabetes because they are two distinct psychological concepts that affect patients' emotional well-being (Dierter & Lauerer, 2018).

Distinguishing between DRD and depression is also critical because many patients experience emotional instability but may not meet the DSM-V criteria for depression (Wong et al., 2017). The PHQ-9 is a validated depression screening tool that has been shown to be effective in helping providers screen for depression. The PHQ-9 has shown to have a 94% specificity and 61% sensitivity in adults. The PHQ-9 is a nine-question survey that can be self-administered or clinician-administered. In addition to screening tools for depression, there are also screening tools that can be used to identify patients with DRD, including the Problem Areas in Diabetes (PAID) or the Diabetes Distress Scale (DDS-17). The DRD screening tools will be further discussed in the following section on DRD evaluation.

The 2017 American Diabetes Association Standards of Medical Care in Diabetes stressed the importance of screening, diagnosis, and management of both DRD and depression among diabetic patients to achieve optimal outcomes including enhanced self-care, improved glycemic control, reduced cardiovascular risk, and reduced all-cause mortality (Kreider, 2017). Distinguishing between depression and DRD is an imperative step in patients' treatment, as this distinction allows providers to ensure appropriate treatment referrals are made. For example, misidentifying distress as depression in a patient with diabetes could lead to prescribing an antidepressant, which may not lead to improvements in their symptoms (Kreider, 2017; Vallis et al., 2016).

There are various conceptual elements of DRD, such as anxiety and fear, and these elements are closely linked to medication regimens and complications. Additionally, physical symptoms associated with diabetes such as fatigue, appetite changes, neuropathic pain, and sleep difficulties can overlap with symptoms of depression (Dierter & Lauerer, 2018; Gonzalez et al., 2016). One area that can help distinguish DRD and depressive symptoms is related to distress

associated with glycemic control and disease management, which are more common among individuals with DRD. Concerns related to glucose control among patients with DRD include daily tasks such as counting carbohydrates, monitoring glucose levels, and understanding meal-associated insulin schedules. These patients reported that these stressors created an emotional burden leading to DRD (Hood, 2018).

Diabetes-Related Distress Evaluation

Signs and Symptoms

Physical symptoms, such as diabetes-related fatigue, neuropathic pain, headaches, and nausea play a significant role in predicting DRD (Kane et al., 2018). Patients who report more physical symptoms related to their diabetes and demonstrate a higher self-criticism of management at baseline show higher levels of distress at follow-up. These physical symptoms can influence patients in developing maladaptive coping strategies including negative, destructive, and illogical cognitive styles.

Powerlessness is a common psychosocial expression that patients with DRD experience, which can stem from variants outside of their control and affect their glucose level, weight, and energy level (Wardian et al., 2018). These symptoms are related to the emotional burden experienced with the stress of constant diabetes management. Gonzalez et al. (2016) also found diabetic patients have high levels of regimen-related distress, which is describe as becoming overwhelmed by the frequency of monitoring glucose levels, as well as the requirements for counting carbohydrates and dosing insulin several times a day.

Patients with DRD may constantly ruminate about future complications, such as the development of comorbidities, and this may create a fear of hypoglycemia or hyperglycemia and feelings of guilt or shame in relation to weight or lifestyle choices (Perrin et al., 2017). The

rumination correlates to the emotional distress that arises from concerns about their disease management, perceived lack of emotional support, and a fear of inability to access care. Patients may report feelings of burnout due to the taxing nature of this disease, and the burnout is often connected to keeping up with treatment regimens, conflicts that regimens create on relationships with family and friends, or feelings of failure or inadequacy due to self-management and glycemic control (Gonzalez et al., 2016; Hood, 2018).

Incidence

According to the North Dakota Department of Health (2018), 54,000 North Dakotans have diabetes, which is 1 out of every 10 people. Additionally, 17,000 adults with diabetes in North Dakota are predicted to be undiagnosed. In North America, approximately 46 million people were affected by diabetes in 2017, and worldwide, this chronic disease affects more than 425 million people, becoming the most common chronic disease to date (International Diabetes Federation IDF, 2017). Diabetes is projected to be the seventh leading cause of death by 2030 and is predicted to grow to affect 642 million people worldwide by 2040 (CDC, 2017).

Depression has been shown to be prevalent comorbidity commonly occurring with diabetes (CDC, 2017). Diabetic patients are two to three times more likely to have depression than people without diabetes. Only 33% to 50% of patients with diabetes who have depression are actually diagnosed and receive treatment for depression. Diabetes is the eighth leading cause of disability adjusted life years, while depression and anxiety are the fourth leading cause (IDF, 2017). While DRD is prevalent with depression, DRD has been found to be just as common among diabetic patients with a prevalence of 18% to 35%. Approximately 70% of patients with diabetes who were identified as having DRD were not clinically depressed (Wardian et al., 2018).

Risk Factors

Environmental factors have been shown to play integral roles in the development of depression, DRD, and the development of type 2 diabetes (Bădescu et al., 2016; Kreider, 2017; Perrin et al., 2017). Lower socioeconomic status has been shown to increase patients' odds of developing diabetes, as well as depression and DRD. Common causes for higher rates of depression and DRD among patients with lower socioeconomic status include financial strain, inadequate sleep, lack of physical activity, and poor diet.

The factors mentioned above play an integral role in activating and disturbing the stress pathways in the body. Chronic stress has been shown to activate the hypothalamus-pituitary-adrenal (HPA)-axis and the sympathetic nervous system (SNS), which results in an increased production of cortisol from the adrenal cortex, as well as the production of adrenalin in the adrenal medulla (Bădescu et al., 2016; Kreider, 2017). Prolonged SNS activation and high levels of cortisol have been shown to promote insulin resistance and truncal obesity, as well as increase patients' risk of developing diabetes.

The female sex has also been linked to the development of DRD according to Perrin et al. (2017). The authors also report that women are at greater risk of developing depression and anxiety compared to men. Women with type 2 diabetes express emotional difficulty related to their disease and attribute this to differing social conventions. Additionally, men are less likely to seek help than women or admit distress due the fear of being emasculated by showing weakness.

Adult males with diabetes have been shown to have less concern about long-term complications but experience more distress about how the limitation of this disease affects their role as a provider and their freedom (Lasaite et al., 2015; Rossi et al., 2017). Additionally, men and women have been found to use different coping strategies when dealing with a chronic

illness. For example, women are able to communicate their symptoms more effectively to providers and support systems about their distress and depression, while men are more unable to admit their feelings and tend to cope more privately (Lasaite et al., 2015).

Uncontrolled blood glucose levels and elevated body mass index are also some of the main factors that have been shown to contribute DRD (Parsa, Aghamohammadi, & Abazari, 2019). DRD has been found to be directly related to glycemic control due to the release of stress hormones from the SNS and the neuroendocrine system (Lasaite et al., 2016). These stress hormones increase glucose production in the liver, inhibit insulin secretion from the pancreas, and decrease the body's ability to respond to elevated blood glucose levels.

An increased duration of diabetes and being diagnosed at a younger age have also been suggestive of another important factor associated with DRD. The longer a person has been diagnosed with diabetes, the higher their risk for developing complications and having an increased need for insulin therapy (Kane et al., 2018; Perrin et al., 2017). In general, patients who experience more complications and have extensive self-management requirements are at a higher risk for developing DRD.

Screening for Diabetes-Related Distress

The PAID and the DDS-17 are both scales that are used to assess the extent to which the patient experiences emotional burdens when living with the disease, how affliction is created by maintaining a strict daily treatment regimen, and how they experience sorrow from diabetes affecting relationships with friends, family members, and even healthcare providers (Vallis et al., 2016). The PHQ-9 and DRD screening tools are meant to assist with the identification of patients' symptoms or problem areas and allow for appropriate referrals (Dierter & Lauerer, 2018).

Both DRD screening instruments have been validated for their strong psychometric qualities (Fenwick et al., 2014; Schmidt et al., 2016). Both scales have been translated into various languages to enable the assessment of DRD in many countries. Both the DDS-17 and PAID scale are currently accepted as the standard of measuring DRD and have similar constructs; however, the scales also differ from one another (Schmitt et al., 2016). The DDS-17 was developed to improve the psychometric properties and overcome limitations with the PAID scale, but due to the PAID scale utilization and unidimensional validity it has remained more prominent and is more commonly used.

Problem Areas in Diabetes Screening Tool

The PAID was developed in 1995, and the scale has been translated into more than 20 languages (Fenwick et al., 2018). This widely used tool is comprised of 20 items, which are intended to assess diabetes-related problems in patients with type 1 and type 2 diabetes (Perrin et al., 2017; Schmitt et al., 2016). The PAID scale questions were developed to focus on patients' general emotional distress, self-care behaviors, distress, coping abilities, and overall patient health perception (Fenwick et al., 2018). Patients are asked to rate the severity of each question on a five-point Likert scale (zero representing no problem to four being a serious problem). Scores are totaled, and then multiplied by 1.25 to give score a range of 0 to 100 with higher scores indicating more severe distress. In fact, a score greater than 40 indicates severe distress (Fenwick et al., 2018).

The Cronbach alpha, which measures internal consistency, has shown the PAID to have an reliability of $\alpha = 0.90$ and test-retest reliability of $r = 0.83$ (Reddy, Wilhelm, & Campbell, 2013). The PAID scale has also been found to have a high sensitivity and specificity at 95% and 89% respectively. This screening tool was designed as a clinical instrument to measure the

specific responsiveness to diabetes as opposed to general emotional distress a patient may have. PAID scores are related to patients' perceived control of their blood glucose and treatment adherence (three items), social support (two items), diet adherence (three items), and overall emotional distress related to the disease (12 items) (Welch, Jacobson, & Polonsky, 1997). This tool can be completed prior to appointment and takes approximately five minutes to complete (Esbitt et al., 2013).

Schmitt et al. (2016) have made a number of recommendations for effective use of the PAID scale. The PAID scale is recommended to be utilized when clinicians are attempting to analyze diabetes-related concerns in their entirety, when assessing the impact of distress on patients' quality of life, and when looking to compare distress across type 1 and type 2 diabetic patients. Another recommendation by Schmitt et al. (2016) is to consider using the DDS-17 instrument when the different areas of DRD need to be assessed separately, as well as when evaluating the relationship or outcomes between distress, self-care, and complications.

One limitation or area of interest that has limited coverage in the PAID scale is the assessment of patients' feelings about their relationship with their healthcare provider (Polonsky et al., 2005). Another limitation of the PAID scale include that some questions that have created confusion among patients need to be clarified, and the instrument needs to be adapted to enable clinicians to assess the different sub-types of diabetes-related emotional distress.

Diabetes Distress Scale (DDS-17)

The DDS-17 screening tool has been found to focus more on patient distress regarding their relationship with providers and with their treatment regimens, as well as behavioral and motivational factors (Schmitt et al., 2016). This screening tool can be utilized more consistently across various cultures and is structured to be highly reflective of distress concerns related to

diabetes self-management and regimen-related distress. Also, this scale has been found to have a strong correlation with Hgb A1C, as patients who demonstrate higher distress levels on the DDS-17 typically have higher Hgb A1C levels.

The DDS-17 was developed in 2005 and is based on the PAID scale. The DDS-17 was developed with the goal of making a better-rounded tool that can address the perceived limitation of the PAID scale regarding patients' feelings about their healthcare providers and also to address the lack of subscales targeting the specific sub-traits of DRD (Fenwick et al., 2018). Unlike the PAID scale, which can be used with type 1 and type 2 diabetes, the DDS-17 was created to offer a more thorough assessment specifically for patients with type 2 diabetes (Perrin et al., 2017). The scale is comprised of 17 questions, which are separated into four different subscales, and the DDS-17 has been translated into 10 different languages.

When completing the DDS-17, patients are asked to rate the severity of their symptoms using a six-point Likert scale with one being 'no problem' to six being a 'serious problem' (Fenwick et al., 2018; Polonsky et al., 2005). The four subscales within the tool include emotional burden (five items; e.g. 'feeling that my diabetes controls my life'), physician-related distress (four items; e.g. 'feeling that my provider doesn't take my concerns serious'), regimen-related distress (five items; e.g. 'feeling that I am not testing my blood sugars frequently enough/ feeling that I am not following my diet closely enough'), and diabetes-related interpersonal distress (three items; e.g. 'feeling that my family or friends do not provide me the emotional support that I need/or don't understand how difficult living with diabetes can be') (Polonsky et al., 2005). All 17 items are averaged to calculate a total score, and scores are also calculated with each subscale. A score of less than two in a subscale indicates little or no distress, and a score of

two to three indicates moderate distress. A score of three or higher in any subscale is considered to be clinically meaningful for high distress (Fenwick et al., 2018).

Schmitt et al. (2016) identified that the DDS-17 falls short when assessing physical-related distress, as physical-related distress may not fit within the concept of DRD. The DDS-17 also fails to adequately discriminate between differing levels of patients' distress regarding their providers. Fenwick et al. (2018) used a Rasch analysis to compare the psychometric properties of the PAID scale and the DDS-17 and found the DDS-17 to be multidimensional, while the PAID scale was found to be unidimensional. Unidimensional instruments allow the examiner to measure a single underlying construct. On the other hand, when a questionnaire is multidimensional, Fenwick et al. (2018) recommend that the instrument be avoided because the scale lacks the capacity to distinguish between different constructs. Participants may respond differently to one set of questions within the scale compared to another; therefore, multidimensional instruments lack precision and may mask symptoms when scores are combined.

If a scale lacks precision in evaluating constructs, then the tool's ability to detect changes over time is reduced (Fenwick et al., 2018). Therefore, the PAID scale is more effective when measuring DRD overall, and the DDS-17 is best when only looking to measure emotional burden or regimen-related distress specifically. The DDS-17 subscales did not obtain adequate precision on the Rasch scale when assessing physician-related distress or interpersonal distress because the subscales could not adequately discriminate between the differing levels of distress the patient was experiencing. Ultimately, this limits the sensitivity of the DDS-17 in detecting differences between groups or measuring changes over time (Schmitt et al., 2016).

Theoretical Framework

Adult Learning Theory

The Adult Learning Theory, also known as Andragogy, is a concept that highlights the diverse methods and learning environments that can impact the adult learner (Merriam & Bierema, 2014). This theory was developed by Malcom Shepard Knowles in 1968. Knowles' research focused on how adults learn as opposed to children. He found that adults are more self-directed, internally motivated, and have an increased readiness to learn. Knowles' theory is centered on experience-based; problem solving and creates a collaboration between the educator and the student. The main foundation of this theory is that adults prefer a learning environment that fosters self-direction and self-led training as they mature in their lifespan. Drawing upon the learner's personal experiences within the lesson and incorporating experimental activities has been proven to be the most successful learning environments for adult learners.

The Adult Learning Theory was used to guide the development of this practice improvement project with the goal of increasing healthcare professionals' knowledge and screening of DRD. The theory is divided into six main assumptions, and the assumptions were applied to help meet the educational needs of the participants in this project (Merriam & Bierema, 2014).

Self-Concept. Due to adults being in a mature stage of their development, this harbors a more secure self-concept compared to that of a child (Decelle, 2016). This allows adult learners to take part in directing their own learning because they have moved from a place of dependence to autonomy. The practice improvement project incorporated an education session that allowed for collaboration and feedback between the healthcare professionals at Linton Medical Center and the coinvestigator to meet this assumption of the Adult Learning Theory.

Past Learning Experience. Adults are able to pull information from past learning experiences, as opposed to children who are in the process of developing experiences (Merriam & Bierema, 2014). The education was developed around the healthcare professionals' prior knowledge of diabetes care, but also added to their existing knowledge through education on DRD.

Readiness to Learn. Adults have reached a point in their lives where the value of education can be appreciated (Merriam & Bierema, 2014). As adults mature, their readiness to learn becomes orientated around developing tasks to fulfill their perceived roles in society. Therefore, choosing an appropriate audience that shares a common interest in the topic can be instrumental in the success of the teaching. Healthcare professionals at Linton Medical Centers who work on daily basis with diabetic patients were chosen as the audience for this project because of their common interest in the well-being of this patient population.

Problem Centered Orientation. Today, adults are pulled in more directions than ever and are expected to balance all the demands of life. Time is a valuable resource, so adults are looking for practical, problem-centered approaches to learning. Adults want to be able to apply the lessons learned to everyday practices immediately (Merriam & Bierema, 2014). The decision to use the PAID scale was decided on based on this theory. The scale was easy to use, quick, and offered insightful information for the healthcare providers to apply to future practice.

Driven by Internal Motivation. Children are driven to perform tasks due to external motivators, such as the fear of punishment; however, adults are more motivated by internal interests, such as personal goals, desires, and hobbies (Merriam & Bierema, 2014). The chosen audience of healthcare professionals meets this belief, as healthcare professionals strive to improve patient care and are motivated by the act of ensuring no harm. Additionally, there was

an emphasis placed on how the training was going to help the participants manage and treat their diabetic patient population through screening for distress.

The Need to Know. Adults tend to look into the meaning of things (Merriam & Bierema, 2014). They need to understand the purpose behind a rule or process. The purpose of this practice improvement project was to increase awareness of DRD and increase the healthcare professionals' ability to help patients who are experiencing this distress. The providers and nursing staff at Linton Medical Center expressed interest in the topic and requested more education related to DRD.

The Iowa Model of Evidence-Based Practice

The Iowa Model of Evidence-Based Practice is a highly supported framework for applying evidence-based research and process improvement into the primary practice setting (Buckwalter et al., 2017). This model was developed in the early 1990's by nurses to assist clinicians with implementing and evaluating research in every day clinical research. The model allows researchers to use a problem-focused approach based on current recommendations in literature, which in turn leads to improved nursing practice due to the facilitation of evidence-based research into practice. The Iowa Model of Evidence-Based Practice (Appendix A) was chosen to implement this practice improvement project because of the step-wise approach to provide guidance, which enhances the success of implementing change into the primary care setting.

Identifying a problem where research can be implemented to improve current practice within an organization is the initial step of the Iowa Model of Evidence-Based Practice (Buckwalter et al., 2017). This challenges researchers to identify potential practice improvement opportunities that question the current practice or standards. Once a problem is identified and

recognized as a priority within organization, the next step is to develop a team around people who will be vested in change. These team members will be responsible for assessing the problem by conducting a critical literature review, developing a plan of action around information found, implementing the planned changes, and evaluating the purposed project on completion (Doody & Doody, 2011).

The research found during the literature review was used to develop recommendations to pilot the change (Melnyck & Finout-Overholt, 2015). The change was then implemented and evaluated based on the identified benefits or successful implementation of change. During the implementation phase, current practices were modified if necessary. Evaluation was the last step before adoption and is key in determining the value and sustainability of change into practice, as well as the appropriateness of the change for the organization (Doody & Doody, 2011).

Topic Selection

Selecting a topic is the first step in evidence-based research according to the Iowa Model (Doody & Doody, 2011). When selecting a topic, several factors must be considered and evaluated such as identifying triggers, assessing the magnitude of the problem, and recognizing opportunities to improve care and patient outcomes (Buckwalter et al., 2017). The prevalence of serious psychological distress has been noted to be twice as high among diabetic individuals compared to individuals without diabetes (Hood et al., 2018). The daily routine of counting carbohydrates, checking glucose levels, and having a fear of hypoglycemia or hyperglycemia can create DRD, leading to individuals feeling emotionally burdened by their disease.

Gonzalez et al. (2016) stressed that DRD is more common, more chronic, and has a stronger correlation to poor diabetic outcomes and related complications than depression; however, most primary care providers only screen diabetic patients for depression. Additionally,

DRD is often mischaracterized as depression due overlapping symptoms, which may lead to high rates of false positive results on self-report screening tools. For example, insomnia, increased or decreased appetite, and fatigue are symptoms that were linked to both depression and DRD, which may lead to over-identification and misdiagnosis of depression when using screening instruments, such as the PHQ-9.

Healthcare providers should be encouraged to use both screening tools (PAID and PHQ-9) on diabetic patients during their initial and subsequent visits to monitor for increased emotional burden, depressive symptoms, and their perceived emotional well-being (Young-Hyman et al., 2016). However, primary care providers may not be aware of the benefits and different information that each screening tool can provide. Managing comorbidities such as diabetes, depression, and DRD can be challenging for rural primary care providers (PCPs). By educating rural health providers about DRD and the available screening tools, healthcare providers may be more likely to identify patients experiencing emotional distress from diabetes management, which may lead to more individualized treatment and improved health outcomes.

Organization Priority

The mission of Linton Medical Center is to enhance the health, well-being, and quality of life of the community they serve (Linton Hospital, 2019). Staff at Linton Medical Center seek to achieve their mission through values that support quality and continuous improvement in patient care. Personal discussions began with a diabetes educator at Linton Medical Center regarding areas for improvement in their current practice, including key areas where the diabetic community could use more support. PCPs at Linton Medical Center also participated in the discussion and shared they would benefit from educational sessions on DRD and implementation of the proper screening tools into their practice.

As a clinic, staff at Linton Medical Center strive to develop their skills to ensure they are delivering the best possible healthcare (Linton Hospital, 2019). Social and organizational factors that could interfere with implementation of the project were identified by leaders within the facility. Lack of knowledge regarding the topic of DRD among the staff and patient populations was identified, which demonstrated the importance of education in this project to achieve success. For this reason, administrators at Linton Hospital chose to support the implementation of the PAID questionnaire to enhance patient and staff knowledge regarding DRD.

Team Assembly

Team assembly is the second step of the Iowa Model, which draws upon interprofessional relationships, educational backgrounds, and skill sets of the team members (Buckwalter et al., 2017). The team members were chosen based on their interest in the topic and their desire to support the coinvestigator in the development, implementation, and evaluation of the practice change. Five instrumental people were involved in this practice improvement project: a doctor of nursing practice/family nurse practitioner (DNP/FNP) graduate student (the coinvestigator), a DNP/FNP graduate school faculty member, Dr. Allison Peltier (the committee chair), a DNP/FNP graduate school faculty member with an interest in the proposed project, Dr. Dean Gross, a FNP practicing at Linton Medical Center, Jackie Grunefelder, MSN, and a graduate school appointed faculty member, Dr. Lisa Montplaisir.

The coinvestigator was overall responsible for the project, and this included the development of the project proposal starting with a detailed literature review. This included the analytical investigation of the most current and significant evidence and data available. The coinvestigator also worked to develop a plan for project implementation and evaluation of goals while determining if there is risk to subjects. Communicating and seeking guidance from

committee members throughout the duration of the project was an integral part of the project's success. The coinvestigator also obtained IRB approval prior to implementation of the practice improvement project. Upon completion of the action plan, the coinvestigator evaluated the project with the assistance of committee members.

The committee members assisted the coinvestigator by providing support for the project. The graduate faculty members' roles included counseling and guiding the coinvestigator during the literature review, assisting in the development of the plan of action, and supporting the coinvestigator during the implementation and evaluation of the improvement project. The DNP/FNP student and committee chair were responsible not only for assisting with the development and implementation of the project, but also for ensuring proper dissemination of the project to their colleagues.

Research and Related Literature Assembly and Critique

In order to determine if there was adequate evidence, a literature review was completed to substantiate the validity of implementing the PAID screening tool in primary care within the rural setting (Dieter & Lauerer, 2018). While conducting the literature review, the coinvestigator was able to see that there was a lack of knowledge regarding screening and assessing DRD among primary care providers. The evidence-based research and clinical practice guidelines include current practices relating to DRD screening, which demonstrates a need for improved DRD knowledge and implementation of screening standards in primary care clinics (Hermanns et al., 2013). Enhancing primary care providers' ability to manage diabetic complications, such as distress, is essential to increasing treatment compliance and the overall well-being of the patient.

Piloting a Practice Change

Piloting a practice change is the next step in the Iowa Model of Evidence-Based Practice (Buckwalter et al., 2017). Trialing a practice improvement project assists the organization in identifying and addressing problems prior to the organization implementing the change. Piloting a practice change consists of several steps, which will be further discussed below.

Selecting Outcomes to be Achieved. Utilizing current research and clinical guidelines with the overall goal of improving healthcare providers' knowledge of screening and treating DRD guided the development of the program outcome indicators. Selected outcomes for the practice improvement project have been identified and include enhancing healthcare provider knowledge of DRD, achieving effective PAID scale utilization and evaluation among healthcare providers, and increasing indicated referrals for individuals with DRD. Project outcomes will be discussed in further detail in Chapter Three.

Collecting Baseline Data. Baseline data that was collected included qualitative information from primary care providers at a rural clinic. The contributing providers and nursing staff expressed interest in DRD screening tools, knowledge to aid in DRD diagnosis, and education on determining appropriate referrals. The participants attributed these needs due to their lack of knowledge and available resources to aid in the diagnosis of DRD.

Choosing a DRD Screening Tool for Project Implementation. Fenwick et al. (2018) developed the first study that compared evaluation tools for DRD, and the PAID screening tool was found to be the most psychometrically robust tool to assess distress in the clinical and research setting. The PAID screening tool was also found to be superior for use in smaller sample sizes, which it is fitting for this practice improvement project. Through the research and literature review conducted by the coinvestigator, many studies and DRD management articles

frequently referred to the PAID screening tool, providing evidence that this is a well-used and researched tool for healthcare providers to in implement in practice (Kreider, 2017; Schmitt et al., 2016). In addition, the PAID screening tool was found to be beneficial and applicable to the current health practices in the rural setting by the practicing FNPs at the site of project implementation.

Evaluate Processes and Modify Outcomes of the Project. Following any project implementation, an evaluation should occur to determine if the practice change is effective, identify areas that could have been strengthened, and recognize the sustainability of the changes (Buckwalter et al., 2017). Following a PowerPoint presentation provided to staff at Linton Medical Center, there was a pre- and post-test completed to assess knowledge gain regarding DRD and the PAID screening tool. This was used to ensure the participants understand how to score the scale effectivity and identify positive screenings.

The PAID scale was also implemented into clinical practice. The coinvestigator tracked the scores for each scale throughout the duration of the project. Each individual question was tracked and the total sums of scales were monitored. Additionally, the number of referrals (i.e. dietician, mental health, diabetes educator, or other) that occurred as a result of the screening was also studied. This will be discussed further in the results section. Following the implementation of the educational session at the Linton Medical Center, personal interviews were conducted with providers to discuss the effectiveness of PAID screening tool, usability, and appropriateness for use in the rural primary care setting.

Implementation Strategies

To assist with the implementation of the PAID screening tool and support this practice improvement project, frequent communication and support with staff at Linton Medical Center

was essential. Frequent bi-weekly follow-up sessions were conducted by the coinvestigator to answer questions and troubleshoot problems with completing the screenings. According to White and Spruce (2015), providing frequent communication with PCPs and clinic staff is essential when implementing a practice change. This fosters a supportive environment for the practice improvement project, which assists in cultivating ownership and acceptance of the change in practice.

Approaches to support the implementation of the practice improvement project, developed by the Iowa Model's Implementation Strategies for Evidence-Based Practice (Appendix A), include: (1) developing an awareness within organization to facilitate an interest and support, (2) building an educational platform for staff to develop their knowledge of the topic and skills necessary to meet program outcomes, (3) promoting the action plan and ownership of the new practice model within the clinic, and (4) pursuing integration of the screening tool into everyday practice to ensure sustainability by displaying how the tool improves the quality of care (Buckwalter et al., 2017).

Creating Awareness and Interest. Developing interest and awareness of DRD was cultivated through personal discussions with the healthcare providers and diabetes educators within the organization. Performing education sessions with clinic staff and primary care providers regarding the benefits of the PAID screening tool assisted the team members to understand the benefit of how early intervention can help reduce DRD and increase regimen compliance. A more thorough understanding of the PAID screening tool and known benefits may motivate providers to implement the screening tool into practice. Knowles' Adult Learning theory was used because it is centered on problem-based learning and creates a collaboration between the educator and the student. This was key to the development of this practice

improvement project because the HCP at LMC and coinvestigator formed a team who were ultimately working together toward the same goal of increasing screening for DRD so focused referrals could be made to support DM patients in the management of their disease.

Promoting Action and Adoption. The primary strategy to stimulate adoption of the PAID scale into practice at the Linton Medical Center was to demonstrate the usability of the scale. An educational session was offered to allow the providers and supporting staff to practice using and scoring the scale, and the teach-back method was used to help providers and supporting staff evaluate their strengths and weakness with using the scale. Feedback and input were sought from healthcare providers and staff because they play an integral role in the development of modifications and were instrumental in the practice change (White & Spruce, 2015). Encouraging feedback from stakeholders within the organization also helped to identify potential barriers prior to implementation of the PAID scale. This activity related back to the premise that adult learning should be centered around how they can apply the skill in their everyday life (Decelle, 2016). By allowing the participants to see the benefit of the PAID scale in identifying areas of counseling or support, this may result in individualized care for patients

Pursuing Integration and Sustained Use. To encourage the continual DRD screening and use of the PAID scale at Linton Medical Center, the clinic was given a master copy in the PDF format of the PAID screening tool so they could print out as needed (Appendix C) and an informational hand out created by the American Association of Diabetes Educators (2017) (Appendix D) to give to patients on DRD.

Project Evaluation and Dissemination of Results

The overall practice improvement and project outcome indicators were evaluated in several different phases. The first phased occurred with primary care providers and the clinic

nursing staff, as they were asked to complete a pre- and post-test before and after attending the educational session about DRD. The pre- and post-test questionnaires included questions on proper use and implementation of the PAID scale as reviewed by the coinvestigator during the educational session.

The second evaluation phase included monitoring the number of patients screened for DRD, as well as the number of patients who screened positive. Additionally, the number of referrals to specialties or further counseling was also monitored through chart reviews. The coinvestigator utilized the clinics electronic medical record to review the patients' progress notes to determine what services were offered to patient as a results of PAID scale.

The final step of Iowa Model of Evidence-Based Practice is the dissemination of results (Buckwalter et al., 2017). With the conclusion of this project, results were compiled, analyzed, and presented to the PCPs and clinic staff during a meeting by presenting a short PowerPoint presentation and a poster display in the spring of 2020. The results were also disseminated through poster presentations at North Dakota State University and the North Dakota Nurse Practitioner Association Pharmacology Conference.

Congruence of the Project to the Organization's Strategic Plan/Goals

The rural providers at Linton Medical Center acknowledged a need for DRD education regarding screening, implementing, and scoring the PAID scale while evaluating diabetic patients in the rural setting. Additionally, patients with diabetes have reported a gap in their care due to little or no attention placed on their psychosocial needs by their providers (Holt et al., 2016). This correlates to the difference in perceptions of how much the management of diabetes impacts an individual's daily life. Holt et al. (2016) discussed that the Diabetes, Attitudes, Wish and Needs (DAWN) study showed that psychosocial support and self-management remains a

prominent need, but the availability of education on how to assess this need remained inconsistent among providers. The healthcare providers at LMC were found to be eager to help support their diabetic patients with DRD but lack the pertinent training to assess this need.

Linton Medical Center providers and leadership identified a lack of knowledge and vagueness around current DRD screening as being a key barrier to proper management. An educational session focusing on DRD and assistance with implementation of the PAID screening tool was developed to assist the rural primary care providers in the screening, diagnosis, and management of DRD. In order to improve access to psychological support for diabetic patients, healthcare providers must understand and utilize the proper resources for DRD screening (Holt et al., 2016).

CHAPTER III. METHODS

Project Objectives

The overall goal of this practice improvement project was to ensure all diabetic patients at Linton Medical Center were screened appropriately for DRD and offered the appropriate referral and resources to assist them managing their diabetes.

The overall goal of the practice improvement project was met through the following objectives:

1. Increase healthcare professionals' knowledge, skill, and confidence when evaluating and managing diabetes- related distress in the rural primary care setting by providing an educational session.
2. Implement routine use of the PAID screening tool into clinical practice for diabetic patients in the rural primary care setting and increase healthcare professionals' ability to use and interpret the PAID screening tool.
3. Ensure all patients with a positive PAID screening tool were referred for indicated support services.

Project Design

Setting and Participants

The practice improvement project setting, and participants were chosen by a convenience sample method after completing clinical rotations at the Linton Medical Center and identifying a lack of screening for DRD. This project was conducted at the Linton Medical Center, which is located in central North Dakota. There were two FNPs, two registered nurses (RNs), two licensed practical nurses (LPNs), and one medical assistant who participated in the educational session and completed the evaluation portion of the practice improvement project. The medical

director, a physician assistant, and another FNP were invited to attend but could not due to scheduling conflicts.

Project Implementation

The development of an educational session was the first step in the implementation of this project. The implementation of the practice improvement project occurred on November 4th, 2019 at Linton Medical Center. A PowerPoint presentation was developed to train the participants on proper utilization and scoring of the PAID scale within their facility (see Appendix F). This educational session was presented over a lunch period, which was determined by clinic leadership to be the most feasible time. The coinvestigator was provided 45 minutes to provide the necessary education and skill demonstration. Due to the clinics schedule there was a time conflict in gather all staff members at the same time. Our goal was to reach as many healthcare professionals as possible, so the coinvestigator broke the training into three smaller group sessions to accommodate the staff. The total time spent was approximately 90 minutes to train all 7 staff members.

Prior to the DRD presentation, the participants were asked to complete a pre-test which included demographics, as well as current DRD knowledge and practices (see Appendix G). The coinvestigator then presented the DRD educational session (see Appendix F), and the PAID scale (see Appendix C) and DRD informational handout (see Appendix D) were distributed. During the educational session, the coinvestigator demonstrated use of the PAID scale on a mock-diabetic patient. The mock case was used in the teach-back format for staff to practice scoring symptoms on the PAID scale. One-on-one assistance was offered to the participants by the coinvestigator to ensure staff understood how to properly score the PAID scale.

After the participants practiced scoring, the coinvestigator reviewed available resources to discuss with patients based on their individual scores. A key point of the educational session was discussing the resources available to patients such as referrals to dieticians, diabetic educators, or psychologists, regimen counseling, financial assistance for medications, and psychosocial counseling. Reviewing how the proper scoring of the PAID scale correlates with what resources the patient needs has the potential to increase staff adoption of the scale to enhancing patient outcomes. Following the conclusion of both the educational session and scoring of a mock PAID scale, each participant was asked to complete a post-test to assess their self-confidence in scoring and referring patients for appropriate services (see Appendix H). The estimated time commitment that was needed by each participant was 20 minutes for the educational session and 15-30 minutes for the return skill demonstration.

The second phase of the project involved screening diabetic patients for DRD who presented to the clinic for annual diabetic visits or follow up/checkup appointments from November 4th 2019 through January 31st 2020. The PAID scale and informed consent were presented to patients upon check-in at their appointments. The clinic nursing staff were responsible for presenting this to patient. The patient was allowed time to fill in responses while waiting for the providers. The clinic nursing staff scored the scale for providers, and the providers then reviewed the scores for accuracy and discussed results with the patients. Appropriate counseling or referrals were made by providers in collaboration with the patients' input. A total of 24 responses were completed (N=24).

Data Collection and Analysis

Quantitative and qualitative data collection took place during the data collection process. Qualitative data collection methods occurred during the teach-back method during the

educational session through direct observation by the coinvestigator. Evaluation surveys based on self-reported scoring on a Likert scale and assessment of positive PAID scale that resulted in referrals were used for quantitative data collection. Qualtrics software was utilized to distribute the surveys to participants, and the data gained from the self-reported surveys, PAID scale completions, and referrals was then evaluated.

Resources

The collaboration and cooperation of the clinic staff and providers was imperative to this project. They were provided with a PowerPoint educational session, which was used to educate providers and nursing staff about DRD, as well as how and when to implement the PAID screening tool in their practice. The educational information provided to the participants was also distributed to the coinvestigator's dissertation committee, including the PowerPoint handout (Appendix F), the PAID scale (Appendix C), handout explaining DRD (Appendix D), and informed consent (Appendix E). This educational session took place over lunch period where the Linton Medical Center has allotted 45 minutes for the training. Leadership and guidance provided by committee members throughout the entirety of the project played a key role in the project's success.

Evaluation Plan

Evaluation of the practice improvement project was pivotal to determining if the interventions were successful. Data were collected to help evaluate if the objectives were met upon completion of the project. Evaluation of the educational sessions were used to measure the participants' perceived knowledge base of DRD and use of the PAID screening tool through self-confidence post survey (see Appendix H). A pre-test was also distributed to identify participants'

demographics, prior knowledge of DRD, and current practices (see Appendix G). Both of these surveys were developed by the coinvestigator and reviewed and edited by committee members.

Completed PAID scales were collected by nursing staff and held for the coinvestigator in a locked compartment within the clinic for further analysis. The coinvestigator assessed the completed PAID scales scores and reviewed the patients' electronic medical record to identify what services were offered to the patient such as referral to educator, counseling, or medication assistance. During the chart review the coinvestigator only reviewed the assessment and plan portion of the patient's progress note to ensure privacy was maintained.

Objective One

The first objective of this project was to increase healthcare professionals' knowledge, skill, and confidence when evaluating and managing DRD in the rural primary care setting. Following the PowerPoint portion of the educational session, the participants were shown how to properly score the PAID scale and how to interpret positive results. Using a four-point Likert scale, participants completed a post-test questionnaire regarding their self-confidence with diagnosing DRD, as well as scoring the PAID scale and interrupting the results. Multiple choice knowledge questions were also incorporated into the pre- and post-tests to determine if there was an increase in knowledge related to DRD after the educational session.

Objective Two

The second objective was to implement the PAID screening tool into clinical practice for diabetic patients in the rural primary care setting, as well as increase healthcare professional's ability to use and interpret the PAID scale. The participants were evaluated on their ability to demonstrate their acquired DRD knowledge and PAID scoring skills through a return skill demonstration at the education session. The coinvestigator developed a mock patient's response

to the PAID scale to address objective two (see Appendix I). Participants were evaluated on their ability to assess, diagnose, and treat a mock patient with a suspected DRD during the educational session. Following the education session, packets were distributed to staff that include the PAID scale and patient handouts explaining DRD (see Appendix D). These were available for nursing staff and providers and were kept in a folder at the nurse station for easy access during diabetic appointments.

Objective Three

The third objective of the project was to ensure that all patients with a positive PAID screening tool were referred for indicated support services. In ordered to achieve this objective, the coinvestigator tracked how many positive and negative DRD screening scales resulted in a referral to additional and adjunctive services. The provider marked on the PAID scale whether a referral was made to assist this patient or whether the patient received further education, counseling, or discussion regarding their distress.

Protection of Human Subjects

No ethical concerns were identified that would negatively affect participants of the practice improvement project. This practice improvement project was certified as exempt by the North Dakota State University Institutional Review Board (IRB) on September 30, 2019 (Appendix B). There was minimal risk to the participants, as the coinvestigator did not engage in direct patient contact. The participants involved in the project included healthcare professionals. While health professionals did ask patients to complete the PAID scale, minimal risks were identified with this change. No children were included in the practice improvement project. Additionally, the data obtained were in an aggregate format with no personal identifiers

included. Data collected from PAID scales were reviewed only in the setting of the clinic and was shredded after completion of the project to maintain privacy of the patients' identities.

CHAPTER IV. RESULTS

The evaluation of this practice improvement project was conducted to determine if the implementation was successful in meeting the project objectives. Quantitative and qualitative data were analyzed to determine the outcomes of the project initiatives. Participant demographics, current practices of healthcare providers, DRD knowledge, and pre- and post-test results are included in the following sections.

Participant Demographics and Current DRD Practices

The completion rate of both the intervention and evaluation phase of implementation was 100% (n=7). Of the seven participants that participated in the practice improvement project, two identified themselves as an FNP (28.5%), two as a Registered Nurse (28.5 %), two as a Licensed Vocational Nurse (28.5%), and one other support staff (14.5%). All participants (100%) identified as practicing over 6 years, and the two FNP participants identified as being in practice between 7-15 years. Table 1 illustrates the sample demographics.

Two questions in the pre-assessment survey (questions four and five) were used as a baseline to assess participants' self-reported prior education and training related to DRD (see Appendix G and Table 1). The participants were asked about their formal training and education regarding diagnosing and managing DRD. One (14.29%) of the participants reported receiving education on assessing, diagnosing, or managing DRD during their formal education, whereas five (71.4%) of the participants did not receive any information on DRD during their formal education. One participant did not answer this question. Additionally, one (14.29%) participant also reported having completed additional training or education related to DRD assessment, diagnosis, and management, and 85.71% of the participants did not report additional training related to DRD.

Table 1

Sample Demographics

Question	Response (N = 7)	Mean (%)
Profession		
Licensed Vocational Nurse	2	28.5%
Register Nurse	2	28.5%
Nurse Practitioner	2	28.5%
Physician Assistant	0	0%
Physician	0	0%
Other	1	14.5%
Years in Practice		
0-2	0	0%
3-6	0	0%
7-15	5	71.43%
16 or more	2	28.57%
Gender		
Female	6	90%
Male	1	10%
During your graduate education for your degree, did you learn how to assess, diagnose, or manage diabetes related distress?		
Yes	1	14.29%
No	5	71.42%
Other (please explain): did not answer	1	14.29%
During your current position, have you completed additional training/education for diabetes related distress assessment, diagnosis, or management (CME, CEU, CDC, other?)	(R=7)	
Yes	1	14.29%
No	6	85.71%

A baseline assessment was established in the pre-survey to determine how familiar the participants were with the diagnosis of DRD or if they had assisted in the treatment of DRD. Three (42.86%) of the participants reported never diagnosing or assisting in the treatment of a patient with DRD with past year (see Table 2). One (14.29%) of the seven participants reported treating between 1-2 patients, and three (42.86%) participants reported treating five or more patients within the past year.

Table 2

Pre-Education Evaluation Survey, Questions 3

Pre-Test Question 3	Answer/Response (N = 7)	Mean (%)
Approximately how many patients have you diagnosed or treated for a diabetes related distress within the past year (either initial visit or follow-up)?	(R=7)	
0	3	42.86%
1-2	1	14.29%
3-4	0	0%
5 or more	3	42.86%

Overall, participants were pleased with educational session. Five (71.43%) of the participants reported they strongly agreed that the educational session met their needs, and five (71.43%) participants reported the education provided new ideas and information they expected to use (see Table 3).

Table 3

Post-Education Evaluation Survey, Questions 1 and 3

Overall Satisfaction Statements	Strongly Agree	Somewhat Agree	Neutral	Somewhat Disagree	Do not Disagree
Did the information presented provide new ideas/information you expect to use?	5 (71.43%)	2 (28.57%)	0	0	0
Did this session meet your educational needs?	5 (71.43%)	2 (28.57%)	0	0	0

Objective One

The first objective was met by enhancing the participants' knowledge, skill, and confidence in evaluating and managing patients with DRD. In order to evaluate this objective, pre- and post-test scores were broken down into those three themes. The participants' confidence in evaluating and managing DRD was measured by three questions on the pre- and post-tests. One question on the post-test survey was utilized to evaluate the impact on the participants' skills related to DRD evaluation and management, and two questions on the pre- and post-test surveys were utilized to evaluate a change in knowledge.

Confidence

Participants responded to a Likert scale regarding their confidence in their ability to recognize DRD symptoms (pre-test question 6, see Appendix G). Prior to the educational session, there was a lack in confidence regarding DRD evaluation and management noted in the pre-assessment survey, as only one (14.29%) of seven participants reported that they felt strongly confident in their ability to recognize DRD symptoms. Additionally, two (28.57%) participants reported that they somewhat agreed with the statement, three (42.86%) remained neutral, and one (14.29%) stated that strongly disagreed with the statement. Following the educational session, three (42.86%) participants strongly agreed that they felt confident in their ability to recognize DRD symptoms, two (28.57%) reported that they somewhat agree, and two (28.57%) remained neutral, demonstrating the educational session elevated their confidence related to DRD symptoms (See Figure 1).

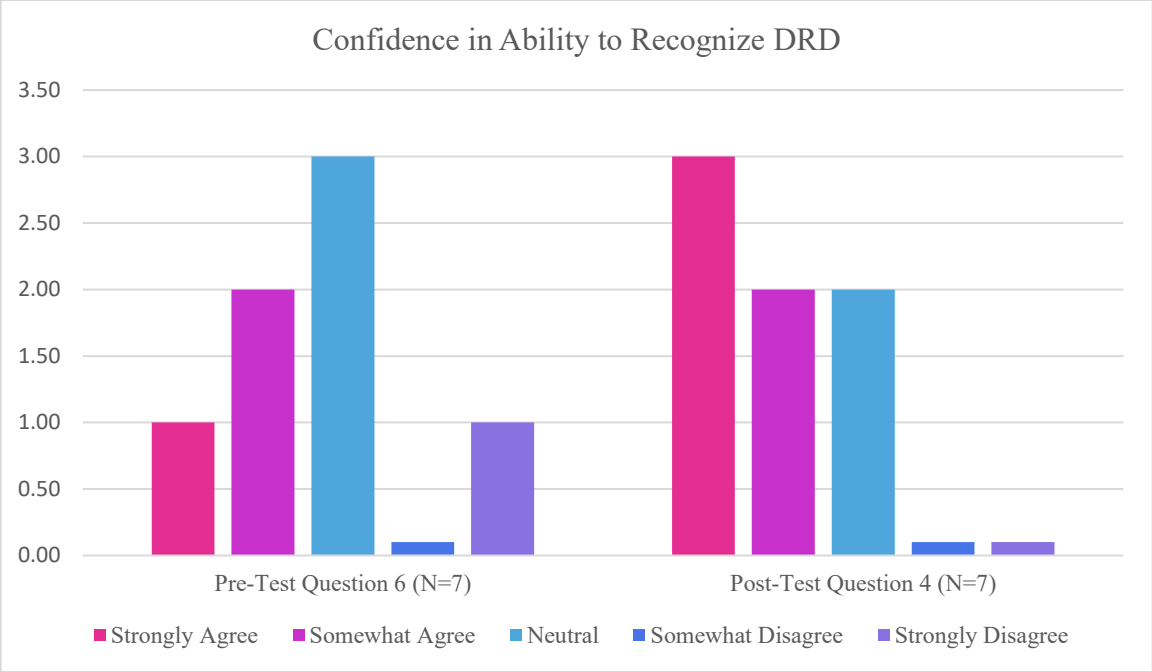

Figure 1. Confidence in ability to recognize DRD

None of the participants responded that they strongly agreed they felt confident in their ability to score and interpret the results on the PAID scale during the pre-test. Two (33.33%) participants somewhat agreed they felt confident in scoring and interpreting PAID scale results, two (33.33%) participants remained neutral in the statement, one (16.67%) participant somewhat disagreed, and one (16.67%) participant strongly disagreed. One (16.67%) of the participants chose not to answer this question. Following the educational session, the post-test showed a heightened level of confidence with four (57.14%) of the participants stating they strongly agree, and three (42.86%) participants stating they somewhat agree that they feel confident in their ability to score and interpret the results of a PAID scale (See Figure 2).

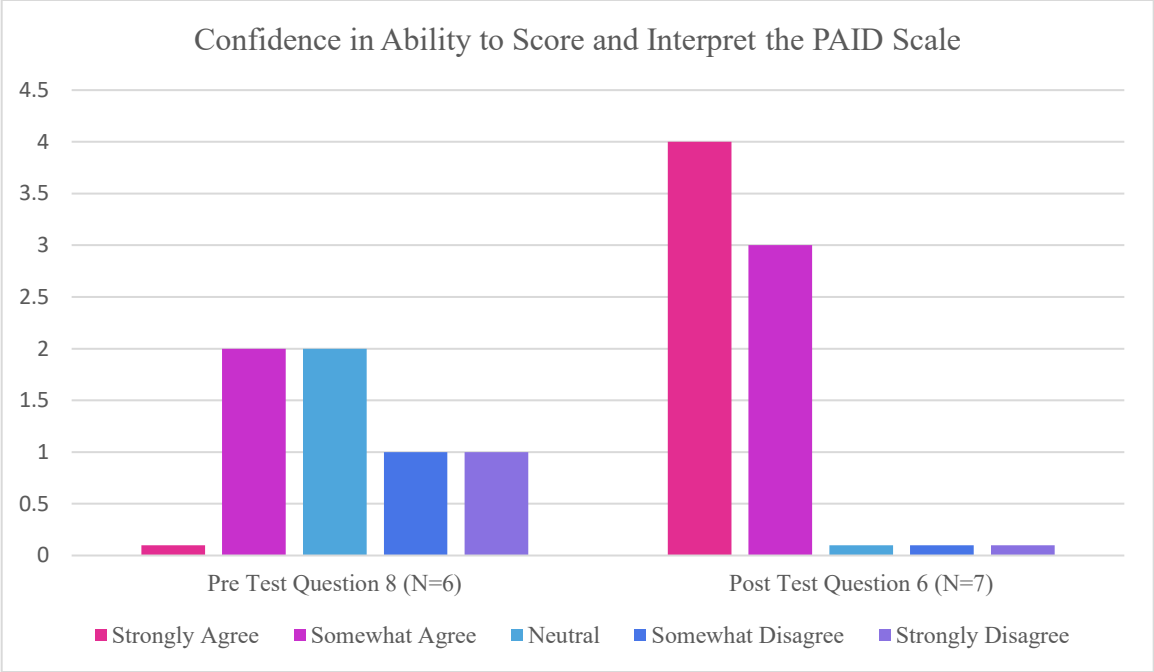

Figure 2. Confidence in ability to score and interpret the PAID scale

Pre-test question seven assessed participants' confidence in recommending a follow-up and/or referral for patients experiencing DRD prior to the educational session. Only one (14.29%) of the participants strongly agreed with this statement, three (42.86%) participants somewhat agreed, two (28.57%) participants remained neutral, and one (14.29%) participant strongly disagreed. Following the educational session, three (42.86%) of the seven participants reported they strongly agreed with their ability to recommend follow-up or referrals for patients who are experiencing DRD, and four (57.14%) participants responded that they somewhat agreed (See Figure 3). The results demonstrate an increase in confidence among healthcare professionals regarding their ability to recommend follow-up and referrals for patients experiencing DRD.

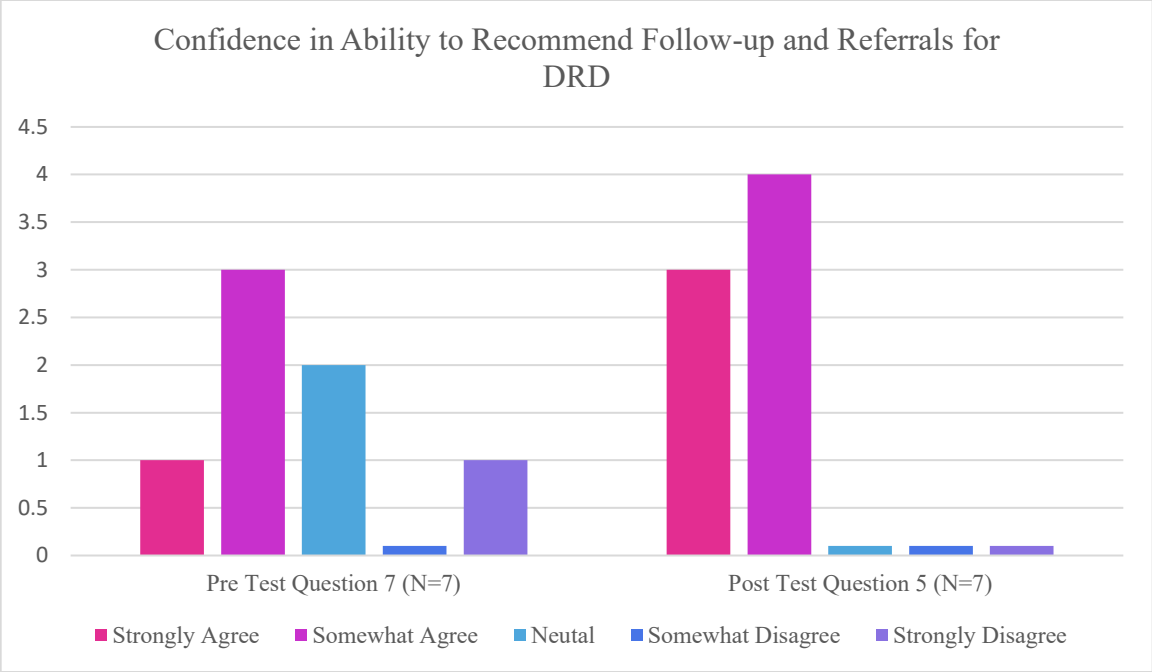

Figure 3. Confidence in ability to recommend follow up and referral for DRD

Skill

Another facet of objective one was to enhance the participants' skills related to the diagnosis and management of DRD, which was measured by one question on the post-test. Participants were asked if they felt the educational session reinforced or improved their current skills. On the post-test, five (71.43%) of the seven participants reported they strongly agreed with this statement, while two (28.57%) participants somewhat agreed with the statement.

Knowledge

To quantitatively assess objective one on whether the participants' knowledge increased regarding DRD, the participants were asked the same questions on both the pre- and post-tests. Question nine on the pre-test assessed participants' knowledge regarding the difference between depression and DRD. While one (16.67%) participant reported there was no difference between depression and DRD, five (83.33%) participants did choose the correct answer relating to the fact

that DRD focuses more on distress related to management of diabetes. There was one respondent who did not answer pre-test question nine.

On the post-test, six (85.71%) participants answered this question correctly, and one (14.29%) participant responded incorrectly by choosing the statement, "misidentifying DRD as depression in a patient with diabetes could lead to prescribing an antidepressant, which will lead to improvements in their symptoms" (See Figure 4). The results demonstrate a majority of the participants did have a baseline of understanding of the differences between depression and DRD prior to the educational session.

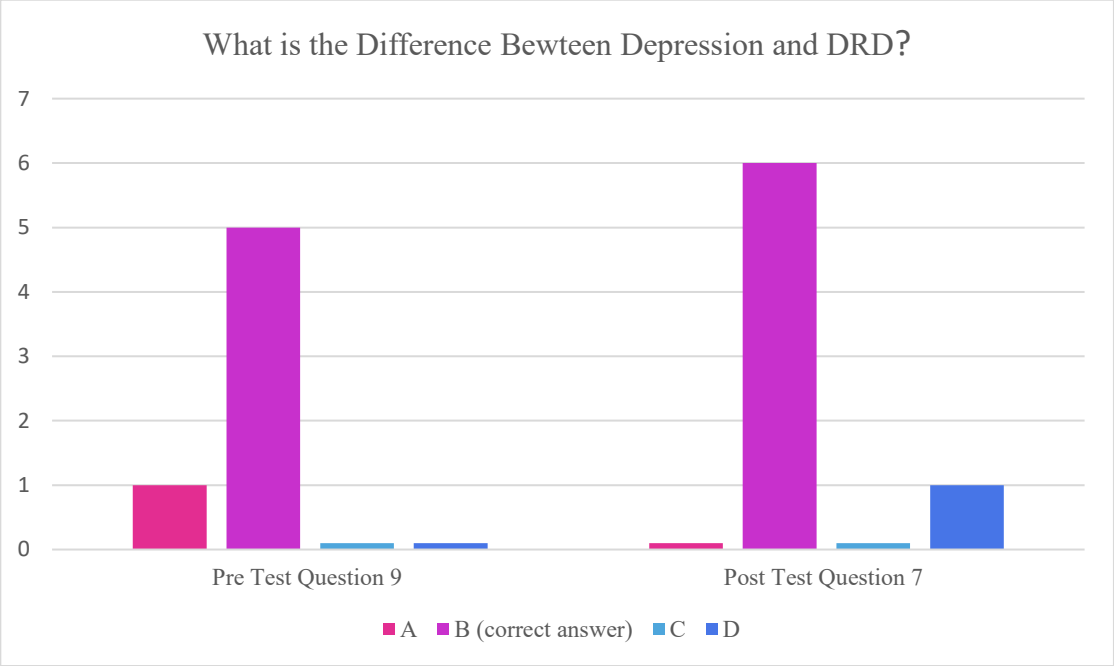

Figure 4. What is the difference between depression and DRD?

Question 10 on the pre-test was also used to assess participants' knowledge and asked the participants which tools could be used to screen for DRD. On the pre-test, one (14.29%) participant had the correct understanding of which tools can be used to diagnosis DRD, three (42.86%) of the participants reported that the PHQ-9 was an appropriate scale, one (14.29%) participant chose the DDS-17 only, one (14.29%) participant reported the PAID scale alone, and

one (14.29%) participant left this question blank. Question number eight on the post-test also assessed participants' knowledge regarding screening tools for DRD, and all of the seven (100%) participants answered this question correctly, which demonstrates an increase in the participants' knowledge related to the appropriate screening tools for DRD (See Figure 5).

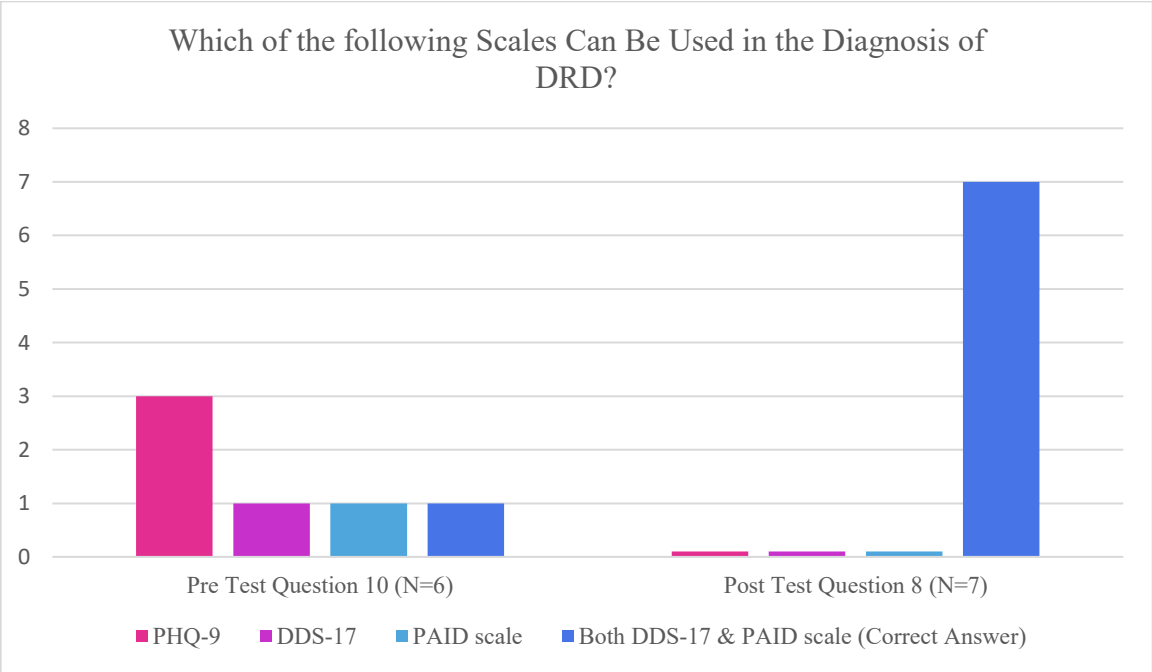

Figure 5. Which of the following scales can be used in the diagnosis of DRD?

Objective Two

The second objective of the practice improvement project was met by increasing the healthcare professionals' ability to use and interpret the PAID screening tool, as well as implement routine use of the PAID screening tool into clinical practice for diabetic patients in a rural primary care setting. This objective was evaluated during the teach-back method of the educational session with qualitative data. The smaller group size allowed the coinvestigator to meet one-on-one with participants and ensure they were able calculate the PAID scale score correctly. All of the seven (100%) participants were able to score the PAID scale correctly and

determine appropriate referrals based on the responses to the mock PAID scale after the educational session.

Additional qualitative data were received after implementation of the mock PAID scale. Participants reported the scale to be useful because the scale allows them to identify subgroups in which the participants score higher on and use this to further identify interventions. One participant felt the PAID scale questions helped develop a foundation of where the patient was having trouble managing their treatment for them to work forward from. Another participant felt the individual questions that a patient scored high on could be used an icebreaker for patients to open up about their concerns.

The teach-back method and evaluation of the mock PAID scale resulted in participants being able to correctly score the scale and identify additional ways to apply the PAID scale to their clinical practice. Five (71.43%) of the seven participants reported they strongly agree with the statement that they will likely use the PAID scale during their next diabetic encounter, and two (28.57%) of the participants somewhat agreed that they will likely use the PAID scale during the next diabetic patient encounter (see Table 4).

Table 4

Post-Education Evaluation Survey, Questions 9

Statement	Strongly Agree	Somewhat Agree	Neutral	Somewhat Disagree	Do not Disagree
I will likely use the PAID scale during my next encounter with a diabetic patient	5 (71.43%)	2 (28.57%)	0	0	0

Objective two also focused on implementation of the PAID scale into clinical practice in a rural primary care setting. There was a total of 25 PAID surveys that were handed out to adult patients over the age of 18 that were English speaking throughout the duration of the three-month practice improvement project. Patients of other languages were not excluded but just did

not exist in the clinic patient's population during the duration of the project. There was one scale that was not filled out in its entirety, so this scale was excluded from the practice improvement project results. The scales were handed out in a paper format for self-reporting. All the patients that completed the PAID scales had been diagnosed with type 2 diabetes. The facility was unable to track how many diabetic visits were scheduled and completed during the duration of the project; therefore, no data is available regarding how many diabetic patients were missed or did not complete the PAID scale during the three-month time period.

Objective Three

The third objective of this practice improvement project was met by ensuring that all patients with a positive PAID screening tool were referred for indicated support services. The purpose of the PAID scale is to help providers identify areas of distress in the patients' care plan and assist them in making appropriate referrals. All scores for each item were summed and then multiplied by 1.25 to generate a total score out of 100. Scores higher than 40 indicated severe DRD. Apart from the total score, an individual item score of 3 or more indicates a "problem area" or an area of concern and should be explored for further (Owen-Gray et al., 2019).

There was a total of 24 scales completed over the course of three months, and the results are summarized in Table 7. One (4.17%) patient of the 24 that completed the PAID scale scored over 40 points, indicating severe distress (see Figure 6). There was one (4.17%) patient who scored between 31 and 40, and seven (29.17%) of the patients had a total score between 21 and 30, indicating some form of distress in managing their diabetes. Additionally, five (20.83%) patients had a score ranging from 11-20, and seven (29.17%) patients had a total score ranging from 1-10.

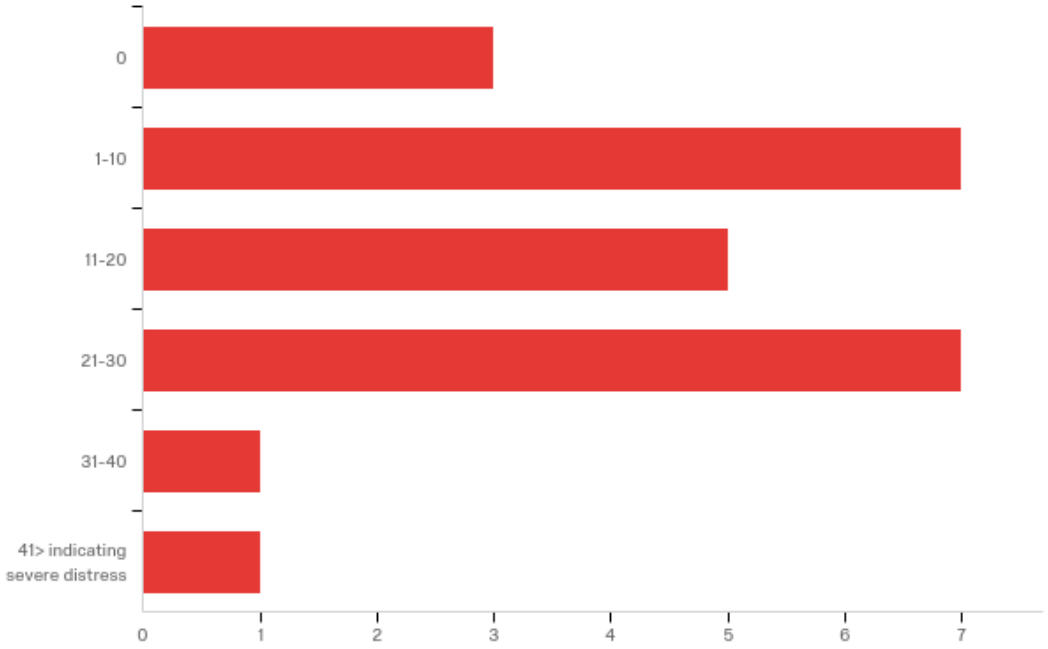

Figure 6. PAID scale scores

Table 5

PAID Scale Responses

Statement	Not a problem	Minor problem	Moderate problem	Somewhat serious problem	Serious problem
Not having a clear and concrete goals for your diabetes care?	14 (58.33%)	6 (25.00%)	3 (12.50%)	0	1 (4.17%)
Feeling discouraged with your diabetes treatment plans?	12 (50.00%)	9 (37.50%)	2 (8.33%)	0	1 (4.17%)
Feeling scared when you think about living with diabetes?	13 (56.52%)	5 (21.74%)	3 (13.04%)	2 (8.70%)	0
Uncomfortable social situations related to your diabetes care (e.g., people telling you what to eat)?	16 (66.67%)	5 (20.83%)	3 (12.50%)	0	0
Feeling of deprivation regarding food and meals?	10 (45.45%)	7 (31.82%)	3 (13.64%)	1 (4.55%)	1 (4.55%)
Feeling depressed when you think about living with diabetes?	11 (45.83%)	6 (25.00%)	5 (20.83%)	1 (4.17%)	1 (4.17%)
Not knowing if your mood or feelings are related to your diabetes?	7 (30.43%)	13 (56.52%)	3 (13.04%)	0	0
Feeling overwhelmed by your diabetes?	16 (66.67%)	7 (29.17%)	1 (4.17%)	0	0
Worry about low blood sugar reactions?	13 (56.52%)	7 (30.43%)	2 (8.70%)	0	1 (4.35%)
Feeling angry when you think about living with diabetes?	11 (50.00%)	7 (31.82%)	3 (13.64%)	0	1 (4.55%)
Feeling constantly concerned about food and eating?	9 (39.13%)	8 (34.78%)	5 (21.74%)	1 (4.35%)	0
Worry about the future and the possibility of serious complications?	6 (25.00%)	8 (33.33%)	5 (20.83%)	5 (20.83%)	0
Feeling of guilts or anxiety when you get off track with your diabetes management?	13 (54.17%)	5 (20.83%)	5 (20.83%)	0	1 (4.17%)
Not “accepting” your diabetes?	19 (79.27%)	3 (12.50%)	0	1 (4.17%)	1 (4.17%)
Feeling unsatisfied with your diabetes physician?	22 (91.67%)	1 (4.17%)	1 (4.17%)	0	0
Feeling that diabetes is taking up too much of your mental and physical energy every day?	16 (66.67%)	6 (25.00%)	1 (4.17%)	1 (4.17%)	0
Feeling alone with your diabetes?	20 (90.91%)	0	2 (9.90%)	0	0
Feeling that your friends and family are not supportive of your diabetes management efforts?	20 (83.33%)	4 (16.67%)	0	0	0
Coping with complications of diabetes?	14 (58.33%)	8 (33.33%)	2 (8.33%)	0	0
Feeling “burned out” by the constant effort needed to manage diabetes?	13 (54.17%)	6 (25.00%)	4 (16.67%)	0	1 (4.17%)

Providers were responsible for documenting on the PAID form if there was a referral made for additional services. This allowed the coinvestigator to track progress throughout the practice improvement project. A chart review was also completed to identify referrals or additional resources. A total of 30 referrals or additional resources such as counseling were offered during the practice improvement project implementation for patients that completed the PAID scale (see Figure 7). Some patients were offered more than one referral or service during their encounter. Fourteen (46.67%) patients received additional regimen counseling based on how they responded to individual questions on the PAID scale. For example, participants were asked if they "worry about the future and the possibility of serious complications," and a total of five (20.83%) patients responded that this was somewhat a serious concern, while another five (20.83%) responded that this is a moderate concern. Addressing this question with patients allowed for conversations regarding how to prevent complications through regimen counseling.

Patients were also asked if they are "feeling burned out by the constant effort needed to manage diabetes." One (4.17%) patient reported this as serious problem, four (16.67%) stated it was a moderate problem, six (54.17%) stated that this was a minor problem, and 13 (54.17%) reported that this was not a problem. This question allowed for 11 referrals to a diabetic educator who can assist patients with further dietary education, glucose monitoring, and medication education. Additionally, there were four (13.33%) patients offered financial assistance in some manner to assist with treatment adherence.

There was also one referral made to dietician. Participants were asked if they are "feeling constantly concerned about food and eating." One (4.35%) patient reported this as somewhat a serious problem, five (21.74%) patients reported this a moderate problem, eight (34.78%) stated

that this was minor problem, and nine (39.13%) stated this was not a problem. This question could also trigger a referral to the diabetic educator.

No referrals to mental health counseling were made during the duration of the practice improvement project. Providers reported that the lack of referrals most likely correlated with the fact that patients may not have scored high enough on the PHQ-9 to warrant a referral. Data received on the PAID scales included one (4.17%) of the 24 participants who reported "feeling depressed when you think about living diabetes" as a serious problem. None of the patients answered that they felt "not knowing if your mood or feelings are related to diabetes" or "feeling overwhelmed by your diabetes" was either a serious problem or somewhat serious problem.

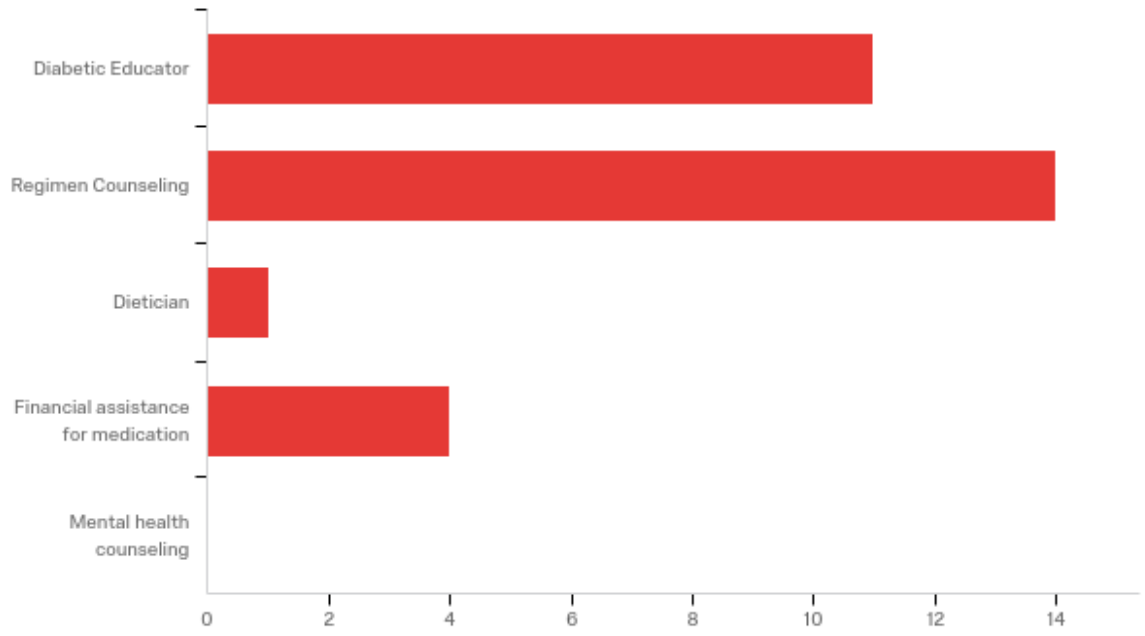

Figure 7. Referrals made following a completed PAID scale

CHAPTER V. DISCUSSION AND RECOMMENDATIONS

Interpretation of Results

The overarching goal of this practice improvement project was to ensure all diabetic patients at Linton Medical Center were screened appropriately for DRD and offered the appropriate referrals or resources they needed to support them with managing their diabetes. DRD has consistently shown to have a damaging effect on glycemic control and the emotional/ psychosocial wellbeing of DM patients, which leads to an increased risk for complications and mortality (Lim et al., 2019). Despite the literature consistently showing a high prevalence of DRD worldwide, the disease is still under-recognized and undertreated by healthcare providers (ADA, 2019). In order to close this gap of inadequate recognition and under-treatment of DRD, an evidence-based education session was developed to enhance awareness of DRD and the use of a validated screening tool. The screening tool was then implemented into practice to assist providers with referrals.

Overall, the educational session was well-received. Five (71.43%) of the seven participants reported that they strongly agreed that the information presented at the educational session presented new ideas and information that they will use in the future. Five (71.43%) of the seven participants also reported they strongly agreed that the presentation improved or reinforced their current skills and that the educational session met their needs. Improving or reinforcing skills related to DRD management is important because DRD has been shown to have a strong correlation with the chronicity of disease and to the number of complications a patient experiences, leading to a lower quality of life among diabetic patients (Hood et al., 2018; Kreifer, 2017; Perrin et al., 2017). The results demonstrate that the practice improvement project

has the potential to leave a lasting impact because participants reported gaining useful information to apply to future practice.

Objective One

The driving force for objective one was to increase health professionals' knowledge, skill, and confidence when evaluating and managing DRD in the rural primary care setting by offering an evidence-based education session. A gap in awareness regarding DRD evaluation and management was identified, as only one (14.29%) of seven participants reported that they felt strongly confident in their ability to recognize DRD symptoms on the pre-test prior to the educational session. One factor that may contribute to this finding is the lack of formal education on DRD. While more than half of the participants reported diagnosing or treating patients with DRD within the past year, only one (14.29%) of the participants reported receiving formal training during their education on DRD, which may demonstrate a gap in education for healthcare professionals. After the educational session, three (42.86%) participants responded they strongly agreed that the educational session enhanced their confidence regarding DRD evaluation and management. The literature shows that DRD is associated with poor healthcare outcomes and increased morbidity, which demonstrates the importance of further education on DRD for healthcare professionals (Pintaudi et al., 2015).

The majority of the participants demonstrated a strong baseline knowledge of the differences between depression and DRD; however, the post-test does show a knowledge advancement after the educational session. Participants may have had a baseline knowledge of DRD due to prior meetings and discussions with the coinvestigator to determine the need for the project. After the intervention, six (85.71%) of the seven participants were able to correctly identify the differences between depression and DRD, and all of the participants were able to

correctly identify the evidence-based scales that can be used to diagnose DRD. Offering the rural healthcare professionals DRD training may assist them in determining if mental health consultation is warranted (Lim et al., 2019).

The participants also reported an improved self-confidence in their ability to correctly score and interpret the PAID scale as a result of the educational session. One (14.29%) participant reported that they strongly agreed they felt confident in scoring in interpreting the PAID scale on the pre-test prior to the session, and following the educational session, four (57.14%) of the seven participants reported they felt strongly in their ability to perform this task. The PAID tool is a valid, easy, and effective way for healthcare professionals to identify DRD in their everyday practice (Welch, Jacobson, & Polonsky, 1997). Additionally, the ADA recommends that diabetic patients be routinely monitored using validated patient appropriate tools, such as the PAID (Young-Hyman et al., 2016). Therefore, incorporation of the PAID scale into the project was important, as early and frequent DRD screening can assist health professionals in offering appropriate referrals, which has the potential to improve diabetes control and overall patient (ADA, 2019).

Five (71.43%) of the seven participants also stated they strongly agreed that they would be likely to use the PAID scale during their next diabetic encounter. Literature shows that although international guidelines have recommended periodic psychological assessments in patients with diabetes, there is still a lack of uptake due to inadequate resources and insufficient knowledge to offer psychological support, especially within primary care setting (Lim et al., 2019). Routine implementation of the PAID scale and increased healthcare professional knowledge regarding DRD has the potential to have a long-term impact on patient care, as patients may be provided access to additional services to help manage their diabetes.

Recommending follow-ups or referrals for patients experiencing DRD was another weak area noted on the pre-test that was improved with the education session. Having the participants feel strongly confident in their ability to refer or counsel patients is important because DRD impacts all aspects of life including physical health, financial welling, pleasure in daily activities, and personal relationships (Vallis et al., 2016). Only one (14.29%) reported they felt strongly in their ability to offer the appropriate referral prior to the educational session. Following the educational session, three (42.86%) of seven participants reported that their confidence in recommending follow-ups or referrals was strong, which was an improvement. This newfound confidence can assist healthcare professionals in providing referrals that directly address this disease burden and increase patients' daily function (ADA, 2019).

Objective Two

The second objective of the practice improvement project was to implement the routine use of the PAID screening tool into clinical practice and to increase the participants' ability to interpret the scale. Schmitt et al. (2016) recommended that the PAID scale be utilized when clinicians are attempting to analyze diabetes-related concerns in their entirety. This validated tool assists providers when assessing the impact of distress on patients' quality of life and when looking to compare distress for all diabetic patients.

The Adult Learning Theory explains that adults prefer a more self-directed approach to learning and learn better with experiential and problem-solving activities (Decelle, 2016). Therefore, the teach-back method was used to evaluate objective two during the education. This format provided the participants the opportunity to lead in scoring of mock PAID scale on their own and then discuss results with the coinvestigator. This allowed for time to answer questions regarding the scales and help trouble shoot problems with the scale.

All participants were able to accurately score the mock PAID scale. This validated tool has been acknowledged as an excellent psychometric self-reporting measure that is able to capture a broader range of emotional concerns than other tools, such as DDS-17 (Perrin et al., 2017). Participants were also asked to identify resources that they felt would be appropriate for this patient, and this activity was related to the premise that adult learning should be centered around how they can apply the skill in their everyday life (Decelle, 2016). Allowing the participants to see the benefit of the PAID scale in identifying areas of counseling or support may result in providing more individualized care for patients. This utilization of PAID scale answers allows for healthcare professionals to identify problems with psychosocial screening and discuss therapeutic options, enabling them to view the person with diabetes as a whole, including their values and preferences (Lim et al., 2019). This holistic treatment approach is the definition of patient-centered care recommended by the ADA (2019).

Objective Three

The third objective was to identify referrals and to ensure that patients who screen high on the PAID scale were offered supportive services. Prior to the intervention, participants were asked about their confidence in providing appropriate referrals based on PAID scale results. One (14.29%) of the participants reported not feeling confident in providing referrals based on PAID scale results, while two (28.57%) participants remained neutral, three (42.86%) participants somewhat agreed, and one (14.29%) strongly agreed that they felt confident in making referrals based on PAID scale results. After the intervention, three (42.86%) participants reported that they strongly agreed that they felt confident in making referrals based on PAID scale results, and four (57.14%) participants reported that they somewhat agreed with the statement.

The PAID scale is a self-reported measure that links concepts such as depression, social support, coping behaviors, and health perceptions that are all related to burden of the diabetes (Schmitt et al., 2016; Vallis et al., 2016). This tool allows providers to identify areas that patients may need assistance in and focuses resources to patient-specific areas, which was the goal of implementing this tool into rural practice. There was a total of 24 scales completed to meet objective three. Only one patient of the 24 that completed the PAID scale scored over 40 points, which is an indication of severe distress. The majority of the patients scored between 21-30, indicating some distress in managing their diabetes. A study by Martin et al. (2018) demonstrated that the PAID scale revealed four clinically relevant diabetes distress themes, which include emotional, diabetes management, treatment, and social support.

The questions within the PAID scale allowed the providers to use these statements or themes as described above as talking points with patients to help identify areas in which they needed help. Reddy, Wilhem, and Campbell (2013) discussed that the PAID scales acts as an ice breaker for providers because patient with diabetes have been shown to be more willing to discuss emotional issues in the context of DRD rather than using generic open-ended questions related to psychological distress, such as depression or anxiety. The implementation of the PAID scale into clinical practice resulted in 30 referrals for additional resources offered during the intervention time frame.

Evaluating the Practice Improvement Project

A logic model was developed to describe the implementation and evaluation of the practice improvement project. The CDC (2018) explains that the logic model is a road map that shows the relationship of resources, activities, outputs, outcomes, and impact of a program. Logic models help represent the relationships between the practice improvement project

outcomes and intended effects while clarifying the program's boundaries. The Iowa Model of Evidence Based Practice was instrumental in the development of practice improvement project. The last step asks users whether the "change is appropriate for adoption in practice," and the logic model was used to help answer this question.

Logic Model

Figure 8 shows the logic model that was created as a visual road map to help evaluate the practice improvement project impact on rural healthcare providers and diabetic patients in the community. The goal of the practice improvement project was to raise awareness of DRD and screening tools, as well as increase meaningful referrals to improve care management and patient support. Outputs are the deliverable products that result from an activity, such as the practice improvement project (CDC, 2018). The outputs for this practice improvement project were the evidence-based education session regarding DRD, the implementation of screening for DRD, and the referrals created as a result of the practice improvement project. Outcomes relate to the change that occurred as a result of the outputs. For this practice improvement project, the outcomes were the staff taking part in the education session, which resulted in a reported increased in self-confidence in assessing and referring patients. Impacts relate to the long-term outcomes, and one impact for this project was the increase in screening for DRD among diabetic patients, leading to targeted referrals to help reduce distress in diabetic patients.

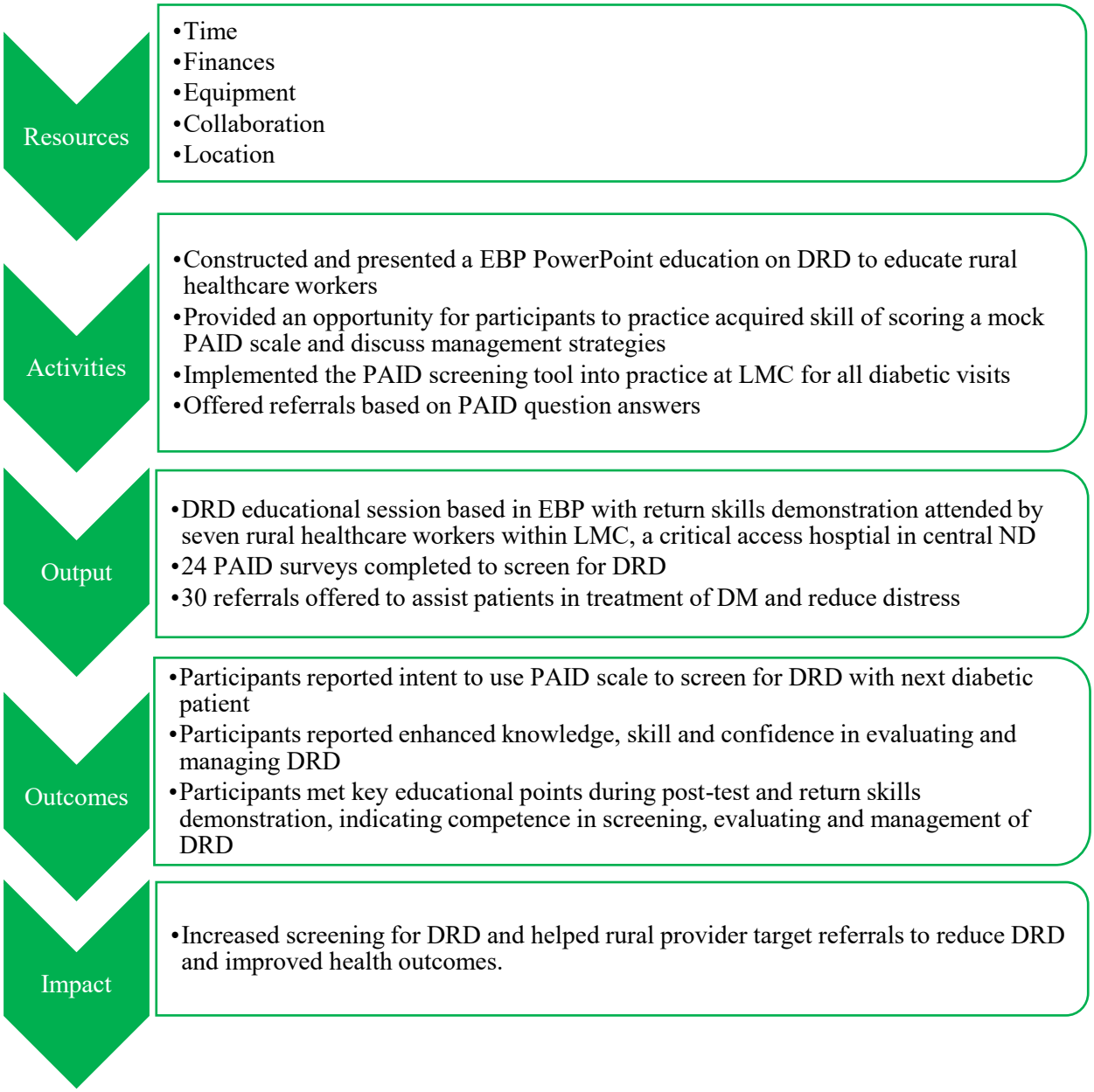

Figure 8. Logic model

Project Findings Compared to Review of Literature

The practice improvement findings strongly correlate to findings in the current literature. The consistent theme throughout the literature review was the recommendations presented by the American Diabetes Association and European Association for the Study of Diabetes, which stress the importance of individualizing treatment and strategic plans with shared decision

making (ADA, 2017; Owen-Gray et al., 2019). This patient-centered care has shown to demonstrate a four times larger reduction in Hbg A1C compared to treatment plans that were not patient-centered (Owen-Gray et al., 2019).

The ADA also recommends routine and frequent screening for depression and DRD (ADA, 2017). Educating providers on DRD and screening tools becomes even more important when the patient has comorbidities, as well as if the patient is experiencing life stressors, complications from the disease, or changes in the treatment plan. Providers are increasingly being expected to diagnose and manage chronic diseases in a limited amount of time, which may make having adequate time to focus on patients' mental health difficult. Since the somatic symptoms of DRD are very similar to depression, distinguishing the two diagnoses is an important skill to understand. Health professionals must be able to accurately use and assess both the PHQ-9 for depression and the PAID scale or DDS-17 for DRD in clinical practice (Perrin et al., 2019). For this study the authors did not included surveillance of the PHQ-9 along with the DRD screening tools, but incorporation of both scales may be beneficial in further research.

The ADA (2017) recommends offering mental health training to primary care providers who manage patients with diabetes to help recognize depression and DRD. This further education also helps providers determine when mental health consultation in warranted. Based on the results of the project, the participants may also benefit from additional mental health training or resources, as no referrals were made to mental health professionals. Additionally, a service that could be added to the clinics resources would be telemedicine referrals where patients are able to see providers at the rural clinic via telemedicine to increase their access and reduce travel. The ADA also recommends when treating patients experiencing distress related to disease management, a referral to a diabetes educator should be made to provide support that

focuses on individualized self-care needs. In addition, assisting patients with developing coping strategies (e.g., discovering a sense of self-efficacy, support systems) is also important.

Project Limitations

There are a number of limitations of this practice improvement project. One limitation of the project was the small sample size of healthcare providers. While the smaller sample size may affect the generalizability of the results, Tan et al. (2015) discussed how the PAID scale was more sensitive in the analysis of psychological distress in smaller samples than other tools, such as DDS-17. Another project limitation is that only type 2 diabetics were screened due to a lack of type 1 diabetics in the patient population. Nonetheless, increasing the awareness of DRD and knowledge of proper screening in diabetic patients was the overall goal of this practice improvement project which was met.

Another identified limitation is that the setting of the practice improvement project and participants were chosen by the coinvestigator after conducting clinical hours at the facility. A prior student-preceptor relationship was established between the coinvestigator and the clinic providers and nursing staff creating an inclusion bias. This prior relationship could have influenced the participants' evaluation of the educational session and their responses on their individual survey. However, the participants were asked to answer the survey questions honestly and were informed their answers were confidential. All demographic information was removed from post evaluation responses, and surveys were submitted together in a folder to maintain anonymity. This prior established relationship would have not played a role in how the providers scored the mock PAID scale, as the evaluation was completed by the coinvestigator's observations with the teach-back method and were not based on the participants' responses.

Due to the smaller clinic size, there initially was one medical doctor, three FNPs, one PA, and all nursing staff that were scheduled to attend the DRD educational session. The Iowa Model of Evidence-Based Practice discusses developing a team around people who will be vested in change (Buckwalter et al., 2017). Because of clinic appointments and scheduling conflicts, only two FNP's, participated in the DRD educational session along with nursing staff. During the three-month time frame in which the practice improvement project was implemented, two FNPs resigned from the clinic, and a new medical director was added to the team. The turnover of staff and a transition in leadership taking place mid-project made creating buy-in for the project challenging. Additionally, the coinvestigator was unable to be present daily at the clinical site, which made maintaining the momentum of the project over the three months challenging at times. The coinvestigator attempted to account for this by asking for support from the providers to continue with implementation of the project during the coinvestigator's absences, and the providers were supportive of this. The coinvestigator did make biweekly visits to the facility to help keep the momentum moving forward to achieve project outcomes.

The results of the project revealed that there were no mental health referrals or consults made for counseling. This could correlate to the fact that the practice improvement project did not include PHQ-9 screening along with the PAID scale. Because the scope of the project did not include measuring how many patients scored positive high for symptoms of depression, PHQ-9 scores were not tracked. An additional barrier that may have limited mental health referrals is the fact that these services are not offered at Linton Medical Center. The nearest facility offering mental health counseling is 60 miles away, which may be a deterrent due to transportation or financial limitations.

Another limitation of the project is the time frame, which makes it difficult to determine the long-term impact of the project. The short time frame did not allow the study to continue with retrospective screening to see if the referrals made a positive difference in Hgb A1C or DRD score. Finally, the clinic's electronic health record did not allow for incorporation of the screening electronically into a health maintenance que, which would have provided reminders for healthcare professionals to ensure routine screening for DRD.

Implications for Advanced Practice Nursing

Rural communities face several barriers to accessing healthcare services including having to travel long distances and limited access to specialty services such as cardiology, pulmonology, neurology, or psychiatry. The populations of rural communities often have more elderly residents with more chronic comorbidities requiring specialty services and frequent follow-up (National Rural Health Association, 2020). There is a reduced patient-to-provider ratio in rural areas with 39.8 physicians per 100,000 people compared to 53.3 physicians per 100,000 people in urban areas. Nurse practitioners have created a significant impact in helping close this gap in healthcare access and are instrumental in managing chronic disease in rural patients. In the United States, there are currently 205,000 licensed NPs, and over 90% of these NPs are certified in primary care (Owens & Zwilling, 2017). Roughly 66% of NPs work in rural settings with populations less than 250,000, and 35% practicing in setting less than 50,000 people (National Rural Health Association, 2020). North Dakota currently has a ratio of 8.7 NPs per 10,000 in 2015 and 49% of those practice in primary care.

Comprehensive diabetes care includes addressing the emotional aspect of living with diabetes, and because FNPs are leading the rural workforce, they should be a leader in this movement due their holistic nature (Giese, 2018). FNPs are known for focusing their practices

on the patient as whole and addressing patients' physical, emotional, spiritual, and environmental challenges and needs. DRD falls into the scope of practice NPs and other health professionals because DRD is a response to living with a complex chronic disease that is self-managed, but also reliant on the direction of a healthcare system.

The ADA and the European Association for the Study of Diabetes have together stressed the impact that individualizing treatment plans, strategies, and shared decision making has improved the care of people with diabetes (Williams et al., 2020). Studies that utilized an individualized, patient-focused care plan have demonstrated a nearly four-times larger reduction in Hgb A1C compared to those that did not. Providing individualized care may be difficult with lack of proper understanding of DRD. Unfortunately, 83.3% of the participants in this project had no formal training in DRD. In order close this gap and improve care, DRD education must be included into formal education programs.

Dissemination

Dissemination of nursing knowledge is fundamental to the profession of nursing and is also the final step of Iowa Model of Evidence-Based Practice (Buckwalter et al., 2017). Advance practice nurses use this information to guide, contribute, and ensure they are providing the best possible care based on the available literature. Dissemination of the DRD education was conducted throughout this project and will continue upon completion. The practice improvement project results and recommendations for further research will be disseminated in several ways with the goal of reaching multiple healthcare providers.

The coinvestigator presented the practice improvement project proposal and expected outcomes at the Sanford Research Committee Quarterly meeting in April 2019 and the North Dakota Nurse Practitioner Pharmacology Conference in October 2019. Dissemination of the

project findings and recommendations will be presented at the NDSU Research Day April 1st, 2020. The NDSU Research Day is an event where undergraduate nursing students and graduate DNP students can present their respective evidence-based research in the poster format to cohorts, faculty, providers, nursing staff, administrators, and members of the community.

Recommendations for Future Practice Improvement Projects

With over 12.2% of the United States population or 30 million people diagnosed with diabetes, future projects focusing on DRD are essential (Perrin et al., 2019). A compatible project that could be recommended for future studies would be to create this study on larger scale as a cohort study that measures DRD as the primary outcome to improve quality. Most literature surrounding DRD focuses on reducing Hgb A1C levels as their primary outcome (Perrin et al., 2019). There is a gap in the literature that focuses on improvement of DRD through providing referrals and targeted counseling to measure the quality of the scales. This highlights a distinct need for further research into DRD and more targeted and focused studies seeking DRD as a primary outcome measure to improve quality.

Given the limited studies on PAID themes/burden factors (emotional, diabetes management, treatment, and social support), especially in US patient samples, additional studies are needed to identify specific distress concepts to inform clinical and research practices (Martin et al., 2018). Identifying contributing factors to these themes could help providers direct their care efforts. One recommendation for future projects may be to implement a study at several rural health clinics that includes an evidence based DRD educational session and implementation of validated screening tools. Monitoring the participants over a longer duration, such as year timeframe, would be beneficial as well and may allow investigators to measure whether the referrals generated form the screening were helpful in decreasing DRD. Future projects at

Linton Medical Center could also be enhanced if the DRD screening tool was added to their electronic medical record, and health maintenance reminders were created for diabetic patients, as are available for other indicated screenings, such as Hbg A1C.

Conclusion

Raising awareness regarding DRD and increasing screening in all diabetic patients at Linton Medical Center was the main objective of this practice improvement project. A global partnership initiative from 17 countries and four continents, demonstrated that 44.6% of patients with diabetes suffered from high rates DRD, with the lowest rates at approximately 20% in Netherlands and the highest rates at approximately 65% in Algeria (Lim et al., 2019). DRD has also consistently shown through the literature to have a negative influence on glycemic control and emotional and psychosocial wellbeing of diabetic patients (Aljuaid et al., 2018). Diabetic patients with higher distress levels also have been shown to have higher levels of depression, which may result in an increased risk for complications and mortality. Despite literature consistently showing a high prevalence of DRD worldwide, the disease is still under-recognized and undertreated by healthcare providers (Lim et al., 2019).

The lasting impact that was created through the practice improvement included enhanced health professional awareness of DRD and screening tools at one rural ND clinic, which may help close the gap of patients with DRD being undertreated. Additionally, patients were provided the opportunity to learn more about DRD through implementation of the screening tool, which may enhance patient outcomes by increasing recognition of symptoms. By offering diabetic patients more support, resilience is being cultivated, as patients are more likely to be able to manage the stressors and challenges associated with living with a chronic disease. The evidence-based education and implementation of routine DRD screening and monitoring referrals

enhanced the knowledge and clinical practice of healthcare professionals in the rural setting, which has the potential to improve quality of care and patient outcomes.

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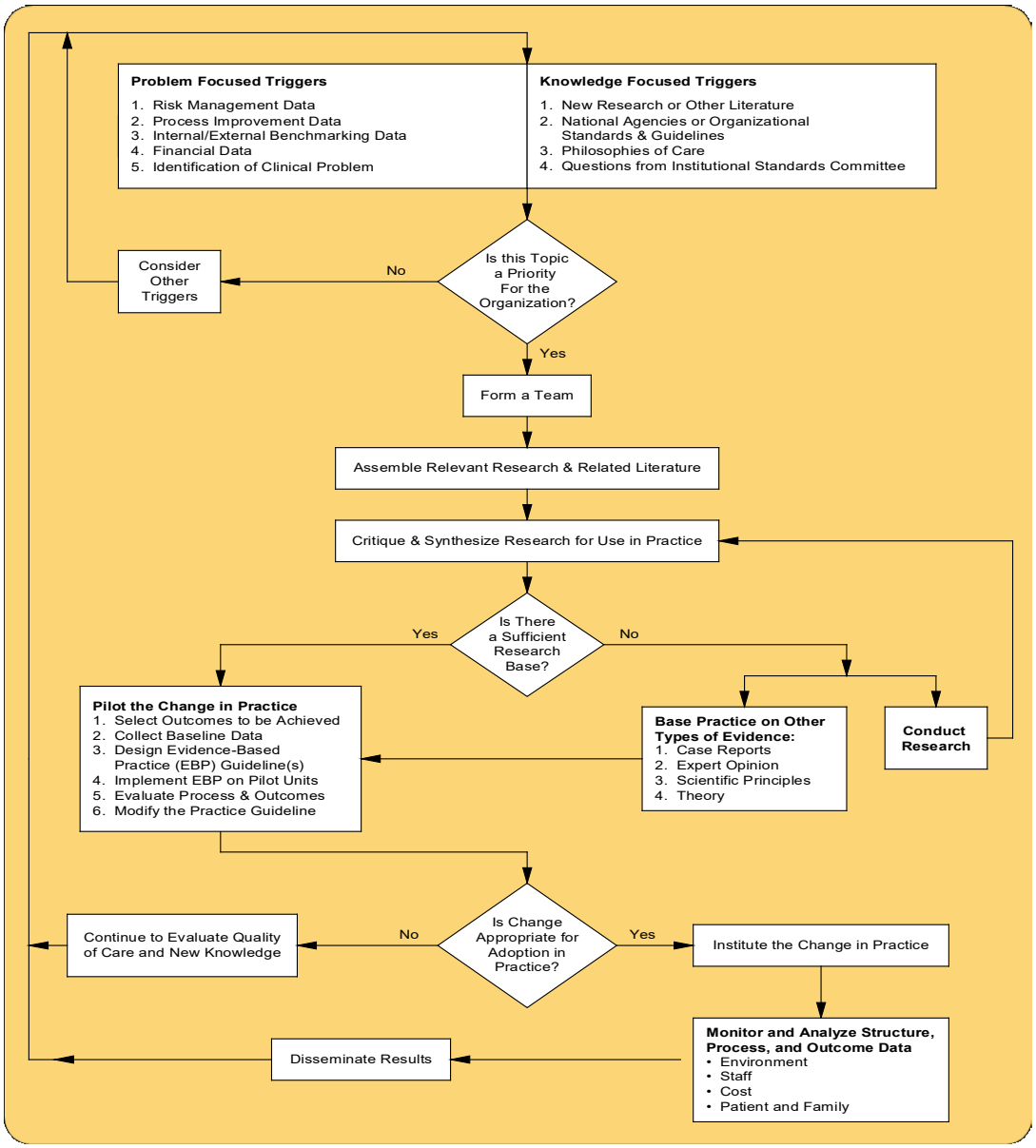
APPENDIX A. THE IOWA MODEL OF EVIDENCE-BASED PRACTICE

The Iowa Model of Evidence-Based Practice to Promote Quality Care

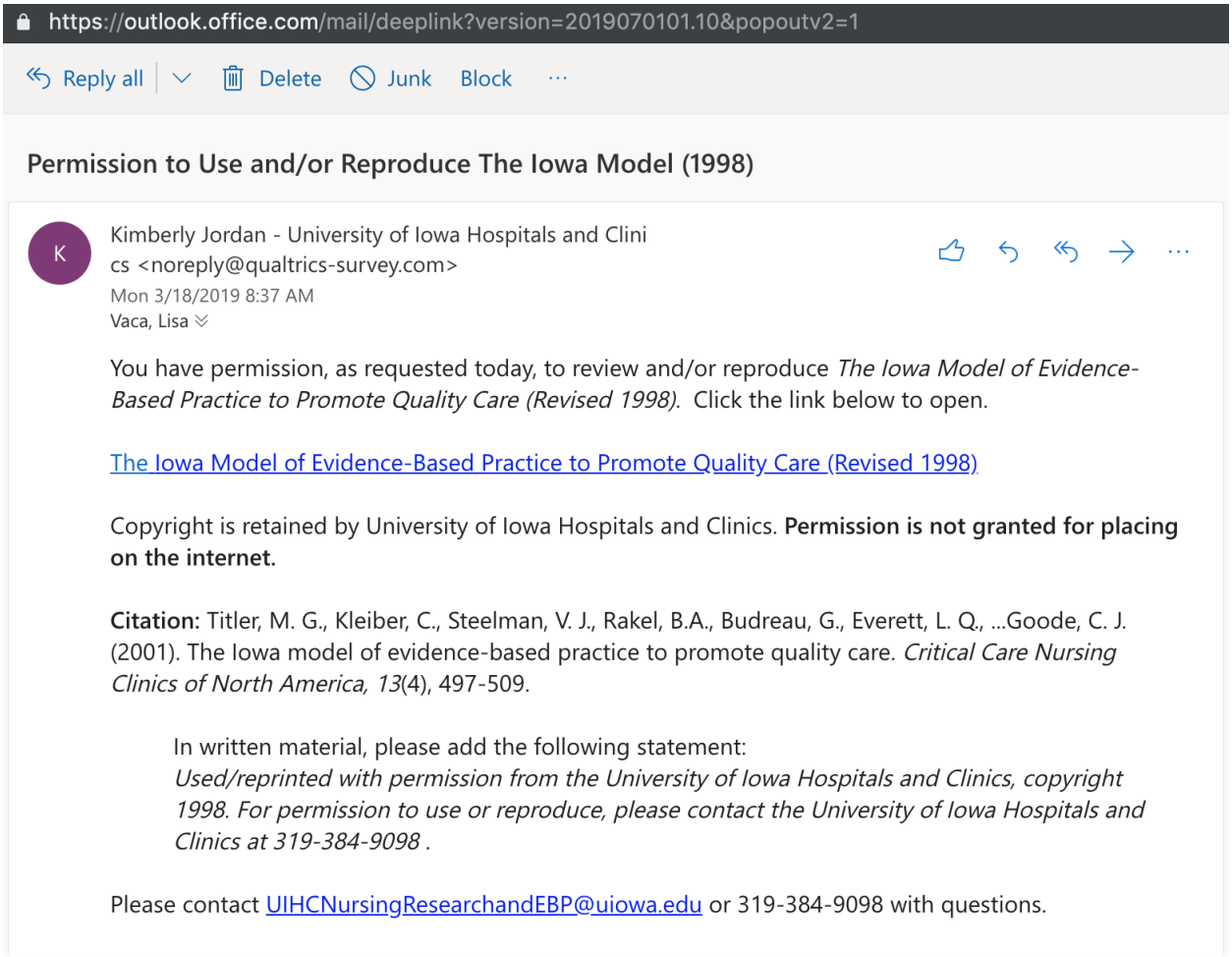


◇ = a decision point

Titler, M.G., Kleiber, C., Steelman, V.J., Rakel., B. A., Budreau, G., Everett, L.Q., Buckwalter, K.C., Tripp-Reimer, T., & Goode C. (2001). The Iowa Model Of Evidence-Based Practice to Promote Quality Care. *Critical Care Nursing Clinics of North America,* 13(4), 497-509.

REQUESTS TO:
Department of Nursing
University of Iowa Hospitals and Clinics
Iowa City, IA 52242-1009

APPENDIX B. PERMISSION TO USE THE IOWA MODEL OF EVIDENCE-BASED PRACTICE



https://outlook.office.com/mail/deeplink?version=2019070101.10&popoutv2=1

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K

Kimberly Jordan - University of Iowa Hospitals and Clini
cs <noreply@qualtrics-survey.com>
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Vaca, Lisa

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Citation: Titler, M. G., Kleiber, C., Steelman, V. J., Rakel, B.A., Budreau, G., Everett, L. Q., ...Goode, C. J. (2001). The Iowa model of evidence-based practice to promote quality care. *Critical Care Nursing Clinics of North America, 13*(4), 497-509.

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Please contact UIHCNursingResearchandEBP@uiowa.edu or 319-384-9098 with questions.

APPENDIX C. PROBLEM AREAS IN DIABETES QUESTIONNAIRE (PAID)

SCREENING TOOL

Problem Areas in Diabetes Questionnaire (PAID)

DAWN
Diabetes Attitudes Wishes & Needs

INSTRUCTIONS: Which of the following diabetes issues are currently a problem for you?
Circle the number that gives the best answer for you. Please provide an answer for each question. Please bring the completed form with you to your next consultation where it will form the basis for a dialogue about how you are coping with your diabetes.

Patient name: Completion date: Interview date:

	Not a problem	Minor problem	Moderate problem	Somewhat serious problem	Serious problem
1. Not having clear and concrete goals for your diabetes care?	0	1	2	3	4
2. Feeling discouraged with your diabetes treatment plan?	0	1	2	3	4
3. Feeling scared when you think about living with diabetes?	0	1	2	3	4
4. Uncomfortable social situations related to your diabetes care (e.g., people telling you what to eat)?	0	1	2	3	4
5. Feelings of deprivation regarding food and meals?	0	1	2	3	4
6. Feeling depressed when you think about living with diabetes?	0	1	2	3	4
7. Not knowing if your mood or feelings are related to your diabetes?	0	1	2	3	4
8. Feeling overwhelmed by your diabetes?	0	1	2	3	4
9. Worrying about low blood sugar reactions?	0	1	2	3	4
10. Feeling angry when you think about living with diabetes?	0	1	2	3	4
11. Feeling constantly concerned about food and eating?	0	1	2	3	4
12. Worrying about the future and the possibility of serious complications?	0	1	2	3	4
13. Feelings of guilt or anxiety when you get off track with your diabetes management?	0	1	2	3	4
14. Not "accepting" your diabetes?	0	1	2	3	4
15. Feeling unsatisfied with your diabetes physician?	0	1	2	3	4
16. Feeling that diabetes is taking up too much of your mental and physical energy every day?	0	1	2	3	4
17. Feeling alone with your diabetes?	0	1	2	3	4
18. Feeling that your friends and family are not supportive of your diabetes management efforts?	0	1	2	3	4
19. Coping with complications of diabetes?	0	1	2	3	4
20. Feeling "burned out" by the constant effort needed to manage diabetes?	0	1	2	3	4

www.dawnstudy.com

APPENDIX D. PATIENT DIABETES DISTRESS HANDOUT

The unpredictability in blood sugar, daily schedules, and life can make this disease frustrating. Whenever our actions have unpredictable outcomes, we can become distressed. In this case it is specific to diabetes, so it is referred to as diabetes distress.

Having diabetes is like someone handing you four balls and telling you to juggle perfectly. Then it's telling you that once you acquire that skill you will now juggle every day for the rest of your life and that there are variables that are going to influence your ability to juggle, you just don't know what and when. If you stop doing this, you will get sick and the people who care about you will become upset and tell you to start juggling again.

Those who have diabetes know this scenario far too well. You have been given a disease to manage that requires daily attention to aspects of life that never seemed controllable even before the diagnosis. In addition to these behaviors, you are often expected to look at numbers as a judgement of your success, and go to frequent healthcare appointments that evaluate you and your skill in dealing with this juggling act. Oh, by the way your family and friends get in on the act, because they know you have diabetes and you not only feel judged by them, you feel judged by yourself.

This wouldn't be such a big deal if you could get it right, but the unpredictability in blood sugar, daily schedules, and life can make this disease frustrating. The emotional ups and downs add to the daily burden.

How does this diabetes distress impact me and the disease?

Whenever our actions have unpredictable outcomes, we can become distressed. In this case it is specific to diabetes, so it is referred to as diabetes distress. We develop tension, fatigue, a sense of being overwhelmed and experience "burnout." This burnout sometimes pushes us to quit or at least not pay close attention to the things that are causing this distress. You may think "I just won't check my blood sugar, or I'll skip that medication since it doesn't seem to do much anyway." The unfortunate result is diabetes goes unmanaged, leaving you with a high A1C, not feeling well and possibly developing complications.

AADE American Association of Diabetes Educators

Friends, family and co-workers are all likely to be concerned about you and may seem to be monitoring your activities. You have the right to ask people to give you space if they are too close, but keep in mind they are usually doing this because they care, so express appreciation for their attention, then offer them ideas for how you would like them to be involved and how you don't want them involved. It's clear you are the one with diabetes, but you also have the responsibility to help those who love you be involved in appropriate ways.

What can I do if I think I have this distress?

First find out. If you think this is happening to you, don't be surprised as it happens to many people who live with diabetes.

- Talk with your diabetes educator, they can ask relevant questions.
- Get an assessment. There are simple tests that can help such as a diabetes distress questionnaire.
- The results from the test will help you identify what area in diabetes is most distressing.
- Based on those results you can develop a plan.

Diabetes doesn't go away, so what can I do to ease my distress?

- Find someone who understands your feelings surrounding living with diabetes and talk to them.
- Talk with another person who has diabetes, a diabetes support group offered by your local hospital or your diabetes educator, family member, or a mental health professional. Someone who knows diabetes will ease the burden and you won't feel so alone.
- If you feel judged by others express your concerns and find a way to ask for their help rather than their judgments.
- The medical system can sometimes make you feel that if your health is not improving, then it is something you are doing wrong. You need their support, which is different than their judgment. Tell your healthcare team and family if and how supportive they are, because they often feel helpless as family members often do not know what to say or do to help their loved ones manage diabetes.
- If you are worn out by the daily tasks and the feeling of failure, give yourself a reasonable break from the routine.
- Realize almost no one gets diabetes right. Doing diabetes tasks well will not assure you of getting the numbers you want. Striving for perfection is extremely difficult. Take some time off. Plan it, make it safe, and perhaps ask someone to help you. Do this intentionally, not out of anger.
- If you feel bothered by others or have the sense they are monitoring your behavior, ask them to stop.

Diabetes is not easy. When you feel burned out, you may not want more responsibility, but this is probably the time you most need to ask for help and let others join in the way that works best for you.

Diabetes Distress Questionnaire: www.behavioraldiabetes.org/scales-and-measures

APPENDIX E. INFORMED CONSENT FOR PARTICIPANTS

NDSU **North Dakota State University**
Department of Nursing
Campus Address
NDSU Dept. 2670
PO Box 6050
Fargo, ND 58108-6050
701.231.7395

Title of Practice Improvement Project: Implementation of Diabetes-Related Distress Scale in a Primary Care Clinic

Dear Participants:

My name is Lisa Vaca. I am a graduate student in the Doctor of Nursing Practice program at North Dakota State University, and I am conducting a practice improvement project to increase awareness, knowledge, and confidence in recognizing and managing diabetes-related distress by primary care providers in the rural clinic setting.

Because you are a healthcare provider or nursing staff, you are invited to take part in this project. Your participation is entirely your choice, and you may change your mind or quit participating at any time, with no penalty to you.

It is not possible to identify all potential risks in practice improvement projects, but we have taken reasonable safeguards to minimize any known risks. There are minimal risks associated with completed the educational module.

By taking part in this project, you may benefit by improving your knowledge of evaluation and evidence-based management of diabetic patients who are experiencing distress related to managing their treatment plan through attending an educational session on the proper implementation of a Problem Areas in Diabetes (PAID) Scale into practice.

It should take about five minutes to complete the pre-test which has questions related to demographics, provider knowledge and diabetes-related distress. Prior to starting the module, the pre-test questions must be completed. Post-test questions will be available at the end of the module.

This study is anonymous. That means that no one, not even members of my dissertation team, will know that the information given comes from you.

If you have any questions about this project, please contact me at 559-280-4455 or Lisa.Vaca@ndsu.edu. You may also contact my advisor, Dr. Allison Peltier, at 701-231-7395 or Allison.Peltier@ndsu.edu.

You have rights as a participant. If you have questions about your rights or complaints about this project, you may talk to the investigator or contact the NDSU Human Research Protection Program at 701.231. 8995, by email at ndsu.irb@ndsu.edu, or by mail at: NDSU HRPP Office, NDSU Dept. 4000, P.O. Box 6050, Fargo, ND 58108-6050.

By continuing the educational module, you are giving your consent and are freely making a decision to participate in this practice improvement project. By clicking below to move onto the next slide, it means that:

- You have read and understood the consent form.
- You have had your questions answered, and
- You have decided to participate in this practice improvement project.

Thank you for your taking part in this project. If you wish to receive a copy of the results, please contact me or my advisor.

APPENDIX F. DRD EDUCATIONAL SESSION POWERPOINT

Implementation of Diabetes-Related Distress Scale In Primary Care Rural Clinic

Lisa Vaca, DNP-Student, RN, BSN
Chair: Allison Peltier, DNP, FNP-C[1]
Committee Members: Dean Gross, DNP, FNP-C[1], Jacqueline Grunefelder[2], MSN, FNP-C
Graduate Appointee: Lisa Montplaisir, PhD[2]

North Dakota State University School of Nursing[1],
North Dakota State University School of Biological Sciences[2] Linton Medical Center[3]

NDSU NORTH DAKOTA STATE UNIVERSITY NDSU SCHOOL OF NURSING

Introduction/Problem

- The proposed practice improvement project is to increase awareness, knowledge, and confidence in recognizing and managing diabetes-related distress in primary care providers in the rural clinic setting.
- The implementation of this project is to assist rural primary care providers in the evaluation and evidence-based management of diabetic patients who are experiencing distress related to managing their treatment plan through attending an educational session and the implementation of a Problem Areas in Diabetes (PAID) Scale into their practice.

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Literature Review

- Diabetes-related distress prevalence is reported to be around 18-45 percent of patient with diabetes will experience distress (Young-Hyman et al., 2016).
  - Associated with having a high impact on medication compliance, higher A1C, lower self-efficacy and inadequate exercise and dietary behaviors (Vallis et al., 2016).
- Through early and frequent screenings, providers are able to make appropriate referrals to diabetes educators, dieticians and mental health providers (Kreider, 2017).

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Project Objectives

- **The objectives of the project include:**
  - Increase PCPs' knowledge and confidence when evaluating and managing diabetes-related distress in the rural primary care setting by providing an educational session.
  - Implement routine use of the PAID screening tool into clinical practice for diabetic patients in the rural primary care setting and increase PCP ability to use and interpret the PAID screening tool.
  - Ensure all patients with a positive PAID screening tool are referred for indicated support services.

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Theoretical Framework

- The Iowa Model of Evidence-Based Practice to Promote Quality Care
  1. Topic Selection
  2. Organizational Priority
  3. Team Assembly
  4. Determine the Sufficiency of Research
  5. Piloting a Practice Change
  6. Implementation Strategies (Titler et al., 2001).

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Project Design

- Setting
  - Linton Medical Center
- Participants
  - Includes all nursing and provider staff at the clinic
    - Two FNP, two PA's, two physicians and four nurses
- Tool
  - Problems Areas in Diabetes (PAID) Scale
    - comprised of 20 items
    - assess diabetes-related problems in patients with type 1 and type 2 diabetes
    - Five-point Likert scale, totaled from 0 to 100

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Project Design

- Tool continued
  - PAID Scale
    - Higher the score the more sever distress
      - Score greater than 40 indicates severe distress
    - Takes 5 minutes to complete
    - Focuses on:
      - general emotional distress, self-care behaviors, depression, coping abilities, and over health perception
- Data Collection
  - Occurring over 3 months from Nov 2019 - Jan 2020

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How to score the PAID scale

- Each question has five possible answers with a value from 0 to 4, with 0 representing "no problem" and 4 "a serious problem".
- The scores are totaled and then multiplied by 1.25,
  - generating a total score between 0 – 100.

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Scoring continued

- A score of 40 or higher is consider positive for DRD.
  - These patients may be at the level of "emotional burnout" and need additional counseling or referrals for further assistance.
    - PAID scores in these patients may drop 10-15 points in response to educational and medical interventions.
- An extremely low score (0-10) combined with poor glycemic control may be indicative for denial.

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Referrals

- Resources that are available to patients with positive scores or who request additional help can be referred to:
  - dieticians
  - diabetic educators
  - psychologists
  - regimen counseling
  - financial assistance for medications
  - psychosocial counseling

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Evaluation of PIP

- Evaluation
  - Pre and Posttest following education session with providers and clinic staff
  - Determine how many diabetes-related distress scales were implemented and how many resulted in positive scores
  - Analyze the number of positive diabetes-related distress scales with referrals

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Timeline of Project

- September 2019
  - Incorporate suggestions and IRB application
  - Implementation of educational session for providers regarding screening for diabetes related distress
- November 2019– January 2020
  - Implementation of diabetes-related distress screening tool by providers at clinic
  - Conclude with provider interviews regarding pro's and con's of screening tool
- January 2019
  - Data analysis and complete dissertation
- March 2020
  - Defend Dissertation

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Questions?

- Thank you all for participating as committee members in my practice improvement project.
- Contact information: Lisa Vaca, DNP-Student, RN, BSN
- Lisa.vaca@ndus.edu

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NDSU SCHOOL OF NURSING

APPENDIX G. PRE-ASSESSMENT SURVEY

Please answer the following questions below on the presented education by circling your response.

1. Indicate your profession.
    a. Licensed Vocational Nurse
    b. Registered Nurse
    c. Nurse Practitioner
    d. Physician Assistant
    e. Physician
    f. Other

2. How many years have you been in clinical practice?
    a. 0-2
    b. 3-6
    c. 7-15
    d. 16 or more

3. Approximately how many patients have you diagnosed or assisted in the treatment of a patient with diabetes related distress within the past year (either initial visit or follow-up)? If 0, skip to question 6.
    a. 0
    b. 1-2
    c. 3-4
    d. 5 or more

4. During your graduate education or training for your degree, did you learn how to assess, diagnose, or manage diabetes related distress?
    a. Yes
    b. No
    c. Other (please explain): _____

5. During your current position, have you completed additional training/education for diabetes related distress assessment, diagnosis, or management (CME, CEU, CDC, other?)
    a. Yes (please explain): _____
    b. No

6. I am confident in my ability to recognize diabetes related distress symptoms.
    a. Do not agree
    b. Somewhat disagree
    c. Neutral
    d. Somewhat agree
    e. Strongly agree

7. I am confident in recommending a follow-up and/or referral for patients experiencing diabetes related distress?
    a. Do not agree
    b. Somewhat disagree
    c. Neutral
    d. Somewhat agree
    e. Strongly agree

8. I am confident in my ability to score and interrupt results on a PAID scale.
    a. Do not agree
    b. Somewhat disagree
    c. Neutral
    d. Somewhat agree
    e. Strongly agree

9. What is the difference between depression and diabetes-related distress?
    a. There is no difference.
    b. DRD focuses on emotional state experienced by patients living with diabetes encompasses feelings of guilt, stress, or denial that arise from living with the need for 24-hour management for control.
    c. Screening is only necessary for depression and not DRD.
    d. Misidentifying DRD as depression in a patient with diabetes could lead to prescribing an antidepressant, which will lead to improvements in their symptoms.

10. Which of the following scales can be used in the diagnosis of DRD?
    a. PHQ-9
    b. DDS-17
    c. PAID scale
    d. Both B and C

APPENDIX H. POST EVALUATION SURVERY

Please answer the following questions below on the presented education by circling your response.

1. Did the information presented provide new ideas/information you expect to use?
    a. Do not agree
    b. Somewhat disagree
    c. Neutral
    d. Somewhat agree
    e. Strongly agree

2. Did the information presented reinforce and/ or improve your current skills?
    a. Do not agree
    b. Somewhat disagree
    c. Neutral
    d. Somewhat agree
    e. Strongly agree

3. Did this session meet your educational needs?
    a. Do not agree
    b. Somewhat disagree
    c. Neutral
    d. Somewhat agree
    e. Strongly agree

4. I am confident in my ability to recognize diabetes-related distress symptoms.
    a. Do not agree
    b. Somewhat disagree
    c. Neutral
    d. Somewhat agree
    e. Strongly agree

5. I am confident in recommending a follow-up and/or referral for patients experiencing diabetes-related distress?
    a. Do not agree
    b. Somewhat disagree
    c. Neutral
    d. Somewhat agree
    e. Strongly agree

6. I am confident in my ability to score and interrupt results on a PAID scale.
    a. Do not agree
    b. Somewhat disagree
    c. Neutral
    d. Somewhat agree
    e. Strongly agree

7. What is the difference between depression and diabetes-related distress?
    a. There is no difference.
    b. DRD focuses on emotional state experienced by patients living with diabetes encompasses feelings of guilt, stress, or denial that arise from living with the need for 24-hour management for control.
    c. Screening is only necessary for depression and not DRD.
    d. Misidentifying DRD as depression in a patient with diabetes could lead to prescribing an antidepressant, which will lead to improvements in their symptoms.

8. Which of the following scales can be used in the diagnosis of DRD?
    a. PHQ-9
    b. DDS-17
    c. PAID scale
    d. Both B and C

9. I will likely use the PAID scale during my next encounter with a diabetic patient.
    a. Do not agree
    b. Somewhat disagree
    c. Neutral
    d. Somewhat agree
    e. Strongly agree

APPENDIX I. IRB APPROVAL LETTER

NDSU NORTH DAKOTA STATE UNIVERSITY

September 30, 2019

Dr. Allison Peltier
School of Nursing

Re: IRB Determination of Exempt Human Subjects Research:
Protocol #PH20065, "Implementation of Diabetes-Related Distress Scale in a Primary Care Clinic"

Co-investigator(s) and research team: Lisa Vaca, Dean Gross
Date of Exempt Determination: 9/30/2019 Expiration Date: 9/29/2022
Study site(s): Linton Medical Center
Sponsor: n/a

The above referenced human subjects research project has been determined exempt (category #2(ii), 4(iii)) in accordance with federal regulations (Code of Federal Regulations, Title 45, Part 46, Protection of Human Subjects). This determination is based on the revised protocol submission and patient information sheet (received 9/30/2019).

Please also note the following:
• If you wish to continue the research after the expiration, submit a request for recertification several weeks prior to the expiration.
• The study must be conducted as described in the approved protocol. Changes to this protocol must be approved prior to initiating, unless the changes are necessary to eliminate an immediate hazard to subjects.
• Notify the IRB promptly of any adverse events, complaints, or unanticipated problems involving risks to subjects or others related to this project.
• Report any significant new findings that may affect the risks and benefits to the participants and the IRB.

Research records may be subject to a random or directed audit at any time to verify compliance with IRB standard operating procedures.

Thank you for your cooperation with NDSU IRB procedures. Best wishes for a successful study.
Sincerely,

Kristy Shirley

Kristy Shirley, CIP, Research Compliance Administrator

For more information regarding IRB Office submissions and guidelines, please consult https://www.ndsu.edu/research/for_researchers/research_integrity_and_compliance/institutional_review_board_irb/. This Institution has an approved FederalWide Assurance with the Department of Health and Human Services: FWA00002439.

INSTITUTIONAL REVIEW BOARD
NDSU Dept 4000 | PO Box 6050 | Fargo ND 58108-6050 | 701.231.8995 | Fax 701.231.8098 | ndsu.edu/irb
Shipping address: Research 1, 1735 NDSU Research Park Drive, Fargo ND 58102

APPENDIX J. EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

IMPLEMENTATION OF A DIABETES-RELATED DISTRESS SCALE IN A PRIMARY CARE CLINIC

PARTICIPANTS AND SETTING

The educational session and return skill demonstration were attended by seven health care workers a rural clinic in Linton, ND.

The PAID scale was implemented with diabetic patients presenting for a follow-up healthcare visit at Linton Medical Center.

PROJECT FINDINGS

- An increase in healthcare professional knowledge of DRD evaluation and management was noted after the educational session
- 100% of participants were able to score the PAID scale correctly and determine appropriate referrals based on the responses to the mock PAID scale after the educational session
- 71.43% reported they strongly agree with the statement that they will likely use the PAID scale during their next diabetic encounter
- 24 PAID surveys were collected and analyzed for DRD. A total of 30 referrals were offered as a result of identified problem areas with the PAID tool

INTRODUCTION

Individuals with diabetes face many multifaceted issues when integrating their plan of care into their daily lives, which can become burdensome and lead to inadequate diabetes control. Due to the persistent demands of diabetes management, screening for psychosocial factors that can impact control, such as depression, anxiety, and diabetes-related distress (DRD) should occur routinely (American Diabetes Association [ADA], 2017). DRD is distinctly different from depression in that the focus is on the burden experienced due to the rigorous treatment regimen associated with diabetes.

DRD focuses on the self-management demands, complications, comorbidities, and lack of perceived social support (ADA, 2019). DRD can affect treatment compliance and lead to negative health outcomes, including more frequent hospitalizations and higher healthcare costs. Therefore, early screening and detection of psychosocial factors influencing management is essential to prevent health complications and deterioration.

Significance for Practice

The ADA recommends that patients are routinely monitored using validated patient appropriate measures (Young-Hyman et al., 2016). The prevalence of DRD is reported to range from 18-45% of patients with diabetes. DRD is associated with having a high impact on medication noncompliance, higher A1C, lower self-efficacy, sedentary lifestyle, and inadequate dietary behaviors.

Implementation of early and frequent screening allows healthcare providers to make appropriate referrals to diabetes educators, dieticians, and mental health professionals, which has the potential to improve diabetes control and overall patient health.

PROJECT DESIGN

The purpose of the practice improvement project was to increase awareness, knowledge, and confidence in recognizing and managing DRD among primary care providers working in a rural community. The project consisted of an educational session for healthcare providers at Linton Medical Center that focused on the evaluation and evidence-based management of diabetic patients who are experiencing distress related to managing their treatment plan. The Problem Areas in Diabetes (PAID) scale was also implemented into their practice after the educational session.

The PAID scale is a self-reported measure that links concepts such as depression, social support, coping behaviors, and health perceptions, which contribute to the burden of the disease associated with diabetes (Schmitt et al., 2016; Vallis et al., 2016). The use of this scale allows providers to identify areas that patients may need assistance in and focus resources to patient-specific areas.

Quantitative and qualitative data collection took place during the data collection process. Qualitative data collection methods occurred during the teach-back method of the educational session through direct observation by the coinvestigator. Pre- and post-tests were utilized to identify changes in knowledge and confidence among healthcare professionals after the educational session. The number of PAID scales implemented into practice were also monitored. Additionally, PAID scale results were analyzed, and positive results were monitored to identify referrals that occurred as a result of the tool.

RECOMMENDATIONS

With over 12.2% of the United States population or 30 million people diagnosed with diabetes, future projects focusing on DRD are essential (Perrin et al., 2019). Enhanced DRD awareness and additional education and training opportunities for primary care providers who evaluate and manage diabetes is supported by current literature (Martin et al., 2018).

Recommendations

- A compatible project that could be recommended for future studies would be to create this study on larger scale as a cohort study that measures DRD as the primary outcome to improve quality. There is a gap in literature that focuses on improvement of DRD through providing referrals and targeted counseling to measure the quality of the scales.
    - Develop more targeted and focused studies seeking DRD as a primary outcome measure to improve quality.
    - Implement a study at several rural health clinics that included an evidence based DRD educational session and implementation of validated screening tools.
    - Monitor the participants over a longer duration of time and allow investigators to measure whether the referrals generated form the screening were helpful in decreasing DRD.

Potential Benefits

- Enhanced healthcare workers and patient's awareness and knowledge regarding DRD
- Increase routine screening for DRD
- Enhanced confidence in evaluating and treating DRD in the primary care setting
- Promote a culture of evidence-based practices with the health care system
- Assist rural providers in targeting referrals to help reduce distress in diabetic managing their disease

Contact Information

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CONCLUSION

Raising awareness regarding DRD and increasing screening in all diabetic patients at Linton Medical Center was the main objective of this practice improvement project. A global partnership initiative from 17 countries and four continents, demonstrated that 44.6% of patients with diabetes suffered from high rates DRD, with the lowest rates at approximately 20% in Netherlands and the highest rates at approximately 65% in Algeria (Lim et al., 2019). DRD has also consistently shown through the literature to have a negative influence on glycemic control and emotional and psychosocial wellbeing of diabetic patients. Diabetic patients with higher distress levels also have been shown to have higher levels of depression, which may result in an increased risk for complications and mortality. Despite literature consistently showing a high prevalence of DRD worldwide, the disease is still under-recognized and undertreated by healthcare providers (Lim et al., 2019).

The lasting impact that was created through the practice improvement included enhanced health professional awareness of DRD and screening tools, which may help reduce the number of patients with DRD being undertreated. Additionally, patients were provided the opportunity to learn more about DRD through implementation of the screening tool, which may enhance patient outcomes by increasing recognition of symptoms. By offering diabetic patients more support, resilience is being cultivated, as patients are more likely to be able to manage the stressors and challenges associated with living with a chronic disease. The evidence-based education and implementation of routine DRD screening enhanced the knowledge and clinical practice of healthcare professionals in the rural setting, which has the potential to improve quality of care and patient outcomes.

APPENDIX K. MOCK PATIENT SURVEY

Problem Areas in Diabetes Questionnaire (PAID)

DAWN
Diabetes Attitudes Wishes & Needs

INSTRUCTIONS: Which of the following diabetes issues are currently a problem for you?
Circle the number that gives the best answer for you. Please provide an answer for each question. Please bring the completed form with you to your next consultation where it will form the basis for a dialogue about how you are coping with your diabetes.

Patient name: Mock Patient Completion date: Interview date:

	Not a problem	Minor problem	Moderate problem	Somewhat serious problem	Serious problem
1. Not having clear and concrete goals for your diabetes care?	0	1	2	3	4
2. Feeling discouraged with your diabetes treatment plan?	0	(1)	2	3	4
3. Feeling scared when you think about living with diabetes?	0	1	2	3	4
4. Uncomfortable social situations related to your diabetes care (e.g., people telling you what to eat)?	(0)	1	2	3	4
5. Feelings of deprivation regarding food and meals?	0	1	(2)	3	4
6. Feeling depressed when you think about living with diabetes?	0	1	2	(3)	4
7. Not knowing if your mood or feelings are related to your diabetes?	0	1	2	(3)	4
8. Feeling overwhelmed by your diabetes?	0	1	2	3	(4)
9. Worrying about low blood sugar reactions?	0	1	2	3	(4)
10. Feeling angry when you think about living with diabetes?	(0)	1	2	3	4
11. Feeling constantly concerned about food and eating?	0	1	(2)	3	4
12. Worrying about the future and the possibility of serious complications?	(0)	1	2	3	4
13. Feelings of guilt or anxiety when you get off track with your diabetes management?	(0)	1	2	3	4
14. Not "accepting" your diabetes?	(0)	1	2	3	4
15. Feeling unsatisfied with your diabetes physician?	(0)	1	2	3	4
16. Feeling that diabetes is taking up too much of your mental and physical energy every day?	0	1	2	(3)	4
17. Feeling alone with your diabetes?	(0)	1	2	3	4
18. Feeling that your friends and family are not supportive of your diabetes management efforts?	(0)	1	2	(3)	4
19. Coping with complications of diabetes?	0	1	2	3	4
20. Feeling "burned out" by the constant effort needed to manage diabetes?	0	1	2	(3)	4

Total sum 35
indicating distress

www.dawnstudy.com